Wesfarmers Kleenheat Gas Pty Ltd

Gas Distribution Licence (GDL9)

2018 Asset Management System Review

Report

November 2018

Deloitte.

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Mr Clay Roberts
Reticulation and Standards Manager
Wesfarmers Kleenheat Gas Pty Ltd
Building 161, Murdoch University
Murdoch, WA 6150

6 November 2018

Dear Clay

Wesfarmers Kleenheat Gas Pty Ltd – 2018 Asset Management System (AMS) review report

We have completed the Gas Distribution Licence AMS review for Wesfarmers Kleenheat Gas Pty Ltd for the period 1 June 2016 to 31 May 2018 and are pleased to submit our report to you.

I confirm that this report is an accurate presentation of the findings and conclusions from our review procedures.

If you have any questions or wish to discuss anything raised in the report, please contact Andrew Baldwin on 0414 924 346 or me on 0414 565 019.

Yours sincerely

Hendri Mentz
Partner
Deloitte Risk Advisory Pty Ltd

Contents

1 Independent assurance practitioner's report

We have undertaken a limited assurance engagement on the effectiveness of Wesfarmers Kleenheat Gas Pty Ltd's (**Kleenheat**) Asset Management System (**AMS**), relating to its Gas Distribution Licence No. 9 (GDL9) (the **Licence**) for the period 1 June 2016 to 31 May 2018 (**review period**).

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that Kleenheat has not established and maintained, in all material respects, an effective AMS for assets subject to the Licence, as measured by the effectiveness criteria in the April 2014 issue of the *Audit and Review Guidelines: Electricity and Gas Licences* issued by the ERA (the **Guidelines**) and the systems have not operated effectively for the review period.

Table 3 of this report provides the effectiveness ratings for each of the 12 key processes in the asset management life-cycle assessed by this engagement. For those aspects of Kleenheat's AMS that were assessed as having a minor opportunity for improvement, relevant observations, recommendations and action plans are summarised at section 2.5 of this report and detailed at section 4 of this report.

We conducted our engagement in accordance with Standard on Assurance Engagements ASAE 3500 *Performance Engagements* issued by the Auditing and Assurance Standards Board.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Kleenheat's responsibility for the AMS

Kleenheat is responsible for ensuring that it has:

- Complied in all material respects with the requirements of the Licence as specified by the Guidelines
- Established and maintained an effective asset management system for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines.

Assurance practitioner's independence and quality control

We have complied with the independence and other relevant ethical requirements relating to assurance engagements, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

The firm applies Auditing Standard ASQC 1 *Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, and Other Assurance Engagements,* and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Assurance practitioner's responsibilities

Our responsibility is to express a limited assurance conclusion on Kleenheat's AMS for assets subject to the Licence, based on the procedures we have performed and the evidence we have obtained. We conducted our limited assurance engagement in accordance with Australian Standard on Assurance Engagements ASAE 3500 *Performance Engagements,* issued by the Australian Auditing and Assurance Standards Board, in order to express a conclusion whether, based on the procedures performed and the evidence obtained, anything has come to our attention that causes us to believe that Kleenheat's AMS for assets subject to the Licence, have not been established and maintained, in all material respects, in accordance with the Licence as measured by the effectiveness criteria in the Guidelines. That standard requires that we plan and perform this engagement to obtain limited assurance about whether the AMS for assets subject to the Licence is materially effective.

A limited assurance engagement in accordance with ASAE 3500 involves identifying areas where the AMS for assets subject to the Licence is likely to be materially ineffective, addressing the areas identified and considering the process used to prepare the AMS for assets subject to the Licence. A

limited assurance engagement is substantially less in scope than a reasonable assurance engagement in relation to both the risk assessment procedures, including an understanding of internal control, and the procedures performed in response to the assessed risks.

Procedures performed

The procedures we performed were based on our professional judgement and consisted primarily of:

- Utilising the Guidelines as a guide for development of a risk assessment, which involved discussions with key staff and review of documents to perform a preliminary controls assessment
- Development of a Review Plan for approval by the ERA and an associated work program
- Interviews with and representations from relevant Kleenheat staff to gain an understanding of the development and maintenance of policies and procedural type documentation (a full list of staff engaged has been provided at **Appendix B**)
- Examination of documented policies and procedures for key functional requirements and consideration of their relevance to Kleenheat's AMS requirements and standards
- Physical visits to operations in Albany and Margaret River
- Consideration of reports and references evidencing activity
- Consideration of activities performed by the Kleenheat that relate to operation of the assets.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement. Accordingly, we do not express a reasonable assurance opinion on the effectiveness of Kleenheat's AMS for assets subject to the Licence, in all material respects, in accordance with the Licence as measured by the effectiveness criteria in the Guidelines.

Inherent Limitations

Because of the inherent limitations of an assurance engagement, together with the internal control structure, it is possible that fraud, error or non-compliance with compliance requirements may occur and not be detected.

A limited assurance engagement relating to the period from 1 June 2016 to 31 May 2018 does not provide assurance on whether the effectiveness of Kleenheat's AMS for assets subject to the Licence will continue in the future.

Restricted use

This report has been prepared for use by Kleenheat for the purpose of satisfying its obligation under Section 11Y of the Energy Coordination Act 1994. We disclaim any assumption of responsibility for any reliance on this report to any person other than Kleenheat, or for any other purpose other than that for which it was prepared. We understand that a copy of the report will be provided to the ERA for the purpose of reporting on the effectiveness of Kleenheat's AMS. We agree that a copy of this report will be given to the ERA in connection with this purpose, however we accept no responsibility to the ERA or to anyone who is provided with or obtains a copy of our report.

DELOITTE RISK ADVISORY PTY LTD

Hendri Mentz
Partner
6 November 2018

2 Executive summary

2.1 Introduction and background

The Economic Regulation Authority (the **ERA**) has under the provisions of the Energy Coordination Act 1994 (the **Act**), issued to Wesfarmers Kleenheat Gas Pty Ltd (**Kleenheat**) the Gas Distribution Licence No.9 (GDL9) (the **Licence**).

Section 11Y of the Act requires Kleenheat to provide to the ERA an Asset Management System (**AMS**) review (the **review**) conducted by an independent expert acceptable to the ERA not less than once in every 24 month period (or any longer period that the ERA allows). The ERA set the period to be covered by the review as 1 June 2016 to 31 May 2018 (**review period**).

At the request of Kleenheat, Deloitte Risk Advisory Pty Ltd (**Deloitte**) has undertaken a limited assurance review of Kleenheat's AMS.

The review has been conducted in accordance with the April 2014 issue of the *Audit and Review Guidelines: Electricity and Gas Licences* (the **Guidelines**), which set out 12 key processes in the asset management life-cycle. The limited assurance review was undertaken in order to state whether, based on the procedures we have performed and the evidence we have obtained, anything has come to our attention to indicate that Kleenheat has not established and maintained, in all material respects, an effective AMS for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines and that the systems have not operated effectively for the review period.

2.2 Findings

In considering Kleenheat's internal control procedures, structure and environment, its compliance arrangements and its information systems specifically relevant to those effectiveness criteria subject to review and with a focus on its distribution activity, we observed that Kleenheat:

- Has continued to develop and strengthen its AMS, through the following initiatives:
    - Development of the *Retic, Gas Network Asset Management Plan* (**AMP**) which has provided an overview of the reticulated gas assets within Kleenheat's gas distribution system. The AMP outlines the description of operations and assets, service levels, demand and forecast drivers, lifecycle management plan and improvement plan
    - Revision and updates of the safety case and the associated risk assessment for the renewal process which has to be submitted to and approved by Building and Energy once every five years. This renewal process included a review of all elements of the safety case including all risk treatments and supporting documentation (policies, procedures and training) supporting the relevant Tier 1 reticulated gas network assets
    - Commencement of the following projects aimed at improving the performance of Kleenheat's Tier 1 reticulated gas assets covered under the Licence:
        - Upgrade of the Rapid's Landing tank to meet the projected network demand
        - Upgrade of the Rapid's Landing and Oyster Harbour pressure regulating equipment to enable continuous LPG supply to the network whilst one regulator is isolated for maintenance, and to enable improvements in unaccounted gas calculations
        - Planning for acquisition of network survey equipment to enable Kleenheat to accurately locate underground valves and welded/mechanical joints during leak surveys.
- Actioned all recommendations made during the 2016 AMS Review.

This review assessed that, of the 56 elements of Kleenheat's AMS:

- For the asset management process and policy definition adequacy ratings:
    - 37 are rated as "Adequately defined"
    - 15 are rated as "Requires some improvement"
    - Four are not rated.
- For the asset management performance ratings:

- 36 are rated as "Performing effectively"
- 15 are rated as "Opportunity for improvement"
- One is rated as "Corrective action required"
- Four are not rated.

- There are a total of 10 opportunities for improvement where further action is recommended.

Specific assessments for each criterion are summarised at **Table 3** in section 3 "Summary of ratings" of this report.

Detailed findings, including relevant observations, recommendations and action plans are located in section 4 "Detailed findings, recommendations and action plans" of this report.

2.3 Asset portfolio

Kleenheat operates four Tier 1 reticulated distribution networks in Western Australia that supply commercial and residential estates under the Licence. One reticulated distribution network is in Albany (Oyster Harbour/Bayonet Head), one in Leinster and two in Margaret River (Rapids Landing and Riverslea). The four Tier 1 reticulated distribution networks distribute approximately 395 tonnes of LPG per annum.

The Albany and Margaret River networks are comprised of a bulk LPG tank (for each network) that dispenses vaporised LPG into an underground network of pipes to each customer. As at 31 May 2018, a total of 764 gas meters were connected within these networks to facilitate meter readings for billing purposes.

The Leinster network is comprised of two bulk LPG tanks connected to an underground network of pipes that supplies vaporised LPG to commercial buildings and residences. Kleenheat uses a bulk supply agreement with a commercial client for billing based on delivered tonnage. Note that meters installed on this network are not used for billing purposes.

2.4 Subsequent event

In June 2018, subsequent to the review period, an incident occurred on Kleenheat's Leinster gas distribution network. The incident involved damage to a gas line during excavation works carried out by third party contractors who were searching for a water pipe leak. The damage to the gas line interrupted the supply and distribution of gas to the Leinster network, which Kleenheat responded to and restored within the required timeframes. A Final Incident Report including eight key learning points was prepared and submitted to Building and Energy on 20 July 2018. Building and Energy had responded to the Final Incident Report on 7 August 2018 issuing three inspector's orders with key resolution milestones and due dates.

After considering the details of the incident and Kleenheat's Final Incident Report, we determined that while the root causes of the incident do not directly relate to our assessment of effectiveness of Kleenheat's AMS, learnings detailed in the Final Incident Report are consistent with our review's findings and identified opportunities for improvement in relation to the clarity of procedures, and staff and contractor training relating to contractors' involvement in emergency response activities.

2.5 Kleenheat's response to previous review recommendations

This review considered Kleenheat's progress in completing the action plans detailed in the 2016 AMS report.

Based on our examination of relevant documents, discussion with staff and consideration of the results of this review's testing against the criteria, we determined that all 12 action plans were fully completed during this review period.

Refer to section 5 of this report for further detail.

2.6 Recommendations and action plans

<table>
<tr><th>AMS Key Process and Effectiveness Criteria</th><th>Adequacy rating</th><th>Issue 1/2018</th></tr>
<tr><td rowspan="2">Asset planning
1(a) Asset Management Plan covers key requirements
1(i) Plans are regularly reviewed and updated

Environmental analysis
4(c) Compliance with statutory and regulatory requirements

Review of AMS
12(a) A review process is in place to ensure that the AMP and the AMS described therein are kept current
12(b) Independent reviews (e.g. internal audit) are performed of the AMS</td><td>Requires some improvement (B)
Performance rating
Opportunity for improvement (2)</td><td>Although Kleenheat’s AMP (last revised 15 September 2017) provides some direction on Kleenheat’s asset management framework and practices, including an overview of the major elements of the reticulated gas assets within Kleenheat’s gas distribution system:
Kleenheat has recognised the need for its AMP to be further expanded and restructured to accommodate all elements of an effective AMP, tailored to Kleenheat’s purposes and commensurate with the relative size and simplicity of Kleenheat’s Tier 1 network assets. Where appropriate, clear reference should be made to the role of the Distribution Network Safety Management System and related Safety Case in describing and managing the distribution network assets
The AMP does not clearly reference the statutory and regulatory requirements relevant to its distribution network assets (note that those requirements are referenced in Kleenheat’s current Safety Case)
Regular annual reviews to update the AMP were not in place during the review period
The current AMP does not define how other independent reviews in key areas that are not included in the Safety Case will assist Kleenheat in ensuring the effectiveness and continuous improvement of its AMS.</td></tr>
<tr><td colspan="2">Recommendation 1/2018
Commensurate with the relative size and simplicity of its network assets, Kleenheat expand and restructure the AMP to accommodate the items raised in the findings above and throughout this report. Ideally the AMP would reference Kleenheat’s systems, processes and procedures in place to manage each of the 12 key components of the asset management lifecycle.</td><td>Action Plan 1/2018
Kleenheat will implement this recommendation.
Responsible Person
Reticulation and Standards Manager
Target Date
September 2019</td></tr>
</table>

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 2/2018
Environmental analysis *4(b) Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved*	Requires some improvement (B) **Performance rating** Corrective action required (3)	Although Kleenheat has developed performance measures for its distribution network assets including the effectiveness of distribution control standards, system reliability, system condition, product controls, system damage, contingency management and worker competency, Kleenheat had not reported on its achievement of those performance measures during the review period.
Recommendation 2/2018 Kleenheat implement a performance measure reporting process, which includes the following elements: • Reporting templates including source system information • Monitoring templates suitable to the network's activities, such as leak surveys and pressure readings • Formal and regular management review and oversight of performance measures.		**Action Plan 2/2018** Kleenheat will implement this recommendation. Monitoring templates will be developed where suitable. **Responsible Person** Reticulation and Standards Manager **Target Date** June 2019

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 3/2018
Asset operations *5(a) Operational policies and procedures are documented and linked to service levels required* **Asset maintenance** *6(a) Maintenance policies and procedures are documented and linked to service levels required*	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	Although it is evident that Kleenheat's procedures have been designed to support its management of a safe and reliable distribution system, the link to specific service levels required (e.g. interruptions, pressure, service connection, emergency (e.g. leak) response time) does not clearly cascade through to specific procedures.
Recommendation 3/2018 Kleenheat consider updating its key asset operations and maintenance documents (including the AMP and relevant procedures) to ensure required service levels are recognised and accommodated throughout. Note that such updates should occur as part of Kleenheat's normal cycle for reviewing its procedure documents.		**Action Plan 3/2018** Kleenheat will implement this recommendation through its review and update of the AMP and relevant procedures. **Responsible Person** Reticulation and Standards Manager **Target Date** September 2019

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 4/2018
Asset operations *5(c) Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data*	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	Although Kleenheat has added to the content of the asset register in response to recommendation 6/2016 of the 2016 AMS review, further improvements can be made to the asset register to assist Kleenheat to understand and manage all key aspects of its asset portfolio. We recognise that there is a cost/benefit balance to achieve in any further expansion asset records to be maintained in eAM.
Recommendation 4/2018 Kleenheat consider including the following elements in its asset register: • Further description of asset type • Asset working environment • Population sizes • Material/technology applied • Age/remaining life/shelf life/obsolescence • Purchase value/commissioning cost • Logistics data.		**Action Plan 4/2018** Kleenheat will implement this recommendation, giving consideration to the capabilities of the current eAM software. **Responsible Person** Reticulation and Standards Manager **Target Date** June 2019

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 5/2018
Asset operations *5(e) Staff receive training commensurate with their responsibilities*	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	Kleenheat's training arrangements can be further strengthened by more specifically aligning staff competence with the asset conditions (current risks) as well as current technology in supporting the execution of the AMP.
Recommendation 5/2018 Kleenheat consider developing a training framework and plan which addresses: • Current staff competence, plus records of assessments of staff competence • Training material update process • Asset technology changes that require new or updated training • Seldom exercised tasks • New skills that need to be added to training • Handling of third party contractors.		**Action Plan 5/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** September 2019

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 6/2018
Asset maintenance *6(b) Regular inspections are undertaken of asset performance and condition*	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	Kleenheat's requirements for asset inspections can be strengthened to more clearly link with underlying risks and asset condition.
Recommendation 6/2018 Kleenheat consider further updating its Asset Maintenance Plan to include the following elements in its asset inspections: • The basis for inspection strategies, linked with the network risk assessment • Compliance metrics/targets • Technology required • How inspection results are used to support wider asset management decisions.		**Action Plan 6/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** December 2018

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 7/2018
Asset maintenance *6(d) Failures are analysed and operational/maintenance plans adjusted where necessary*	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	Kleenheat's Asset Maintenance Plan and its procedures applied in practice do not adequately address the need for demonstrating analyses of any failures (corrective work, leaks, emergency attendance etc.), with conclusions or recommendations on future changes in operation and maintenance, as well as for engineering/asset renewal
Recommendation 7/2018 Kleenheat consider a developing an asset and system reliability/availability performance process which addresses the following elements: • Major identified failure modes with various assets • How work order information is used to feedback to the operation/maintenance plan and strategy • RACI behind maintenance strategy development/improvement • When root cause analysis is applied • How work (engineering, operation and maintenance) is prioritised by analysing the past occurrences (or non-occurrences) • Assessment of consequences for past failures including near-misses.		**Action Plan 7/2018** Kleenheat will implement this recommendation **Responsible Person** Reticulation and Standards Manager **Target Date** June 2019

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 8/2018
Asset maintenance *6(e) Risk management is applied to prioritise maintenance tasks*	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	Although there is evidence of relevant risks and hazards being recognised within the Asset Maintenance Plan and associated procedures, Kleenheat has not clearly documented the link between those key risks and hazards, and its asset maintenance strategies, plans and priorities. Kleenheat had recognised this matter through an independent assessment of the adequacy of it Safety Case, conducted in January 2018.
Recommendation 8/2018 Kleenheat consider including the following elements in its Asset Maintenance Plan: • Reference to those major risks and hazards that drive maintenance tasks (per examples outlined in the Safety Case), including any prioritisation of tasks to address risks relating to safety, reliability, compliance, environment etc. • A mechanism for accommodating instances where maintenance tasks themselves have an impact on risks and hazards (including introducing new risks).		**Action Plan 8/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** June 2019

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 9/2018
Risk management *8(b) Risks are documented in a risk register and treatment plans are actioned and monitored* *8(c) The probability and consequences of asset failure are regularly assessed*	Requires some improvement (B) **Performance rating** Opportunity for improvement (2)	Kleenheat has not developed a process for monitoring the control activities and actions listed in its distribution qualitative risk assessment or the impact of recent events and incidents in order to regularly assess the probability and consequence of asset failure, which impacts the residual risk rating.
Recommendation 9/2018 Kleenheat consider implementing a regular review process of its distribution qualitative risk assessment to assess and update the residual risk of each threat as at a point in time, including the following considerations: • Monitoring through updating recent results of the listed treatment plans and actions • Recent impact on threats and treatment plans and actions from recent events and incidents • Reassessing the probability and consequence of asset failure regularly which impact the low, medium or high residual risk rating.		**Action Plan 9/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** October 2018

AMS Key Process and Effectiveness Criteria	Adequacy rating	Issue 10/2018
Contingency planning *9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks*	Adequately defined (A) **Performance rating** Opportunity for improvement (2)	The Kleenheat distribution safety case stipulates frequency of testing of the contingency plans as annual, which does not exactly align with requirements of AS/NZS 4645.1, which requires the frequency of testing of contingency plans to be "on a regular basis, not less than once per year". The Contingency plan for Leinster was tested in May 2016 and November 2017. The frequency of this testing for Leinster was not executed in line with the requirements of AS/NZS 4645.1 of "… not less than once per year".
Recommendation 10/2018 Kleenheat consider: • Updating the frequency of testing of the contingency plans within the Kleenheat distribution safety case to be in line with requirements of AS/NZS 4645.1, being "on a regular basis, not less than once per year" • Scheduling and executing the testing of the contingency plan for each locality to ensure compliance with the Safety Case.		**Action Plan 10/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** December 2018

2.7 Scope and objectives

The objective of the review was to independently examine the effectiveness and performance of the AMS established for assets subject to Kleenheat's Licence during the review period.

In accordance with the Guidelines, the review considered the effectiveness of Kleenheat's existing control procedures within the following 12 key processes in the asset management life-cycle.

Table 1 – AMS key processes and effectiveness criteria

#	Key processes	Effectiveness criteria
1	Asset planning	(a) Asset management plan covers key requirements (b) Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning (c) Service levels are defined (d) Non-asset options (e.g. demand management) are considered (e) Lifecycle costs of owning and operating assets are assessed (f) Funding options are evaluated (g) Costs are justified and cost drivers identified (h) Likelihood and consequences of asset failure are predicted (i) Plans are regularly reviewed and updated.
2	Asset creation and acquisition	(a) Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions (b) Evaluations include all life-cycle costs (c) Projects reflect sound engineering and business decisions (d) Commissioning tests are documented and completed (e) Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.
3	Asset disposal	(a) Under-utilised and under-performing assets are identified as part of a regular systematic review process (b) The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken (c) Disposal alternatives are evaluated (d) There is a replacement strategy for assets.
4	Environmental analysis (all external factors that affect the system)	(a) Opportunities and threats in the system environment are assessed (b) Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved (c) Compliance with statutory and regulatory requirements (d) Achievement of customer service levels.
5	Asset operations	(a) Operational policies and procedures are documented and linked to service levels required (b) Risk management is applied to prioritise operations tasks (c) Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data (d) Operational costs are measured and monitored (e) Staff resources are adequate and staff receive training commensurate with their responsibilities.

#	Key processes	Effectiveness criteria
6	Asset maintenance	(a) Maintenance policies and procedures are documented and linked to service levels required (b) Regular inspections are undertaken of asset performance and condition (c) Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule (d) Failures are analysed and operational/maintenance plans adjusted where necessary (e) Risk management is applied to prioritise maintenance tasks (f) Maintenance costs are measured and monitored.
7	Asset management information system	(a) Adequate system documentation exists for users and IT operators (b) Input controls include appropriate verification and validation of data entered into the system (c) Logical security access controls appear adequate, such as passwords (d) Physical security access controls appear adequate (e) Data backup procedures appear adequate and backups are tested (f) Key computations related to licensee performance reporting are materially accurate (g) Management reports appear adequate for the licensee to monitor licence obligations.
8	Risk management	(a) Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the AMS (b) Risks are documented in a risk register and treatment plans are actioned and monitored (c) The probability and consequences of asset failure are regularly assessed.
9	Contingency planning	(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.
10	Financial planning	(a) The financial plan states the financial objectives and strategies and actions to achieve the objectives (b) The financial plan identifies the source of funds for capital expenditure and recurrent costs (c) The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) (d) The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period (e) The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services (f) Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.
11	Capital expenditure planning	(a) There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates (b) The plan provides reasons for capital expenditure and timing of expenditure (c) The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan (d) There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.

#	Key processes	Effectiveness criteria
12	Review of AMS	(a) A review process is in place to ensure that the asset management plan and the AMS described therein are kept current (b) Independent reviews (e.g. internal audit) are performed of the AMS.

Each key process and effectiveness criterion is applicable to Kleenheat's Licence and as such was individually considered as part of the review. The Review Plan, set out at Appendix A, details the risk assessments made for and review priority assigned to each key process and effectiveness criterion.

2.8 Approach

Our approach for this review involved the following activities, which were undertaken during July and August 2018:

- Utilising the Guidelines, development of a risk assessment, which involved discussions with key staff and review of documents to undertake a preliminary assessment of relevant controls
- Development of a Review Plan (see Appendix A) for approval by the ERA
- Correspondence and interviews with Kleenheat staff to gain an understanding of process controls in place (see Appendix B for staff involved)
- Visited the Albany and Margaret River operations with a focus on understanding the assets, their function, normal mode of operation, age and an assessment of the network against the AMS review criteria
- Review of documents, processes and controls to assess the overall effectiveness of Kleenheat's AMS (see Appendix B for reference listing)
- Consideration of the resourcing applied to maintaining those controls and processes
- Reporting of findings to Kleenheat for review and response.

3 Summary of ratings

In accordance with the Guidelines, the assessment of both the process and policy definition adequacy rating (refer to **Table 1**) and the performance rating (refer to **Table 2**) for each of the key AMS processes is performed using the below ratings.

For the avoidance of doubt, these ratings do not provide reasonable assurance.

Table 1: Asset management process and policy definition adequacy ratings

Rating	Description	Criteria
A	Adequately defined	• 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	• 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	• 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	• 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	• 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	• 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	• 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	• Process is not performed, or the performance is so poor that the process is considered to be ineffective.

This report provides:

- A breakdown of each function of the AMS into sub-components as described in the Guidelines. This approach is taken to enable a more thorough review of key processes where individual components within a larger process can be of greater risk to the business therefore requiring different review treatment
- A summary of the ratings applied by the review (**Table 3**) for each of:
  - Asset management process and policy definition adequacy (**definition adequacy rating**)
  - Asset management performance (**performance rating**).
- Detailed findings, including relevant observations, recommendations and action plans (**Section 4**). Descriptions of the effectiveness criteria can be found in section 4 and the Review Plan at Appendix A.

Table 3: AMS effectiveness summary

			Ratings	
Ref	Effectiveness criteria	Review Priority	Definition Adequacy	Performance
1.	**Asset planning**		**B**	**2**
1(a)	Asset management plan covers key requirements	Priority 4	B	2
1(b)	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	Priority 5	A	1
1(c)	Service levels are defined	Priority 5	A	1
1(d)	Non-asset options (e.g. demand management) are considered	Priority 5	A	1
1(e)	Lifecycle costs of owning and operating assets are assessed	Priority 4	A	1
1(f)	Funding options are evaluated	Priority 5	A	1
1(g)	Costs are justified and cost drivers identified	Priority 4	A	1
1(h)	Likelihood and consequences of asset failure are predicted	Priority 2	A	1
1(i)	Plans are regularly reviewed and updated	Priority 5	B	2
2.	**Asset creation and acquisition**		**A**	**1**
2(a)	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	Priority 4	A	1
2(b)	Evaluations include all life-cycle costs	Priority 4	A	1
2(c)	Projects reflect sound engineering and business decisions	Priority 4	A	1
2(d)	Commissioning tests are documented and completed	Priority 4	A	1
2(e)	Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood	Priority 2	A	1
3.	**Asset disposal**		**NR**	**NR**
3(a)	Under-utilised and under-performing assets are identified as part of a regular systematic review process	Priority 5	NR	NR
3(b)	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	Priority 5	NR	NR
3(c)	Disposal alternatives are evaluated	Priority 5	NR	NR
3(d)	There is a replacement strategy for assets	Priority 4	NR	NR
4.	**Environmental analysis**		**B**	**2**
4(a)	Opportunities and threats in the system environment are assessed	Priority 4	A	1
4(b)	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	Priority 4	B	2
4(c)	Compliance with statutory and regulatory requirements	Priority 3	B	3
4(d)	Achievement of customer service levels	Priority 4	A	1
5.	**Asset operations**		**B**	**2**
5(a)	Operational policies and procedures are documented and linked to service levels required	Priority 3	B	2

Ref	Effectiveness criteria	Review Priority	Ratings	
			Definition Adequacy	Performance
5(b)	Risk management is applied to prioritise operations tasks	Priority 4	A	1
5(c)	Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data	Priority 3	B	2
5(d)	Operational costs are measured and monitored	Priority 4	A	1
5(e)	Staff resources are adequate and staff receive training commensurate with their responsibilities	Priority 3	B	2
6.	**Asset maintenance**		**B**	**2**
6(a)	Maintenance policies and procedures are documented and linked to service levels required	Priority 2	B	2
6(b)	Regular inspections are undertaken of asset performance and condition	Priority 1	B	2
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Priority 2	A	1
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	Priority 2	B	2
6(e)	Risk management is applied to prioritise maintenance tasks	Priority 2	B	2
6(f)	Maintenance costs are measured and monitored	Priority 4	A	1
7.	**Asset management information system**		**A**	**1**
7(a)	Adequate system documentation exists for users and IT operators	Priority 5	A	1
7(b)	Input controls include appropriate verification and validation of data entered into the system	Priority 4	A	1
7(c)	Logical security access controls appear adequate, such as passwords	Priority 5	A	1
7(d)	Physical security access controls appear adequate	Priority 5	A	1
7(e)	Data backup procedures appear adequate and backups are tested	Priority 4	A	1
7(f)	Key computations related to licensee performance reporting are materially accurate	Priority 5	A	1
7(g)	Management reports appear adequate for the licensee to monitor licence obligations	Priority 5	A	1
8.	**Risk management**		**B**	**2**
8(a)	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the AMS	Priority 2	A	1
8(b)	Risks are documented in a risk register and treatment plans are actioned and monitored	Priority 3	B	2
8(c)	The probability and consequences of asset failure are regularly assessed	Priority 2	B	2
9.	**Contingency planning**		**A**	**2**
9(a)	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Priority 2	A	2
10.	**Financial planning**		**A**	**1**
10(a)	The financial plan states the financial objectives and strategies and actions to achieve the objectives	Priority 4	A	1
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Priority 5	A	1
10(c)	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Priority 5	A	1
10(d)	The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period	Priority 5	A	1
10(e)	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Priority 4	A	1
10(f)	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	Priority 4	A	1
11.	**Capital expenditure planning**		**A**	**1**
11(a)	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	Priority 4	A	1

Ref	Effectiveness criteria	Review Priority	Ratings	
			Definition Adequacy	Performance
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	Priority 5	A	1
11(c)	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Priority 4	A	1
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	Priority 5	A	1
12. Review of AMS			**B**	**2**
12(a)	A review process is in place to ensure that the asset management plan and the AMS described therein are kept current	Priority 5	B	2
12(b)	Independent reviews (e.g. internal audit) are performed of the AMS	Priority 5	B	2

4 Detailed findings, recommendations and action plans

The following tables contain:

- *Findings:* the reviewer's understanding of the process and any issues that have been identified during the review
- *Recommendations (where applicable):* recommendations for improvement or enhancement of the process or control
- *Action plans (where applicable):* Kleenheat's formal response to review recommendations, providing details of action to be implemented to address the specific issue raised by the review.

4.1 Asset Planning

Key process: Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price)

Expected 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

Overall Adequacy/Performance rating: Requires some improvement (B) / Opportunity for improvement (2)

Effectiveness Criteria	Findings	

1(a) Asset Management Plan covers key requirements	Through discussion with the Reticulation and Standards Manager and inspection of Kleenheat's *Retic, Gas Network Asset Management Plan* (**AMP**), we determined that the AMP (last revised 15 September 2017):
	• Provides some direction on Kleenheat's asset management framework and practices, including an overview of the major elements of the reticulated gas assets within Kleenheat's gas distribution system. The AMP includes the following elements:
	  • Scope and purpose
	  • Description of operations and assets
	  • Levels of service (responsibilities, customer research and expectations, legislative requirements)
	  • Future demand and forecast (demand drivers highlighted)
	  • Lifecycle management plan (as a reference to the related Safety Case)
	  • Improvement plan (overview of ERA auditing improvements and safety management system).
	• Can be expanded and restructured to accommodate the following elements of an effective AMP, tailored to Kleenheat's purposes and commensurate with the relative size and simplicity of Kleenheat's network assets. Where appropriate, clear reference should be made to the role of the Distribution Network Safety Management System and related Safety Case in describing and managing the distribution network assets:
	  • Lifecycle stages, from acquisition to disposal
	  • Description of the network's core/tier 1 assets and extended network assets (currently described in the Safety Case)
	  • Legislative and other compliance obligations, including those addressed within the Safety Case and other Kleenheat compliance activities
	  • Key risks and risk management arrangements
	  • Contingency arrangements
	  • Service levels (specific to network assets, rather than customer service)
	  • Financial forecasts
	  • Performance monitoring
	  • Arrangements for review (including independent review) and update of the AMP.	

	Adequacy Rating: Requires some improvement (B)	**Performance Rating:** Opportunity for improvement (2)

Effectiveness Criteria	Findings	
	Recommendation 1/2018 Commensurate with the relative size and simplicity of its network assets, Kleenheat expand and restructure the AMP to accommodate the items raised in the findings above and throughout this report. Ideally the AMP would reference Kleenheat's systems, processes and procedures in place to manage each of the 12 key components of the asset management lifecycle.	**Action Plan 1/2018** Kleenheat will implement this recommendation **Responsible Person** Reticulation and Standards Manager **Target Date** September 2019
1(b) Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, we determined that Kleenheat has maintained an: • Annual commercial planning process where the commercial objectives (revenue, capital expenditure, operations and profitability) and sustainability of each Tier 1 distribution network assets is analysed • An annual process and a health check report is prepared by the Commercial team, providing an analysis of the network's commercial objectives. The Health Check report, referenced in section 1(e), is used as the basis for discussions to facilitate the commercial planning process and feeds into Kleenheat's annual budgeting process. Refer to section 10 of this report for further details on the commercial planning process.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(c) Service levels are defined	Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, and inspection of relevant documentation, we determined that: • Service Levels for customer services have been defined in the AMP (as referenced at section 1(a) above) and in the Safety Case (relating to emergency response service levels) • Service levels for gas distribution have been reflected in the maintenance arrangements applied to the assets defined in the Distribution Systems Asset Maintenance Plan • The Distribution Systems Asset Maintenance Plan highlights the key focus areas of maintenance (including leak surveys, meter replacement, gas sampling and pressure monitoring).	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(d) Non-asset options (e.g. demand management) are considered	Through discussion with the Reticulation and Standards Manager, we determined that Kleenheat's planning process provides for consideration of demand management through the following processes: • Remote monitoring of storage tank volumes at each Tier 1 distribution network location • Design Verification and Compliance Check, which considers demand management for new networks, existing network expansions and development plans • Distribution Network Capacity Check, which provides a process for assessing the Tier 1 distribution network's capacity for expansion.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness Criteria	Findings	
1(e) Lifecycle costs of owning and operating assets are assessed	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager and walkthrough of the Health Check Report 2017, we determined that the commercial planning process as stated at section 1(b) above analyses and forecasts the lifecycle cost of owning and operating assets in the Tier 1 distribution network until the 2030 financial year.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(f) Funding options are evaluated	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that: • An annual bottom up budgeting process exists, providing for analysis of the funding options available for the financial year ahead • The annual budgeting process includes volume and revenue analysis, costs associated with maintenance and capital expenditure, personnel costs and profitability margins • The annual budgeting process addresses the entire LPG business, with the Tier 1 distribution network assets being part of the Retic business line.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(g) Costs are justified and cost drivers identified	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that the 2018 annual budget identifies both capital expenditure and operating costs for the Retic business line. Those costs are included in the justifications for each costs category within the budget.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
1(h) Likelihood and consequences of asset failure are predicted	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager; and inspection of relevant documentation, we determined that Kleenheat has established the following processes to predict the likelihood and consequence of distribution network asset failure: • The Kleenheat distribution Safety Case is a requirement under the Gas Standards (Gas Supply and System Safety) Regulations 2000, which focuses on Kleenheat safety management processes and controls within operations to safely deliver (or distribute) gas to the Tier 1 distribution networks covered under this Licence. The Safety Case has a validity period of 5 years. The Safety Case renewal (Version 4) was prepared during 2018 and submitted to Building and Energy for approval in August 2018 • The Safety Case requires a formal safety case risk assessment (Kleenheat distribution qualitative risk assessment). Threats listed relate to asset or network failure, which will ultimately impact Kleenheat's ability to safely deliver gas to the Tier 1 distribution networks covered by the Licence • Under each threat within the formal safety case risk assessment, there is a prediction (risk category, residual risk) on the consequences (on people, environment and supply of gas) and likelihood of the occurrence of the threat • The Network Pressure Rectification and Distribution Network Capacity Check procedures (referenced at section 1(d) above), which references pressure testing and provides Kleenheat with an operative prediction on the consequences and likelihood of the asset of network failing • The Distribution Network Leak Survey process is undertaken to provide Kleenheat with an operative prediction on the likelihood and frequency of asset failure in maintaining service levels.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="3">1(i) Plans are regularly reviewed and updated</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, we determined that:
Regular annual reviews to update the AMP were not in place during the audit period. Kleenheat has recognised the need for its AMP to be further strengthened (commensurate with the size and nature of its operations) to reflect and incorporate the asset management system applicable to the distribution network assets covered by the Licence. Refer to Findings at section 1(a) above for further detail
Kleenheat’s safety case requires renewal on a five year basis. Kleenheat prepared Version 4 of its safety case during 2018 for submission to Building and Energy for approval in August 2018.</td></tr>
<tr><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td>Recommendation
Refer to Recommendation 1/2018 relating to expansion and restructure of the AMP.</td><td>Action Plan
Refer to Action Plan 1/2018</td></tr>
</table>

4.2 Asset Creation and acquisition

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

Expected 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.

Overall Adequacy/Performance rating: Adequately defined (A) / Performing effectively (1)

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">2(a) Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that:
The creation of new assets for Kleenheat's distribution network is limited to the LPG storage tank upgrades and the commissioning of new development stages within an existing Tier 1 reticulation network
Kleenheat applies its corporate capital expenditure (Capex) process for new asset creation. This process is evidenced in the Wesfarmers Group Capital Expenditure Policy and the WESCEF Delegation of Authority Policy
The Capex authorisation requires evaluation of alternatives, strategic justification/rationale, stages and resources required, budget and financial analysis and risk analysis
There were 9 Capex evaluations performed within the review period. We sighted the following example of the capex evaluation process undertaken by Kleenheat:
The KHG Sales WA 0045 Rapids Landing Retic Stage 6A Capex authorisation form was authorised by the Kleenheat General Manager on 6 October 2017 and included all required elements. The Capex authorisation related to the commissioning of expansion to the distribution network in the Rapids Landing estate in Margaret River.</td></tr>
<tr><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td rowspan="2">2(b) Evaluations include all life-cycle costs</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that:
As referenced at section 2(a) above, Kleenheat's Capex authorisation form provides for evaluation of budget and financial analysis and risk analysis, which includes all life-cycle costs
For the KHG Sales WA 0045 Rapids Landing Retic Stage 6A capex evaluation:
The financial analysis focusses on commissioning costs
All costs associated with new extensions including materials, labour and installation costs were incurred by the developer
As referenced at section 1(e) above, the commercial planning process analyses and forecasts the lifecycle cost of owning and operating assets in the Tier 1 distribution network until the 2030 financial year.</td></tr>
<tr><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td></td><td colspan="2">Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that:</td></tr>
</table>

Effectiveness Criteria	Findings	
2(c) Projects reflect sound engineering and business decisions	• As referenced at 2(a) above, the capex process provides for adequate commercial management oversight in the preparation of the Capex authorisation form. The KHG Sales WA 0045 Rapids Landing Retic Stage 6A Capex authorisation form was approved by the Commercial Manager, Commercial Accounts Manager and the General Manager • The KHG Sales WA 0045 Rapids Landing Retic Stage 6A Capex authorisation form was authorised based on achieving Kleenheat's threshold internal rate of return (IRR) reflected in the positive NPV contribution for each additional customer of over a set revenue threshold • The Capex process provides for sound engineering decisions. As referenced at section 2(a) above, the KHG Sales WA 0045 Rapids Landing Retic Stage 6A commissioning project demonstrated project engineer oversight in the sign off on the Distribution Network Handover Check List, attesting applicable items completed. Project related fit-for-purpose certificates issued by external civil engineering contractors were obtained including Hose for flare, Manometer calibration, Pipe fitting conformity and Welder calibration.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
2(d) Commissioning tests are documented and completed	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that the Capex process provides for completion of commissioning tests, which are authorised by the appropriate level of Kleenheat management. The KHG Sales WA 0045 Rapids Landing Retic Stage 6A Distribution Network Commissioning Scope document was authorised by the Reticulation and Standards Manager with the project engineer's records of testing for scope completion.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
2(e) Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood	Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, and inspection of relevant documentation, we determined that Kleenheat's understanding and assignment of the ongoing legal, environmental and safety obligations of the network is reflected in the reticulation safety case and the formal safety case risk assessment (KHG LPG Reticulation System Safety Case Risk Assessment). *Refer to section 1(h) above for further detail on the processes in place to demonstrate Kleenheat's understanding of its legal, environmental and safety obligations as a gas distribution network operator.*	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.3 Asset disposal

Key process: Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets. Alternatives are evaluated in cost-benefit terms.

Expected outcome: Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs.

Overall Adequacy/Performance rating: Not rated / Not rated

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">3(a) Under-utilised and under-performing assets are identified as part of a regular systematic review process
3(b) The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken
3(c) Disposal alternatives are evaluated
3(d) There is a replacement strategy for assets</td><td colspan="2">Through discussions with the Reticulation and Standards Manager Commercial Accounts Manager, we determined that:
Kleenheat has determined that its Tier 1 distribution network assets deliver an acceptable rate of return
There is no documented approach for assessing asset disposal due to under utilisation or under performing of assets as Kleenheat’s Tier 1 distribution network assets are considered to be in the early to mid-phase of its asset lifecycle (assessed to be in excess of 50 years). Therefore, Kleenheat has not considered or evaluated disposal alternatives or considered any replacement strategies
Meter replacement monitoring is performed through the Oracle eAM module by meter replacement date and implemented as per the Distribution Systems Asset Maintenance Plan
Underutilisation of the relevant Tier 1 distribution network assets is more likely to be detected and investigated through monthly performance reporting (variance analysis, volume of gas sold, profitability) as referenced at section 10(f) below.</td></tr>
<tr><td>Adequacy Rating: Not Rated</td><td>Performance Rating: Not Rated</td></tr>
</table>

4.4 Environmental analysis

Key process: Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.

Expected outcome: The AMS regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.

Overall Adequacy/Performance rating: Requires some improvement (B) / Opportunity for improvement (2)

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="2">4(a) Opportunities and threats in the system environment are assessed</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that:
As referenced at section 1(h) above, the Kleenheat distribution safety case and qualitative risk assessment:
Assesses the opportunities and threats in the system environment for the safe delivery of gas within the relevant Tier 1 distribution networks
Has under each threat, assessed and predicted (risk category, residual risk) the consequences (on people, environment and supply of gas) and likelihood of the occurrence of the threat for safe delivery of gas within the relevant Tier 1 distribution networks. Opportunities for improvement or prevention have been listed as part of controls within the qualitative risk assessment
Opportunities and threats in the system environment, for the LPG business, have been assessed at a corporate level by Kleenheat management on a quarterly basis
The assessment of corporate risk for the Kleenheat LPG business, which includes the relevant Tier 1 distribution networks covered under the Licence are recorded in the Kleenheat LPG Corporate Risk Register.</td></tr>
<tr><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td rowspan="3">4(b) Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, and inspection of relevant documentation, we determined that:
Kleenheat has developed performance measures for its distribution network assets including the effectiveness of distribution control standards, system reliability, system condition, product controls, system damage, contingency management and worker competency
Whilst performance measures have now been defined, Kleenheat had not reported on its achievement of those performance measures during the review period.</td></tr>
<tr><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Corrective action required (3)</td></tr>
<tr><td>Recommendation 2/2018
Kleenheat implement a performance measure reporting process, which includes the following elements:
Reporting templates including source system information
Monitoring templates suitable to the network’s activities, such as leak surveys and pressure readings</td><td>Action Plan 2/2018
Kleenheat will implement this recommendation. Monitoring templates will be developed where suitable.
Responsible Person
Reticulation and Standards Manager
Target Date
June 2019</td></tr>
</table>

Effectiveness Criteria	Findings	
	• Formal and regular management review and oversight of performance measures.	
4(c) Compliance with statutory and regulatory requirements	Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, and inspection of relevant documentation, we determined that: • Applicable statutory and regulatory requirements have been referenced in Kleenheat's most recent Safety Case, which requires Building and Energy's approval as part of a 5 year renewal process. Kleenheat prepared Version 4 of its Safety Case during 2018 for submission to Building and Energy for approval in August 2018 • Throughout the review period, Kleenheat has demonstrated an awareness of and compliance with its statutory and regulatory requirements through compliance with Kleenheat corporate policies and procedures, which reference relevant regulations applicable to the subject matter • Compliance with Kleenheat's Safety Case as referenced at section 1(h) above will enable the relevant Tier 1 distribution network assets to comply with the applicable statutory and regulatory requirements • Although Kleenheat's Safety Case now references statutory and regulatory requirements relevant to its distribution network assets, the AMP does not clearly reference those requirements. *Refer to Findings at section 1(a) for further detail.*	
	Adequacy Rating: Requires some improvement (B)	**Performance Rating:** Opportunity for improvement (2)
	Recommendation Refer to Recommendation 1/2018 relating to expansion and restructure of the AMP.	**Action Plan** Refer to Action Plan 1/2018
4(d) Achievement of customer service levels	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that Kleenheat: • Has established processes to monitor customer service calls received, calls answered, service level achievement percentages (calls answered in less than 30 seconds), longest wait times and average number of calls answered per day for the LPG business including the relevant Tier 1 distribution network assets. Monitoring of these statistics for a one year period is performed through the CISCO Call Statistics Snapshot Report • Utilises the Oracle CRM module to manage customer related data including account feedback and any actions performed in relation to the customer account.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.5 Asset operations

Key process: Operational functions relate to the day-to-day running of assets and directly affect service levels and costs.

Expected outcome: Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.

Overall Adequacy/Performance rating: Requires some improvement (B) / Opportunity for improvement (2)

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="4">5(a) Operational policies and procedures are documented and linked to service levels required</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, inspection of relevant documentation and conduct of site visits to Kleenheat's Albany and Margaret River locations, we determined that:
• Kleenheat has developed the following key documents to manage the development, implementation and maintenance of operational policies and procedures relevant to its distribution network assets:
  • Systems of Work, which describes the use of Standard Operating Procedures (SOP) and Permit To Work Systems for the production and operations elements of Kleenheat's gas distribution activities
  • Distribution Network Manual, which references detailed work instructions and procedures
• A number of SOPs were reviewed and updated throughout the review period, plus additional procedures were implemented as a result of Kleenheat's review and strengthening of its SMS
• SOPs are also referenced throughout the current Safety Case and within training material
• Collectively, these documents provide an overview of the major elements of Kleenheat's asset management system and the major approach to asset operation and maintenance of the reticulated assets within Kleenheat's gas distribution system
• Although it is evident that Kleenheat's procedures have been designed to support its management of a safe and reliable distribution system, the link to specific service levels required (e.g. interruptions, pressure, service connection, emergency (e.g. leak) response time) does not clearly cascade through to specific procedures.
We also note that Kleenheat has identified learnings from the June 2018 incident on the Leinster reticulation network, which will result in Kleenheat making further clarification and improvements to its operational procedures.</td></tr>
<tr><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td>Recommendation 3/2018
In addition to its planned review and update of procedures (including updates identified in the learnings from the Leinster incident), Kleenheat consider updating its key asset operations and maintenance documents (including the AMP and relevant procedures) to ensure required service levels are recognised and accommodated throughout. Note that such updates should occur as part of Kleenheat's normal cycle for reviewing its procedure documents.</td><td>Action Plan 3/2018
Kleenheat will implement this recommendation through its review and update of the AMP and relevant procedures.
Responsible Person
Reticulation and Standards Manager
Target Date
September 2019</td></tr>
</table>

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td>5(b) Risk management is applied to prioritise operations tasks</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, inspection of relevant documentation and conduct of site visits to Kleenheat's Albany and Margaret River locations, we determined that Kleenheat has applied the following processes and references to enable operational tasks to be prioritised:
• The Systems of Work document provides instructions for maintaining effective control over any potentially negative impacts of operations
• A Distribution Network Qualitative Risk Assessment (performed in January 2018) identified hazards associated with its gas distribution systems and documented how associated risks have been reduced "So Far As Reasonably Practicable".</td></tr>
<tr><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td>5(c) Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, and examination of relevant documentation and Kleenheat's Oracle e-business system records, we determined that:
• Kleenheat utilises its Oracle eAM system as its asset register for its network assets. The Oracle eAM system includes provision for information relating to:
  • Asset group and accounting class
  • Asset location
  • Asset health
  • Serial number
• Although Kleenheat has added to the content of the asset register in response to recommendation 6/2016 of the 2016 AMS review, further improvements can be made to the asset register to assist Kleenheat to understand and manage the following aspects of its asset portfolio. We recognise that there is a cost/benefit balance to achieve in any further expansion asset records to be maintained in eAM:
  • Further description of asset type (e.g. specification, model, brand, version)
  • Asset working environment (e.g. environmental conditions)
  • Population sizes
  • Material/technology applied
  • Age (currently being implemented into eAM)/remaining life/shelf life/obsolescence
  • Purchase value/commissioning cost
  • Logistics data such as lead time, availability of parts.</td></tr>
<tr><td></td><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td></td><td>Recommendation 4/2018
Kleenheat consider including the following elements in its asset register:
• Further description of asset type
• Asset working environment
• Population sizes
• Material/technology applied</td><td>Action Plan 4/2018
Kleenheat will implement this recommendation, giving consideration to the capabilities of the current eAM software.
Responsible Person
Reticulation and Standards Manager
Target Date
June 2019</td></tr>
</table>

Effectiveness Criteria	Findings	
	• Age/remaining life/shelf life/obsolescence • Purchase value/commissioning cost • Logistics data.	
5(d) Operational costs are measured and monitored	Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, and examination of relevant documentation, we determined that Kleenheat measures and monitors operational expenditure through its Budget Cost Control for Reticulation Networks process.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating**: Performing effectively (1)

5(e) Staff receive training commensurate with their responsibilities	Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, examination of relevant documentation, and conduct of site visits to Kleenheat's Albany and Margaret River locations we:
	• Determined that Kleenheat utilises the following documents to manage staff and contractor training:
	  • Gas Distribution Training Flexibility Report, which tracks all training due and completed, enabling Kleenheat to ensure only staff and contractors with current training and certifications are assigned to relevant tasks
	  • Gas Test Atmospheres and Permit to Work assessments
	  • Distribution Network Manual
	• Sighted results of training and competency assessments applied in practice, including Gas Test Atmospheres Assessment, Permit to Work Assessment, Installation of a Gas Service Assessment and Commissioning and Purging of a Gas Main Assessment
	• Sighted the most recent Gas Distribution Training Flexibility Report, showing current staff and contractor training levels
	• Considered the learnings drawn from the June 2018 incident on the Leinster reticulation network, which highlighted the need for more specific training relating to contractors' involvement in emergency response activities
	• Determined that Kleenheat's training arrangements can be further strengthened by more specifically aligning staff competence with the asset conditions (current risks) as well as current technology in supporting the execution of the AMP.	

	Adequacy Rating: Requires some improvement (B)	**Performance Rating**: Opportunity for improvement (2)
	Recommendation 5/2018 Kleenheat consider developing a training framework and plan which addresses: • Current staff competence, plus records of assessments of staff competence • Training material update process • Asset technology changes that require new or updated training • Seldom exercised tasks • New skills that need to be added to training • Handling of third party contractors.	**Action Plan 5/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** September 2019

4.6 Asset maintenance

Key process: Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.

Expected outcome: Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.

Overall Adequacy/Performance rating: Requires some improvement (B) / Opportunity for improvement (2)

Effectiveness Criteria	Findings	

6(a) Maintenance policies and procedures are documented and linked to service levels required	Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, examination of relevant documentation, and conduct of site visits to Kleenheat's Albany and Margaret River locations we determined that:
	• Kleenheat has developed the following key documents to oversee the development and implementation of its maintenance policies and procedures relevant to its distribution network assets:
	  • AMP
	  • Systems of Work document
	  • SMS and related Safety Case
	  • Distribution Systems Asset Maintenance Plan
	• Kleenheat has developed and implemented specific procedures in line with its asset maintenance plan and SMS, including:
	  • Distribution Network Leak Survey procedure
	  • Distribution Network Operating Pressure Test procedure
	  • Attending a Reported Gas Escape procedure
	  • Pressure Testing a Gas Main procedure
	  • Bulk Vessel Internal Inspection procedure
	  • Distribution Network Regulator Inspection procedure
	  • Reticulation Compound Installation Checklist
	  • Reticulated Gas Quality Testing procedure
	  • Tagging of Reticulation Network Equipment procedure
	  • Various "How to use/complete…" procedures.
	• A number of SOPs were reviewed and updated throughout the review period, plus additional procedures were implemented as a result of Kleenheat's review and strengthening of its SMS
	• SOPs are also referenced throughout the current Safety Case and within training material
	• As detailed at section 5(a) above, although it is evident that Kleenheat's procedures have been designed to support its management of a safe and reliable distribution system, the link to specific service levels required (e.g. interruptions, pressure, service connection, emergency (e.g. leak) response time) does not clearly cascade through to specific procedures.	

	Adequacy Rating: Requires some improvement (B)	**Performance Rating**: Opportunity for improvement (2)

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td></td><td>Recommendation
Refer to Recommendation 3/2018 relating to key asset operations and maintenance documents.</td><td>Action Plan
Refer to Action Plan 3/2018</td></tr>
<tr><td rowspan="3">6(b) Regular inspections are undertaken of asset performance and condition</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, examination of relevant documentation, and conduct of site visits to Kleenheat’s Albany and Margaret River locations we:
• Determined that Kleenheat has implemented a structured process for regularly inspecting the performance and condition of its distribution network assets. This process is reflected within the Distribution Systems Asset Maintenance Plan, plus Kleenheat’s SMS and associated Safety Case
• Determined that throughout the review period, inspections were undertaken as scheduled within the Asset Maintenance Plan for each of the following tier 1 network assets:
  • Albany – Oyster Harbour
  • Margaret River- Riverslea and Rapids Landing
  • Leinster - BHP Townsite
• Sighted evidence of asset inspections performed through work orders and inspection results recorded in Kleenheat’s Oracle eAM system
• Determined that Kleenheat’s requirements for asset inspections can be strengthened to more clearly link with underlying risks and asset condition.</td></tr>
<tr><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td>Recommendation 6/2018
Kleenheat consider further updating its Asset Maintenance Plan to include the following elements in its asset inspections:
• The basis for inspection strategies, linked with the network risk assessment
• The means to assess the effectiveness of inspections
• Compliance metrics/targets
• Technology required
• How inspection results are used to support wider asset management decisions.</td><td>Action Plan 6/2018
Kleenheat will implement this recommendation.
Responsible Person
Reticulation and Standards Manager
Target Date
December 2018</td></tr>
<tr><td>6(c) Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, examination of relevant documentation, and conduct of site visits to Kleenheat’s Albany and Margaret River locations we determined that:
• Kleenheat’s Distribution Systems Asset Maintenance Plan (last revised in February 2018) outlines the emergency, corrective and preventative maintenance requirements for its distribution network assets, particularly in order for Kleenheat to comply with Gas distribution networks - Network management standard AS/NZS 4645.1. The Plan:
  • Includes procedures for ensuring maintenance activities are completed safely and specifies the frequency of maintenance activity for each asset type.
  • Is a supporting document to Kleenheat’s SMS and associated Safety Case</td></tr>
</table>

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td></td><td colspan="2">• The number of scheduled maintenance tasks are relatively small, commensurate with the nature of Kleenheat's network assets. Approximately 45 maintenance work orders were completed in the period June 2017 to May 2018
• Kleenheat has recognised the highest priority preventative maintenance activities to be leak surveys, gas sampling and pressure monitoring
• Kleenheat's Oracle eAM system records the completion of work orders and enables any overdue work orders to be monitored
• Overdue work orders are monitored via weekly planning meetings
• For all overdue work orders, Kleenheat's procedures provide for justification to be provided and alternative arrangements (i.e. rescheduling) to be arranged and monitored. Priority items (e.g. critical equipment) require immediate action
• During the review period, one maintenance work order was not completed in accordance with the original schedule, with the appropriate justification provided, enabling the work order to be rescheduled and completed in a timely manner.</td></tr>
<tr><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td>6(d) Failures are analysed and operational/maintenance plans adjusted where necessary</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, examination of relevant documentation, and conduct of site visits to Kleenheat's Albany and Margaret River locations we determined that:
• Kleenheat has established a mechanism for managing asset failures through the incident reporting and investigation approach outlined in its SMS and associated Safety Case. Those incidents contemplated by the SMS primarily relate to safety and interruption matters
• In addition to events causing injury, damage or interruption, asset failure can result in leaks and other performance issues. Kleenheat experienced leaks in its network during the review period, however there were no major incidents or disruptions considered to be caused by asset failure during the review period
• Kleenheat's Asset Maintenance Plan and its procedures applied in practice do not adequately address the need for demonstrating analyses of any failures (corrective work, leaks, emergency attendance etc.), with conclusions or recommendations on future changes in operation and maintenance, as well as for engineering/asset renewal.</td></tr>
<tr><td></td><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td></td><td>Recommendation 7/2018
Kleenheat consider a developing an asset and system reliability/availability performance process which addresses the following elements:
• Major identified failure modes with various assets
• How work order information is used to feedback to the operation/maintenance plan and strategy
• RACI behind maintenance strategy development/improvement
• When root cause analysis is applied
• How work (engineering, operation and maintenance) is prioritised by analysing the past occurrences (or non-occurrences)</td><td>Action Plan 7/2018
Kleenheat will implement this recommendation
Responsible Person
Reticulation and Standards Manager
Target Date
June 2019</td></tr>
</table>

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td></td><td>• Assessment of consequences for past failures including near-misses.</td><td></td></tr>
<tr><td rowspan="4">6(e) Risk management is applied to prioritise maintenance tasks</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, inspection of relevant documentation and conduct of site visits to Kleenheat's Albany and Margaret River locations, we determined that:
• Kleenheat has applied the following processes and references to enable maintenance tasks to be prioritised:
  • The Systems of Work document provides instructions for maintaining effective control over any potentially negative impacts of operations
  • The Distribution Network Qualitative Risk Assessment (last performed in January 2018) identified hazards associated with its gas distribution systems and documented how associated risks have been reduced "So Far As Reasonably Practicable" [1]
• Although there is evidence of relevant risks and hazards being recognised within the Asset Maintenance Plan and associated procedures, Kleenheat has not clearly documented the link between those key risks and hazards, and its asset maintenance strategies, plans and priorities. Kleenheat had recognised this matter through an independent assessment of the adequacy of it Safety Case, conducted in January 2018.</td></tr>
<tr><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td>Recommendation 8/2018
Kleenheat consider including the following elements in its Asset Maintenance Plan:
• Reference to those major risks and hazards that relate to safety, reliability, compliance and environment and how they drive maintenance tasks
• A mechanism for accommodating instances where maintenance tasks themselves have an impact on risks and hazards (including introducing new risks).</td><td>Action Plan 8/2018
Kleenheat will implement this recommendation
Responsible Person
Reticulation and Standards Manager
Target Date
June 2019</td></tr>
<tr><td rowspan="2">6(f) Maintenance costs are measured and monitored</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and the WA LPG/LNG Maintenance Manager, and examination of relevant documentation, we determined that Kleenheat measures and monitors maintenance expenditure through its Budget Cost Control for Reticulation Networks process.</td></tr>
<tr><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
</table>

[1] As provided for within AS/NZS 4645.1-2008, Kleenheat utilised its own risk matrix to assess network risks during the January 2018 Distribution Network Qualitative Risk Assessment. This risk matrix required risks to be reduced So Far As Reasonably Practicable (SFARP). The freedom to explore alternative risk assessment matrices to those provided for within AS/NZS4645.1 2008 was removed with the 28 February 2018 revision to the standard, which requires the risk matrix provided within the standard to be utilised when assessing network risks, and an As Low As Reasonably Practicable (ALARP) assessment to be undertaken for residual risks assessed as high or intermediate. In anticipation of the revised standard being captured in amendments to the Gas Standards (Gas Supply and System Safety) Regulations 2000 (which occurred from 3 October 2018), Kleenheat made the required modifications to its Safety Case and Formal Safety Assessment.

4.7 Asset Management Information System

Key process: An asset management information system is a combination of processes, data and software that support the asset management functions.

Expected outcome: The asset management information system provides authorised, complete and accurate information for the day-to-date running of the AMS. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards.

Overall Adequacy/Performance rating: Adequately defined (A) / Performing effectively (1)

Effectiveness Criteria	Findings	

7(a) Adequate system documentation for users and IT operators	Through discussion with the Reticulation and Standards Manager and inspection of relevant documentation we determined that:
	• The key information systems used for Kleenheat's management of its distribution network assets are:
	  • Cintellate (Incident management and work orders)
	  • Oracle e-business suite (operations, maintenance, commercial, financial, customer) modules
	  • Docova (document management system)
	  • Cisco (communications system)
	• System documentation supporting the Cintellate and Docova systems is maintained on Kleenheat's intranet
	• A three week training program has been developed to upskill employees in the LPG business, which includes the use of the Cintellate, Oracle e-business suite and Docova in line with day to day activities of the LPG business. LPG upskill lesson plans have been designed to frame the training program.	

	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7(b) Input controls include appropriate verification and validation of data entered into the system	Through discussion with the Reticulation and Standards Manager, Commercial Accounts Manager and IT Operations Manager, and inspection of relevant documentation, we determined that: • All staff, contractors and authorised third parties with access to Wesfarmers Chemicals, Energy and Fertilisers (WesCEF) equipment, systems and resources are required to sign off on the Electronic Usage Policy to at all times, uphold confidentiality for all information and intellectual property of WesCEF • All processes used to input or process information into the Cintellate and Oracle e-business suite include elements of management oversight and review in relation to verification or validation of data • One of the key reviews performed for the distribution network assets is the review performed by the Commercial Accounts Manager of the monthly LPG Distribution Performance Report as referenced at section 10(f) below to identify significant variances between budget and actual performances reported by the Oracle system.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7(c) Logical security access controls appears adequate, such as passwords	Through discussion with the Reticulation and Standards Manager and IT Operations Manager, and inspection of relevant documentation, we determined that logical security access controls appear adequate, including the application of a predefined password policy.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

Effectiveness Criteria	Findings	
7(d) Physical security access controls appear adequate	Through discussion with the Reticulation and Standards Manager and IT Operations Manager, we determined that: • Server rooms house the servers for the relevant systems. These server rooms are located in data centres at Kleenheat's Murdoch and Kwinana premises, with the ability to failover between data centres in a disaster scenario • Access to server rooms is restricted via access cards on an as needs basis.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
7(e) Data backup procedures appear adequate and backups are tested	Through discussion with the Reticulation and Standards Manager and IT Operations Manager, we determined that: • Server rooms have UPS back up power and generator back up for longer periods without main power • Generators are tested at least every 6 months • Data centres are fitted with fire suppression systems • Back up procedures for all relevant systems are scheduled through MET back up and Veeam for VMWare • Back-ups for all relevant systems are performed daily and are stored for up to 30 days • Testing of back-ups for different system modules are performed weekly (different modules for testing are scheduled on a cyclical basis), with the full back up test performed annually.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating**: Performing effectively (1)
7(f) Key computations related to licensee performance reporting are materially accurate	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, we determined that: • Kleenheat does not use any designated system to compute information related to licensee performance reporting • Information is compiled using spreadsheets for licensee performance reporting. That information is sourced from information manually input into the Oracle e-business suites, Cintellate systems and CISCO Call system • The Reticulation and Standards Manager is responsible for ensuring the accuracy of information sourced from those systems and input into the annual Gas Distribution Licence Performance Reporting Datasheets submitted to the ERA.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating**: Performing effectively (1)
7(g) Management reports appear adequate for the licensee to monitor licence obligations	Through discussion with the Reticulation and Standards Manager and inspection of relevant documentation, we determined that Kleenheat's existing management reports are used to monitor licence obligations as follows: • Customer and connections are monitored through the Oracle new connections report • Gas Consumption and Unaccounted gas is monitored through the Oracle gas consumption calculations report • Leaks are monitored through the number of Cintellate and Oracle eAM work orders raised for reported leaks. The aggregated number of leaks are reported and leak numbers are collated manually on an annual basis • Network reliability is monitored through the Cintellate and Oracle eAM work orders raised for supply interruptions • Actions for resolution are captured in the Cintellate system. Oracle eAM captures the cost incurred for the resolution • Call centre performance is monitored through the CISCO Call Statistics Snapshot Report as referenced at section 4(d) • Distribution mains installed are monitored manually through the new network stages added to the existing network. On an annual basis, the length of the additional new mains installed are obtained from civil contractor built drawings and are manually added to the existing length reported in the previous year.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating**: Performing effectively (1)

4.8 Risk management

Key process: Risk management involves the identification of risks and their management within an acceptable level of risk.

Expected outcome: An effective risk management framework is applied to manage risks related to the maintenance of service standards.

Overall Adequacy/Performance rating: Requires some improvement (B) / Opportunity for improvement (2)

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td>8(a) Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the AMS.</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that:
The Wesfarmers Group Risk management framework, including procedures and key activities is described in a Group Risk Review document developed and formalised on 31 October 2016. This framework covers Kleenheat's distribution network asset management system
Application of risk management policies and procedures to minimise internal and external risks for the Kleenheat LPG business is undertaken through a management quarterly review and update of the Kleenheat LPG Corporate Risk Register as referenced at section 4(a) above
Further application of risk management policies and procedures to minimise internal and external risks associated with the Kleenheat Tier 1 distribution network assets is evidenced through the Kleenheat distribution safety case and qualitative risk assessment (referenced at section 1(h) above). Opportunities and threats in the system environment for the safe delivery of gas have been identified and assessed for renewal once every five years, at which time input and approval from Building and Energy is required. Kleenheat prepared Version 4 of its safety case during 2018 for submission to Building and Energy for approval in August 2018.</td></tr>
<tr><td></td><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Performing effectively (1)</td></tr>
<tr><td>8(b) Risks are documented in a risk register and treatment plans are actioned and monitored

8(c) The probability and consequences of asset failure are regularly assessed</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, examination of the relevant risk registers, risk assessments and associated documentation, we determined that:
As referenced at section 4(a) above, the assessment of corporate risks for the Kleenheat LPG business (including distribution network assets) is recorded in the Kleenheat LPG Corporate Risk Register. Treatments plans are recorded under current controls or in the actions column of the register. We sighted the 30 June 2017 register as the most recent version developed during the period subject to review
The Kleenheat LPG Corporate Risk Register also assesses the probability and consequences of risks, impacts and causes highlighted, including for asset failure
Kleenheat management reviews the Kleenheat LPG Corporate Risk Register on a quarterly basis. We sighted management email communications as evidence of the most recent review performed in April 2018
The specific risk register associated with Kleenheat's distribution network assets is through the Kleenheat distribution qualitative risk assessment (referenced at section 1(h) above). This risk assessment:
Specifically identifies threats in the system environment for the safe delivery of gas
Records the control activities attached to the threat. Control activities are also recognised as future actions and treatment plans
Kleenheat's distribution qualitative risk assessment has been undertaken once every five years in line with the requirement of AS/NZS 4645.1 (Gas Distribution Networks – Network Management). The most recent revision was</td></tr>
</table>

Effectiveness Criteria	Findings	
	undertaken as part of Kleenheat's submission of Version 4 of its safety case to Building and Energy for approval in August 2018. Kleenheat had not identified any reason to update the risk assessment more regularly. However, Kleenheat has not developed a process for monitoring the control activities and actions listed in its distribution qualitative risk assessment or the impact of recent events and incidents in order to regularly assess the probability and consequence of asset failure, which impacts the residual risk rating.	
	Adequacy Rating: Requires some improvement (B)	**Performance Rating:** Opportunity for improvement (2)
	Recommendation 9/2018 Kleenheat consider implementing a regular review process of its distribution qualitative risk assessment to assess and update the residual risk of each threat as at a point in time, including the following considerations: • Monitoring through updating recent results of the listed treatment plans and actions • Recent impact on threats and treatment plans and actions from recent events and incidents • Reassessing the probability and consequence of asset failure regularly which impact the low, medium or high residual risk rating.	**Action Plan 9/2018** Kleenheat will implement this recommendation **Responsible Person** Reticulation and Standards Manager **Target Date** October 2018

4.9 Contingency planning

Key process: Contingency plans document the steps to deal with the unexpected failure of an asset.

Expected outcome: Contingency plans have been developed and tested to minimise any significant disruptions to service standards.

Overall Adequacy/Performance rating: Adequately defined (A) / Opportunity for improvement (2)

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="3">9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, and inspection and testing of relevant documentation, we determined that:
• Kleenheat has three existing procedures relating to contingency plans for its distribution network assets, including:
  • National Emergency Response Communications Systems (NERCS)
  • Guidelines for Emergency Response – LPG
  • Guidelines for Emergency Response – Supply Disruption
• For each of these procedures, training or refresher training is required for all relevant staff and outsourced contractors once every two years. We sighted results of training in the form of planned emergency response exercises relevant to the contingency plans established for each network. Also refer to findings at section 5(e) above
• Emergency responses based on the contingency plans are managed by locality (Margaret River, Leinster and Albany) for the Tier 1 distribution networks. A key element of the emergency response procedures is that a Kleenheat NERCS responder (company representative) must be notified and be onsite for the Emergency Responses as the NERCS responder has received additional emergency response training to enable them to decide the next course of action
• For each locality, contractors with gas and plumbing experience are engaged to enable quicker responses and resolutions
• The Kleenheat distribution safety case as referenced at section 1(h) above, stipulates frequency of testing of the contingency plans as annual, which does not exactly align with requirements of AS/NZS 4645.1, which requires the frequency of testing of contingency plans to be "on a regular basis, not less than once per year"
• The Contingency plan for Margaret River was tested on May 2017 and May 2018
• The Contingency plan for Albany was tested on November 2016 and September 2017
• The Contingency plan for Leinster was tested in May 2016 and November 2017. The frequency of this testing for Leinster was not executed in line with the requirements of AS/NZS 4645.1 of "… not less than once per year".</td></tr>
<tr><td>Adequacy Rating: Adequately defined (A)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td>Recommendation 10/2018
Kleenheat consider:
• Updating the frequency of testing of the contingency plans within the Kleenheat distribution safety case to be in line with requirements of AS/NZS 4645.1, being "on a regular basis, not less than once per year"
• Scheduling and executing the testing of the contingency plan for each locality to ensure compliance with the Safety Case.</td><td>Action Plan 10/2018
Kleenheat will implement this recommendation
Responsible Person
Reticulation and Standards Manager
Target Date
December 2018</td></tr>
</table>

4.10 Financial planning

Key process: The financial planning component of the AMP brings together the financial elements of the service delivery to ensure its financial viability over the long term.

Expected outcome: A financial plan that is reliable and provides for the long-term financial viability of the services.

Overall Adequacy/Performance rating: Adequately defined (A) / Performing effectively (1)

Effectiveness Criteria	Findings	
10(a) The financial plan states the financial objectives and strategies and actions to achieve the objectives	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager and walkthrough of the Annual Corporate Commercial Plan 2018, we determined that: • Kleenheat has developed a 5 year Annual Corporate Commercial Plan for the LPG business (including metered gas – for the relevant Tier 1 distribution networks covered under the Licence) , to provide an overview of the financial objectives, strategies and actions of Kleenheat's LPG business • The Annual Corporate Commercial Plan 2018 document provides strategies, overview and analysis over a period of 5 years for the following areas of Kleenheat's LPG business: ○ Overall volumes and margins ○ Purchasing volumes ○ Sensitivity and scenario analysis ○ To do list ○ Western Australia volumes, profit and loss, capital expenditure, operating expenditure, margins, balance sheet assets and balance sheet working capital.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10(b) The financial plan identifies the source of funds for capital expenditure and recurrent costs	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and walkthrough of the Annual Corporate Commercial Plan 2018, we determined that: • Kleenheat uses the Annual Corporate Commercial Plan 2018 to manage the LPG business (including metered gas – for the relevant Tier 1 distribution networks covered under the Licence) • The key driver for the source of funds is the forecast volume and pricing of gas supplied. Revenue is categorised into each LPG business line.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10(c) The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and walkthrough of Kleenheat's financial planning process, we determined that the Annual Corporate Commercial Plan 2018 provides a 5 year projection of operating statements (profit and loss) and statement of financial position (balance sheets) for Kleenheat's LPG business, which includes metered gas – for the relevant Tier 1 distribution networks covered under the Licence.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10(d) The financial plan provides firm predictions on	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and walkthrough of Kleenheat's financial planning and commercial processes, we determined that the existing annual commercial planning	

Effectiveness Criteria	Findings	
income for the next five years and reasonable indicative predictions beyond this period	process provides predictions on income (revenue) for each relevant Tier 1 distribution network covered under the Licence up until the 2030 year.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
10(e) The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and walkthrough of Kleenheat's financial planning and commercial processes, we determined that the existing annual commercial planning process provides an overview and analysis on the requirements for each relevant Tier 1 distribution network asset covered under the Licence up until the 2030 year, covering the following areas: • Volumes and revenue • Cost of goods sold • Gross profit • Life cycle costs of capital expenditure • Life cycle cost of operations • Profitability – earnings and margins.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating**: Performing effectively (1)
10(f) Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and inspection of relevant documentation, we determined that: • Identification of significant variances in actual and budgeted income and expenses form part of an existing monthly performance review process for Kleenheat's LPG business which includes metered gas – for the relevant Tier 1 distribution network assets • The LPG Distribution Performance Report April is reviewed by the Commercial Accounts Manager for significant or unusual variances on month on month and a year to date basis. Those variances are then to be further investigated, for applicable corrective actions where necessary.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating**: Performing effectively (1)

4.11 Capital expenditure planning

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

Expected outcome: A capital expenditure plan that provides reliable forward estimates of capital expenditure and asset disposal income, supported by documentation of the reasons for the decisions and evaluation of alternatives and options.

Overall Adequacy/Performance rating: Adequately defined (A) / Performing effectively (1)

Effectiveness Criteria	Findings	

11(a) There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and walkthrough of Kleenheat's financial planning and commercial processes, we determined that:
	• Although there is no specific capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates for each relevant Tier 1 distribution network covered under the Licence, the following documents address this requirement:
	  • The Annual Corporate Commercial Plan 2018 as referenced at section 10(a) above, which provides the strategic overall direction for capital expenditure
	  • The existing annual commercial planning process (Health Check Report 2017) as referenced at section 1(b) and 1(e) above, which provides an overview and analysis on the capital expenditure requirements for each relevant Tier 1 distribution network up until the 2030 year
	  • Capex authorisation form (e.g. KHG Sales WA 0045 Rapids Landing Retic Stage 6A Capex) as referenced at section 2(a) above, where more project specific details such as responsibilities, dates and timelines are defined.	

	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
11(b) The plan provides reasons for capital expenditure and timing of expenditure	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, and walkthrough of Kleenheat's financial planning and commercial processes, we determined that the Capex authorisation form provides more project specific details for the capital expenditure, authorisations given, analysis of alternative solutions, financial analysis and responsibilities, dates and timelines.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
11(c) The capital expenditure plan is consistent with the asset life and condition identified in the AMP	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager and walkthrough of Kleenheat's financial planning and commercial processes, we determined that: • As referenced at sections 1(b) and 1(e) above, the existing annual commercial planning process provides an overview and analysis on the capital expenditure requirements for each relevant Tier 1 distribution network asset up until 2030 • The associated Health Check Report references the consistency of predicted capital expenditure predicted with the life of the relevant Tier 1 distribution network assets up until 2030.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)
11(d) There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	Through discussion with the Reticulation and Standards Manager and Commercial Accounts Manager, we determined that: • The annual corporate commercial planning (5 year annual corporate plan) process is performed on an annual basis • The commercial planning process involving each relevant Tier 1 distribution network asset up until 2030 is performed on an annual basis.	
	Adequacy Rating: Adequately defined (A)	**Performance Rating:** Performing effectively (1)

4.12 Review of AMS

Key process: The AMS is regularly reviewed and updated.

Expected outcome: Review of the AMS to ensure the effectiveness of the integration of its components and their currency.

Overall Adequacy/Performance rating: Requires some improvement (B) / Opportunity for improvement (2)

<table>
<tr><th>Effectiveness Criteria</th><th colspan="2">Findings</th></tr>
<tr><td rowspan="3">12(a) A review process is in place to ensure that the AMP and the AMS described therein are kept current</td><td colspan="2">Through discussion with the Reticulation and Standards Manager and WA LPG/LNG Maintenance Manager, we determined that:
Regular annual reviews to update the AMP were not in place during the review period. Kleenheat has recognised the need for its AMP to be further strengthened to reflect and incorporate the asset management system applicable to the relevant Tier 1 distribution networks covered under the Licence. Refer to Findings at section 1(a) for further detail
Kleenheat’s safety case requires renewal on a five year basis. Kleenheat prepared Version 4 of its safety case during 2018 for submission to Building and Energy for approval in August 2018.</td></tr>
<tr><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td>Recommendation
Refer to Recommendation 1/2018</td><td>Action Plan
Refer to Action Plan 1/2018</td></tr>
<tr><td rowspan="3">12(b) Independent reviews (e.g. internal audit) are performed of the AMS</td><td colspan="2">Through discussion with the Reticulation and Standards Manager, and inspection of relevant documentation, we determined that:
An independent review of Kleenheat’s safety case was undertaken by Environmental Risk Solutions (ERS), from 24 November 2017, with the safety case audit final report being issued 12 January 2018
Wesfarmers Internal Audit had performed internal audit reviews on the safety case in 2016 and 2017 as evidenced through Internal Audit Reports dated February 2016 and February 2017
As referenced at section 1(a) above, the current AMP does not define how other independent reviews in key areas that are not included in the safety case will assist Kleenheat in ensuring the effectiveness and continuous improvement of its asset management system.
Refer to Findings at section 1(a) for further detail</td></tr>
<tr><td>Adequacy Rating: Requires some improvement (B)</td><td>Performance Rating: Opportunity for improvement (2)</td></tr>
<tr><td>Recommendation
Refer to Recommendation 1/2018</td><td>Action Plan
Refer to Action Plan 1/2018</td></tr>
</table>

5 Follow-up of previous review action plans

Reference (no./year)	(Asset management effectiveness rating/ AMS Component & Criteria / details of the issue)	Reviewer's Recommendation or action taken	Date Resolved	Further action required
A. Resolved before end of previous Review period				
N/A.				
B. Resolved during current Review period				
1/2016	***Asset Planning*** *1(i) Plans are regularly reviewed and updated* Likelihood and consequences of asset failure are predicted. During the audit period plans covering the operations and maintenance of the distribution systems were not subject to regular review. There is also a need to reflect the changes to the organisation/ responsibility throughout the other documents. A review timetable needs to be developed specifying who is responsible for the reviews and the frequency.	**Recommendation:** Licensee prepares an Asset Management Plan that describes the planning processes and objectives, defines the service levels and assigns responsibilities and how they are applied in practice. **Action/s taken:** Kleenheat developed an Asset management plan and uploaded it to the Docova system (documents repository system).	October 2017	No *However, note further recommendations made by this review (Issue 1/2018)*
2/2016	***Asset Creation and Acquisition*** *2(c) Projects reflect sound engineering and business decisions* Projects reflect sound engineering and business decisions. However, while extensions to the distribution system are evaluated by third party designers, the complete system needs periodic verification to ensure overall design is fit for purpose.	**Recommendation:** Licensee to carry out periodic design verification tests of system capacity. **Action/s taken:** Kleenheat undertook the following actions: • Developed Distribution Network Capacity Check procedures • Commenced capacity checks where they are required.	May 2018	No
3/2016	***Environmental Analysis*** *4(c) Compliance with statutory and regulatory requirements* Compliance with statutory and regulatory requirements. Training of personnel as a result of the EnergySafety audit.	**Recommendation:** Complete the writing of the policies and procedures and the training and assessing the competency of personnel. **Action/s taken:** Kleenheat updated procedures and training tools to be in compliance with the required regulations and standards.	May 2017	No

Reference (no./year)	(Asset management effectiveness rating/ AMS Component & Criteria / details of the issue)	Reviewer's Recommendation or action taken	Date Resolved	Further action required
4/2016	***Asset Operations*** *5(a) Operational policies and procedures are documented and linked to service levels required.* Operational policies and procedures are documented and linked to service levels required. During the audit period a number of the service levels have not been achieved they include taking of LPG samples, process for classifying recording and managing the repair of leaks.	**Recommendation:** The omissions have been recognised by the Licensee and work has been undertaken to rectify the issues. **Action/s taken:** Kleenheat captured its service level requirements in its Safety Case.	November 2016	No *However, note further recommend ations made by this review (Issue 3/2018)*
5/2016	***Asset Operations*** *5(b) Risk Management is applied to prioritise operations tasks.* Risk management is applied to prioritise operations tasks. However, although the risks are identified they have not been managed correctly. Risks that have not been managed correctly include failure to adequately investigate gas incidents in accordance with the Gas Standards (Gas Supply and System Safety) Regulations.	**Recommendation:** These deficiencies have been recognised by the Licensee and work has been undertaken to rectify the issues. **Action/s taken:** Kleenheat identified hazards associated with its gas distribution systems in its Distribution Network Qualitative Risk Assessment (last performed in January 2018) and documented how associated risks associated have been reduced "So Far As Reasonably Practicable".	November 2016	No
6/2016	***Asset Operations*** *5(c) Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data* Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data. Licensee could not demonstrate that all the materials that form the distribution system were fit for purpose.	**Recommendation:** The Licensee complete work on improving what information is contained in the asset register. **Action/s taken:** Kleenheat added to the content of the asset register in response to the finding.	May 2017	No *However, note further recommend ations made by this review (Issue 4/2018)*
7/2016	***Asset Operations*** *5(e) Staff resources are adequate and staff receive training commensurate with their responsibilities* Staff resources are adequate and staff receive training commensurate with their responsibilities.	**Recommendation:** The Licensee complete work on revision of policies and procedures and training and testing of the competency of employees. **Action/s taken:**	May 2017	No *However, note further recommend ations*

Reference (no./year)	(Asset management effectiveness rating/ AMS Component & Criteria / details of the issue)	Reviewer's Recommendation or action taken	Date Resolved	Further action required
	EnergySafety concluded during the audit that the procedures needed to be improved and that the Licensee train personnel in the new procedures and assess their competency through a practical demonstration.	Kleenheat updated procedures and training tools to be in compliance with the required regulations and standards.		*made by this review (Issue 5/2018)*
8/2016	***Asset Maintenance*** *6(b) Regular inspections are undertaken of asset performance and condition* The Regular inspections are undertaken of asset performance and condition. The EnergySafety audit found that the Licensee had failed to undertake all the required leakage surveys and the methodology employed was inadequate because the Licensee failed to properly classify, record, manage and repair leaks.	**Recommendation:** Undertake leakage surveys in accordance with the revised frequency and in accordance with the revised procedures. **Action/s taken:** Kleenheat modified its leak survey procedures and the leak survey schedule for alignment with relevant regulations and standards.	May 2017	No
9/2016	***Risk Management*** *8(c) Risks are documented in a risk register and treatment plans are actioned and monitored* Not Risks are documented in a risk register and treatment plans are actioned and monitored. The EnergySafety audit found that a number of risks were not being adequately actioned and monitored. Failure to conduct leak surveys and to adequately investigate gas incidents in accordance with the Gas Standards (Gas Supply and System Safety) Regulations 2000 are examples.	**Recommendation:** Ensure that the risks identified by the EnergySafety audit have treatment plans and they are actioned and monitored in accordance with the treatment plan. **Action/s taken:** Kleenheat, as part of the Safety Case renewal process, reviewed the areas of non-compliance, risks and concerns from the EnergySafety audit and updated the Safety Case.	May 2017	No
10/2016	***Contingency Planning*** *9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks* Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks. The EnergySafety audit found that the Licensee was not performing frequent enough exercises of the plan.	**Recommendation:** Test the emergency plans on a more frequent basis to conform with EnergySafety's requirements and maintain a record of the testing and the outcomes. Modify the plans to reflect the changes discovered during testing. **Action/s taken:** Kleenheat updated the frequency of the emergency scenario training in relevant procedures and scheduled those exercises in the Oracle system.	May 2017	No *However, note further recommendations made by this review (Issue 10/2018)*

Reference (no./year)	(Asset management effectiveness rating/ AMS Component & Criteria / details of the issue)	Reviewer's Recommendation or action taken	Date Resolved	Further action required
11/2016	***Review of AMS*** *12(a) A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current* A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current. In a number of documents having the wrong person as being responsible. Additionally, a number of documents are out of date and need to be modified to reflect the current situation in terms of procedures processes training and competency assessment of personnel.	**Recommendation:** Undertake a comprehensive review of the Asset management system including the compilation of a document index and details of when the document is modified or reviewed by whom and who is responsible. Include in computer management system a timetable for document reviews and allocate a person responsible for the review. **Action/s taken:** Kleenheat undertook the following actions: • Developed an Asset management plan and uploaded it to the Docova system (documents repository system) • Reviewed all supporting documents as part of the Safety Case renewal process	August 2017	No *However, note further recommend ations made by this review (Issue 1/2018)*
12/2016	***Review of AMS*** *12(b) Independent reviews (e.g. internal audit) are performed of the asset management system capability* Independent reviews (e.g. internal audit) are performed of the asset management system. There is a need to undertake the annual internal audit of the Safety Case.	**Recommendation:** Undertake an annual internal audit of the safety case as required under the GSSSR 2000. **Action/s taken:** Kleenheat has performed annual internal audits on the Safety Case in the 2017 and 2018 calendar years.	February 2017	No *However, note further recommend ations made by this review (Issue 1/2018)*
C. Unresolved at end of current Review period				
N/A – There are no unresolved action plans from the 2016 AMS Review.				

Appendix A: Review plan

Deloitte.

Wesfarmers Kleenheat Gas Pty Ltd

2018 Gas Distribution Licence (GDL9) Asset Management System Review

Review Plan

1 August 2018

Contents

Introduction

Overview

The Economic Regulation Authority (the **ERA**) has, under the provisions of the Energy Coordination Act 1994 (the **Act**), issued to Wesfarmers Kleenheat Gas Pty Ltd (**Kleenheat**) a Gas Distribution Licence (GDL9) (the **Licence**).

Section 11Y of the Act requires Kleenheat to provide the ERA with a report by an independent expert acceptable to the ERA not less than once in every 24 month period (or any longer period that the ERA allows) as to the effectiveness of its asset management system. With the ERA's approval, Deloitte Risk Advisory Pty Ltd (**Deloitte**) has been appointed to conduct the review for the period 1 June 2016 to 31 May 2018 (**review period**).

The Licence covers 4 reticulated networks operated by Kleenheat in WA (one in Albany, two in Margaret River and one in Leinster) that supply commercial and residential estates.

The review will be conducted in accordance with the April 2014 issue of the *Audit and Review Guidelines: Electricity and Gas Licences* (the **Guidelines**). In accordance with the Audit Guidelines this document represents the Review Plan (the **Plan**) that is to be agreed upon by Deloitte and Kleenheat and presented to the ERA for approval.

Objective

The objective of the review is to independently examine the effectiveness and performance of the asset management system established for the assets subject to Kleenheat's Licence during the review period.

Scope

In accordance with the Guidelines, the review will consider the effectiveness of Kleenheat's existing control procedures within the 12 key processes in the asset management life-cycle as outlined below at Table 1. Each key process and effectiveness criteria is applicable to Kleenheat's Licence and as such will be individually considered as part of the review.

Table 1 – Asset management system key processes and effectiveness criteria

#	Key processes	Effectiveness criteria
1	Asset Planning	• Asset management plan covers key requirements • Planning processes and objectives reflect the needs of all stakeholders and is integrated with business planning • Service levels are defined • Non-asset operations (e.g. demand management) are considered • Lifecycle costs of owning and operating assets are assessed • Funding options are evaluated • Costs are justified and cost drivers identified • Likelihood and consequences of asset failure are predicted • Plans are regularly reviewed and updated.

#	Key processes	Effectiveness criteria
2	Asset Creation and Acquisition	• Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions • Evaluations include all life-cycle costs • Projects reflect sound engineering and business decisions • Commissioning tests are documented and completed • Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood.
3	Asset Disposal	• Underutilised and underperforming assets are identified as part of a regular systematic review process • The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken • Disposal alternatives are evaluated • There is a replacement strategy for assets.
4	Environmental Analysis (all external factors that affect the system)	• Opportunities and threats in the system environment are assessed • Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved • Compliance with statutory and regulatory requirements • Achievement of customer service levels.
5	Asset Operations	• Operational policies and procedures are documented and linked to service levels required • Risk management is applied to prioritise operations tasks • Assets are documented in an Asset register, including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data • Operational costs are measured and monitored • Staff receive training commensurate with their responsibilities.
6	Asset Maintenance	• Maintenance policies and procedures are documented and linked to service levels required • Regular inspections are undertaken of asset performance and condition • Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule • Failures are analysed and operational/maintenance plans adjusted where necessary • Risk management is applied to prioritise maintenance tasks • Maintenance costs are measured and monitored.

#	Key processes	Effectiveness criteria
7	Asset Management Information System	• Adequate system documentation for users and IT operators • Input controls include appropriate verification and validation of data entered into the system • Logical security access controls appear adequate, such as passwords • Physical security access controls appear adequate • Data back-up procedures appear adequate • Key computations related to licensee performance reporting are materially accurate • Management reports appear adequate for the licensee to monitor licence obligations.
8	Risk Management	• Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system • Risks are documented in a risk register and treatment plans are actioned and monitored • The probability and consequences of asset failure are regularly assessed.
9	Contingency Planning	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.
10	Financial Planning	• The financial plan states the financial objectives and strategies and actions to achieve the objectives • The financial plan identifies the source of funds for capital expenditure and recurrent costs • The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) • The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period • The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services • Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.
11	Capital Expenditure Planning	• There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates • The plan provides reasons for capital expenditure and timing of expenditure • The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan • There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned.
12	Review of Asset Management System	• A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current • Independent reviews (e.g. internal audit) are performed of the asset management system.

Responsibility

Kleenheat's responsibility for maintaining an effective asset management system

Kleenheat is responsible for putting in place policies, procedures and controls, which are designed to provide for an effective asset management system for assets subject to the Licence.

Deloitte's responsibility

Our responsibility is to express a conclusion on the effectiveness of Kleenheat's asset management systems to meet Licence requirements based on our procedures. The engagement will be conducted in accordance with Australian Standard on Assurance Engagements (ASAE) 3500 *Performance Engagements* issued by the Australian Auditing and Assurance Standards Board and the Guidelines, in order to state whether, in all material respects, based on the work performed, anything has come to our attention that causes us to believe Kleenheat had not established and maintained an effective asset management system for assets subject to the Licence, as measured by the effectiveness criteria in the Guidelines and the systems have not operated effectively for the period 1 June 2016 to 31 May 2018. These standards also require us to comply with the relevant ethical requirements of the Australian professional accounting bodies. Our engagement provides limited assurance as defined in ASAE 3500.

Limitations of use

The regulatory report is intended solely for the information and internal use of Kleenheat and is not intended to be and should not be used by any other person or entity. No other person or entity is entitled to rely, in any manner, or for any purpose, on this report.

We understand that a copy of the report will be provided to the ERA for the purpose of reporting on the effectiveness of Kleenheat's asset management systems. We agree that a copy of the report may be provided to the ERA for its information in connection with this purpose but, as will be made clear in the report, only on the basis that we accept no duty, liability or responsibility to the ERA in relation to the report. We accept no duty, responsibility or liability to any party, other than Kleenheat, in connection with the report or this engagement.

This plan is intended solely for the use of Kleenheat for the purpose of its reporting requirements under section 11Y of the Act.

Inherent limitations

A review consists primarily of making enquiries, primarily of persons responsible for the management of assets, applying analytical and other review procedures, and examination of evidence for a small number of transactions or events. A review is substantially less in scope than a reasonable assurance "audit" conducted in accordance with ASAEs. Accordingly, we will not express an audit opinion in the asset management system review report.

Independence

In conducting our engagement, we will comply with the independence requirements of the Australian professional accounting bodies.

Approach

The review will be conducted in three distinct phases, being a risk assessment, system analysis/policy and procedure review and examination of performance. From the review results, a report will be produced to outline findings, overall assessments and recommendations for improvement in line with the Guidelines. Each step of the review is discussed in detail below.

Risk Assessment

The review will focus on identifying or assessing those activities and management control systems to be examined and the matters subject to review. Therefore, the purpose of conducting the risk assessment as a preliminary phase enables the reviewer to focus on pertinent/high risk areas of Kleenheat's asset management systems established for the assets subject to Kleenheat's licence. The risk assessment gives specific consideration to changes to Kleenheat's relevant systems and processes and any matters of significance raised by the ERA and/or Kleenheat. The level of risk and materiality of the process determine the level of review required i.e. the greater the materiality and the higher the risk, the more effort will be applied.

The first step of the risk assessment is the rating of the potential consequences of Kleenheat not effectively maintaining an asset management system for the assets subject to its licence, in the absence of mitigating controls. The consequence rating descriptions listed at Table 15 of the Guidelines (refer to **Appendix 1**), provides the risk assessment with context to enable the appropriate consequence rating to be applied to each component of the asset management system subject to review.

Once the consequence has been determined, the likelihood of Kleenheat not effectively maintaining an asset management system for the assets subject to its licence (with reference to the defined effectiveness criteria) is assessed using the likelihood rating listed at Table 16 of the Guidelines (refer to **Appendix 1**). The assessment of likelihood is based on the expected frequency of non-performance against the defined criteria, over a period of time.

Table 2 below (sourced from Table 17 of the Guidelines) outlines the combination of consequence and likelihood ratings to determine the level of inherent risk associated with each individual effectiveness criteria.

Table 2: Inherent risk rating

	Consequence		
Likelihood	Minor	Moderate	Major
Likely	Medium	High	High
Probable	Low	Medium	High
Unlikely	Low	Medium	High

Once the level of inherent risk has been determined, the adequacy of existing controls is assessed in order to determine the level of control risk. Controls are assessed and prioritised as weak, moderate or strong dependant on their suitability to mitigate the risks identified. The control adequacy ratings used by this risk assessment are aligned to the ratings listed at Table 19 of the Guidelines (refer to **Appendix 1**).

Once inherent risks and control risks are established, the review priority can then be determined using the matrix listed at Table 20 of the Guidelines (refer to **Table 3** below). Essentially, the higher the level of risk the greater the level of examination is required.

Table 3: Assessment of Review Priority

	Adequacy of existing controls		
Inherent Risk	Weak	Moderate	Strong
High	Review priority 1	Review priority 2	
Medium	Review priority 3	Review priority 4	
Low	Review priority 5		

The following table outlines the review requirement for each level of review priority. Testing can range from extensive substantive testing around the controls and activities of particular processes (including physical inspection of asset infrastructure, which will be given greater attention for those processes with a review priority of 1,2 or 3) to confirming the existence of controls through discussions with relevant staff.

Table 4: Review Priority Table

Priority Rating and Resulting Review Procedures	
Rating	Review requirement
Priority 1	• Controls testing and extensive substantive testing of activities • Follow-up and if necessary, re-test matters previously reported.
Priority 2	• Controls testing and moderate substantive testing of activities • Follow-up and if necessary, re-test matters previously reported.
Priority 3	• Limited controls testing (moderate sample size). Only substantively test activities if further control weakness found • Follow-up of matters previously reported.
Priority 4	• Confirmation of existing controls via observation and walk through testing • Follow-up of matters previously reported.
Priority 5	• Confirmation of existing controls via observation, discussions with key staff and/or reliance on key references ("desktop review").

The risk assessment has been discussed with stakeholders to gain their input as to the appropriateness and factual accuracy of risk and control ratings and associated explanations. The key sources considered in reaching our preliminary assessment of the risk and control ratings were based on:

- Prior assessments of the state of relevant controls during the previous review
- Our understanding of Kleenheat's assets and internal processes
- Our understanding of the electricity industry and regulatory environment
- Any other factors that may have an effect on the level of risk or strength of controls.

At this stage, the risk assessment can only be a preliminary assessment based on reading of documentation and interviews by the auditors. It is possible that the ratings and risk assessment comments may be revised as we conduct our work and new evidence comes to light. Accordingly, the risk assessment for this review is a preliminary draft, not a final report, and no reliance should be placed on its findings. It is however, an invaluable tool for focussing review effort.

The asset management system review risk assessment is attached at **Appendix 2**.

Systems analysis/policy and procedure review

The level of policy and procedure review required will be determined utilising the aforementioned priority scale. Once the priority level has been defined, the review will consist of:

- Interviewing Kleenheat representatives and key operational and administrative staff responsible for the development and maintenance of policies and procedural type documentation
- Examination of documented policies and procedures for key functional requirements and consideration of their relevance to Kleenheat's asset management system requirements and standards.

The policy and procedure definition element of the asset management system review will be performed to provide a rating as defined under Table 5 (refer below).

Key documents which may be subject to review are not specifically disclosed in this plan. A list of documents examined will be included in the review report.

Examination of performance

The actual performance of the relevant controls and processes in place will then be examined via:

- Consideration of reports and references evidencing activity
- Interviews with Kleenheat representatives and key operational and administrative staff
- Physical visit to reticulation distribution network sites in Albany and in Margaret River
- Consideration of the facility's function, normal modes of operation and age.

A full work program will be completed to record the specific aspects of our review and examination of the performance of each asset management system key process. This work program will be based on:

- The review priority determined by the risk assessment to be applicable to each effectiveness criteria
- The results of the policy and procedure review, as described above
- The location of personnel and activity to be tested.

The performance effectiveness element of the asset management system review will be performed to provide a rating as defined under Table 6 (refer below).

Reporting

In accordance with the Guidelines, the reviewer must provide an assessment of both the process and policy definition rating (refer to **Table 5** below and **Table 8** of the Guidelines) and the performance rating (refer to **Table 6** below and **Table 9** of the Guidelines) for each of the key processes in Kleenheat's asset management system.

Table 5: Asset management process and policy definition adequacy ratings

Rating	Description	Criteria
A	Adequately defined	• 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	• 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	• 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	• 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 6: Asset management performance ratings

Rating	Description	Criteria
1	Performing effectively	• 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	• 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	• 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	• Process is not performed, or the performance is so poor that the process is considered to be ineffective.

The asset management review report will be structured to address all key components expected by the Guidelines, including:

- Response to previous review recommendations (refer to **Appendix 3**)
- Performance summary and rating for each effectiveness criteria (Table 1), utilising the asset management process and policy definition adequacy ratings (Table 5) and the asset management performance ratings (Table 6)
- Review observations for each effectiveness criteria
- Status and response to recommendations from the previous review
- Where appropriate, recommendations on actions required to address opportunities for improvement or process deficiencies.

Where appropriate, Kleenheat will provide a post review implementation plan for incorporation into the report as an appendix.

Resources and team

All aspects of the review will undergo quality assurance and review procedures as outlined in our previous communications to Kleenheat. Before delivery of a final report, full quality procedures will be applied, including second partner review.

Key Kleenheat contacts

The key contacts for this review are:

- Ryan Lamp — Manager, Commercial & LPG Sales
- Clay Roberts — Reticulation and Standards Manager
- Barry Hastie — Project Engineer
- Craig Noakes — Maintenance and Training Specialist
- Adam Kozman — Customer Service Team Leader

Deloitte Staff

Deloitte staff who will be involved with this assignment are:

- Hendri Mentz — Partner
- Andrew Baldwin — Specialist Leader Regulatory Compliance; Lead Auditor
- Wei Hao Tan — Senior Analyst
- Kecheng Shen — Manager (Engineer)
- Vincent Snijders — Partner - Quality Assurance.
- Felicia Tristanto — Technical QA Director (Engineer)

Resumes for key Deloitte staff are outlined in the proposal accepted by Kleenheat and the Auditors Approval Submission document presented to the ERA.

Timing

The initial risk assessment phase was completed on 30 July 2018, after which the draft review plan and risk assessment were presented to Kleenheat for comment prior to submission to the ERA for review and approval.

The remainder of the fieldwork phase is scheduled to be performed in August 2018, enabling a report to be submitted to the ERA by the due date of 31 August 2018.

Deloitte's time and staff commitment to the completion of the review is outlined in the proposal accepted by Kleenheat and subsequently presented to the ERA.

Appendix 1 – Risk assessment key

1-1 Consequence ratings

Source: Guidelines – Electricity and Gas Licences April 2014

Rating		Examples of non-compliance		
		Supply quality and reliability	**Consumer protection**	**Breaches of legislation or other licence conditions**
1	Minor	Breach of supply quality or reliability standards minor - affecting a small number of customers. Delays in providing a small proportion of new connections.	Customer complaints procedures not followed in a few instances. Small percentage of disconnections or reconnections not completed on time. Small percentage of bills not issued on time.	Legislative obligations or licence conditions not fully complied with, minor impact on customers or third parties. Compliance framework generally fit for purpose and operating effectively.
2	Moderate	Supply quality breach events that significantly impact customers; large number of customers affected and/or extended duration and/or damage to customer equipment. Supply interruptions affecting significant proportion of customers on the network for up to one day. Significant number of customers experiencing excessive number of interruptions per annum. Significant percentage of new connections not provided on time/ some customers experiencing extended delays.	Significant percentage of complaints not being correctly handled. Customers not receiving correct advice regarding financial hardship. Significant percentage of bills not issued on time. Ongoing instances of disconnections and reconnections not completed on time. Remedial actions not being taken or proving ineffective. Instances of wrongful disconnection.	More widespread breaches of legislative obligations or licence conditions over time. Compliance framework requires improvement to meet minimum standards.
3	Major	Supply interruptions affecting significant proportion of customers on the network for more than one day. Majority of new connections not completed on time/ large number of customers experiencing extended delays.	Significant failure of one or more customer protection processes leading to ongoing breaches of standards. Ongoing instances of wrongful disconnection	Wilful breach of legislative obligation or licence condition. Widespread and/or ongoing breaches of legislative obligations or licence conditions. Compliance framework not fit for purpose, requires significant improvement.

Appendix 1 – Risk assessment key

1-2 Likelihood ratings

Source: Guidelines – Electricity and Gas Licences April 2014

	Level	Criteria
A	Likely	Non-compliance is expected to occur at least once or twice a year
B	Probable	Non-compliance is expected to occur every three years
C	Unlikely	Non-compliance is expected to occur at least once every 10 years or longer

1-3 Likelihood ratings

Source: Guidelines – Electricity and Gas Licences April 2014

Rating	Description
Strong	Strong controls that mitigate the identified risks to an appropriate level
Moderate	Moderate controls that only cover significant risks; improvement required
Weak	Controls are weak or non-existent and have minimal impact on the risks

Appendix 2 – Risk Assessment

1	Asset Planning
Key Process:	Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).
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.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
1(a)	Asset management plan covers key requirements	Moderate	Probable	Medium	Moderate	Priority 4
1(b)	Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning	Minor	Probable	Low	Strong	Priority 5
1(c)	Service levels are defined	Minor	Unlikely	Low	Strong	Priority 5
1(d)	Non-asset options (e.g. demand management) are considered	Minor	Probable	Low	Strong	Priority 5
1(e)	Lifecycle costs of owning and operating assets are assessed	Moderate	Probable	Medium	Strong	Priority 4
1(f)	Funding options are evaluated	Minor	Probable	Low	Strong	Priority 5
1(g)	Costs are justified and cost drivers identified	Moderate	Probable	Medium	Strong	Priority 4
1(h)	Likelihood and consequences of asset failure are predicted	Major	Probable	High	Strong	Priority 2
1(i)	Plans are regularly reviewed and updated	Minor	Unlikely	Low	Moderate	Priority 5

2	Asset Creation and Acquisition
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
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.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
2(a)	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions	Moderate	Unlikely	Medium	Strong	Priority 4
2(b)	Evaluations include all life-cycle costs	Moderate	Unlikely	Medium	Strong	Priority 4
2(c)	Projects reflect sound engineering and business decisions	Moderate	Unlikely	Medium	Moderate	Priority 4
2(d)	Commissioning tests are documented and completed	Moderate	Unlikely	Medium	Strong	Priority 4
2(e)	Ongoing legal/environmental/ safety obligations of the asset owner are assigned and understood	Major	Unlikely	High	Strong	Priority 2

3	Asset Disposal
Key Process:	Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets. Alternatives are evaluated in cost-benefit terms.
Outcome:	Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
3(a)	Under-utilised and under-performing assets are identified as part of a regular systematic review process	Minor	Probable	Low	Moderate	Priority 5
3(b)	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	Minor	Probable	Low	Moderate	Priority 5
3(c)	Disposal alternatives are evaluated	Minor	Probable	Low	Moderate	Priority 5
3(d)	There is a replacement strategy for assets	Moderate	Probable	Medium	Moderate	Priority 4

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.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
4(a)	Opportunities and threats in the system environment are assessed	Moderate	Probable	Medium	Strong	Priority 4
4(b)	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	Moderate	Probable	Medium	Strong	Priority 4
4(c)	Compliance with statutory and regulatory requirements	Moderate	Probable	Medium	Weak	Priority 3
4(d)	Achievement of customer service levels	Moderate	Probable	Medium	Strong	Priority 4

5	Asset Operations
Key Process:	Operational functions relate to the day-to-day running of assets and directly affect service levels and costs.
Outcome:	Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
5(a)	Operational policies and procedures are documented and linked to service levels required	Moderate	Probable	Medium	Weak	Priority 3
5(b)	Risk management is applied to prioritise operations tasks	Moderate	Probable	Medium	Moderate	Priority 4
5(c)	Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data	Moderate	Probable	Medium	Weak	Priority 3
5(d)	Operational costs are measured and monitored	Moderate	Probable	Medium	Strong	Priority 4
5(e)	Staff receive training commensurate with their responsibilities	Moderate	Probable	Medium	Weak	Priority 3

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.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
6(a)	Maintenance policies and procedures are documented and linked to service levels required	Major	Probable	High	Strong	Priority 2
6(b)	Regular inspections are undertaken of asset performance and condition	Major	Probable	High	Weak	Priority 1
6(c)	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	Major	Probable	High	Strong	Priority 2
6(d)	Failures are analysed and operational/maintenance plans adjusted where necessary	Major	Probable	High	Strong	Priority 2
6(e)	Risk management is applied to prioritise maintenance tasks	Major	Probable	High	Strong	Priority 2
6(f)	Maintenance costs are measured and monitored	Moderate	Probable	Medium	Strong	Priority 4

7	Asset Management Information System
Key Process:	An asset management information system is a combination of processes, data and software that support the asset management functions.
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.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
7(a)	Adequate system documentation for users and IT operators	Minor	Probable	Low	Strong	Priority 5
7(b)	Input controls include appropriate verification and validation of data entered into the system	Moderate	Probable	Medium	Strong	Priority 4
7(c)	Logical security access controls appear adequate, such as passwords	Minor	Probable	Low	Strong	Priority 5
7(d)	Physical security access controls appear adequate	Minor	Probable	Low	Strong	Priority 5
7(e)	Data backup procedures appear adequate	Moderate	Probable	Medium	Strong	Priority 4
7(f)	Key computations related to licensee performance reporting are materially accurate	Minor	Probable	Low	Strong	Priority 5
7(g)	Management reports appear adequate for the licensee to monitor licence obligations	Minor	Probable	Low	Strong	Priority 5

8	Risk Management
Key Process:	Risk management involves 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

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Control Risk	Review Priority
8(a)	Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system	Major	Probable	High	Strong	Priority 2
8(b)	Risks are documented in a risk register and treatment plans are actioned and monitored	Moderate	Probable	Medium	Weak	Priority 3
8(c)	The probability and consequences of asset failure are regularly assessed	Major	Probable	High	Moderate	Priority 2

9	Contingency Planning
Key Process:	Contingency plans document the steps to deal with the unexpected failure of an asset.
Outcome:	Contingency plans have been developed and tested to minimise any significant disruptions to service standards.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
9(a)	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	Major	Probable	High	Strong	Priority 2

10	Financial Planning
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.
Outcome:	A financial plan that is reliable and provides for the long-term financial viability of the services.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
10(a)	The financial plan states the financial objectives and strategies and actions to achieve the objectives	Moderate	Probable	Medium	Strong	Priority 4
10(b)	The financial plan identifies the source of funds for capital expenditure and recurrent costs	Minor	Probable	Low	Strong	Priority 5
10(c)	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	Minor	Probable	Low	Strong	Priority 5
10(d)	The financial plan provides firm predictions on income for the next five years and reasonable indicative predictions beyond this period	Minor	Probable	Low	Strong	Priority 5
10(e)	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	Moderate	Probable	Medium	Strong	Priority 4
10(f)	Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary	Moderate	Probable	Medium	Strong	Priority 4

11	Capital Expenditure Planning
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
Outcome:	A capital expenditure plan that provides reliable forward estimates of capital expenditure and asset disposal income, supported by documentation of the reasons for the decisions and evaluation of alternatives and options.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
11(a)	There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates	Moderate	Probable	Medium	Strong	Priority 4
11(b)	The plan provides reasons for capital expenditure and timing of expenditure	Minor	Probable	Low	Strong	Priority 5
11(c)	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	Moderate	Probable	Medium	Strong	Priority 4
11(d)	There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned	Minor	Probable	Low	Strong	Priority 5

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.

Ref	Effectiveness criteria	Consequence	Likelihood	Inherent Risk Rating	Controls Assessment	Review Priority
12(a)	A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current	Minor	Probable	Low	Weak	Priority 5
12(b)	Independent reviews (e.g. internal audit) are performed of the asset management system	Minor	Probable	Low	Moderate	Priority 5

Appendix 3 – Previous Review Recommendations and Action Plans

Issue 1/2016 *Asset Planning: 1(i) Plans are regularly reviewed and updated* Likelihood and consequences of asset failure are predicted. During the audit period plans covering the operations and maintenance of the distribution systems were not subject to regular review. There is also a need to reflect the changes to the organisation/ responsibility throughout the other documents. A review timetable needs to be developed specifying who is responsible for the reviews and the frequency.	
Recommendation 1/2016 Licensee prepares an Asset Management Plan that describes the planning processes and objectives, defines the service levels and assigns responsibilities and how they are applied in practice.	**Action Plan 1/2016** Yes. Scheduled for June 2017. **Responsible Person** Reticulations and Standards Manager **Target Date** June 2017

Issue 2/2016 *Asset Creation and Acquisition: 2(c) Projects reflect sound engineering and business decisions* Projects reflect sound engineering and business decisions. However, while extensions to the distribution system are evaluated by third party designers, the complete system needs periodic verification to ensure overall design is fit for purpose.	
Recommendation 2/2016 Licensee to carry out periodic design verification tests of system capacity.	**Action Plan 2/2016** Yes. Scheduled for June 2017. **Responsible Person** Reticulations and Standards Manager **Target Date** June 2017

Issue 3/2016 *Environmental Analysis: 4(c) Compliance with statutory and regulatory requirements* Compliance with statutory and regulatory requirements. Training of personnel as a result of the EnergySafety audit.	
Recommendation 3/2016 Complete the writing of the policies and procedures and the training and assessing the competency of personnel.	**Action Plan 3/2016** Yes. Scheduled for November 2016 and then review by ESWA late 2016. **Responsible Person** Reticulations and Standards Manager **Target Date** December 2016

Issue 4/2016 *Asset Operations: 5(a) Operational policies and procedures are documented and linked to service levels required* Operational policies and procedures are documented and linked to service levels required. During the audit period a number of the service levels have not been achieved they include taking of LPG samples, process for classifying recording and managing the repair of leaks.	
Recommendation 4/2016 The omissions have been recognised by the Licensee and work has been undertaken to rectify the issues.	**Action Plan 4/2016** No current actions but subject to ESWA review in November 2016. **Responsible Person** Reticulations and Standards Manager **Target Date** November 2016

Issue 5/2016 *Asset Operations: 5(b) Risk management is applied to prioritise operations tasks* Risk management is applied to prioritise operations tasks. However, although the risks are identified they have not been managed correctly. Risks that have not been managed correctly include failure to adequately investigate gas incidents in accordance with the Gas Standards (Gas Supply and System Safety) Regulations 2000.	
Recommendation 5/2016 These deficiencies have been recognised by the Licensee and work has been undertaken to rectify the issues.	**Action Plan 5/2016** No current actions but subject to ESWA review in November 2016. **Responsible Person** Reticulations and Standards Manager **Target Date** November 2016

Issue 6/2016 *Asset Operations: 5(c) Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data* Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data Licensee could not demonstrate that all the materials that form the distribution system were fit for purpose.	
Recommendation 6/2016 The Licensee complete work on improving what information is contained in the asset register.	**Action Plan 6/2016** Yes. Scheduled for June 2017. **Responsible Person** Reticulations and Standards Manager **Target Date** June 2017

Issue 7/2016 *Asset Operations: 5(e) Staff resources are adequate and staff receive training commensurate with their responsibilities* Staff resources are adequate and staff receive training commensurate with their responsibilities EnergySafety concluded during the audit that the procedures needed to be improved and that the Licensee train personnel in the new procedures and assess their competency through a practical demonstration.	
Recommendation 7/2016 The Licensee complete work on revision of policies and procedures and training and testing of the competency of employees.	**Action Plan 7/2016** Yes. Scheduled for November 2016 and then review by ESWA. **Responsible Person** Reticulations and Standards Manager **Target Date** November 2016

Issue 8/2016 *Asset Maintenance: 6(b) Regular inspections are undertaken of asset performance and condition* Regular inspections are undertaken of asset performance and condition The EnergySafety audit found that the Licensee had failed to undertake all the required leakage surveys and the methodology employed was inadequate because the Licensee failed to properly classify, record, manage and repair leaks.	
Recommendation 8/2016 Undertake leakage surveys in accordance with the revised frequency and in accordance with the revised procedures.	**Action Plan 8/2016** Yes. Schedule of surveys to be set by November 2016. **Responsible Person** Reticulations and Standards Manager **Target Date** November 2016

Issue 9/2016 *Risk Management: 2(c) Risks are documented in a risk register and treatment plans are actioned and monitored* Risks are documented in a risk register and treatment plans are actioned and monitored. The EnergySafety audit found that a number of risks were not being adequately actioned and monitored. Failure to conduct leak surveys and to adequately investigate gas incidents in accordance with the Gas Standards (Gas Supply and System Safety) Regulations 2000 are examples.	
Recommendation 9/2016 Ensure that the risks identified by the EnergySafety audit have treatment plans and they are actioned and monitored in accordance with the treatment plan	**Action Plan 9/2016** Yes. Scheduled for June 2017. **Responsible Person** Reticulations and Standards Manager **Target Date** June 2017

Issue 10/2016 *Contingency Planning: 9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks* Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks. The EnergySafety audit found that the Licensee was not performing frequent enough exercises of the plan.	
Recommendation 10/2016 Test the emergency plans on a more frequent basis to conform with EnergySafety's requirements and maintain a record of the testing and the outcomes. Modify the plans to reflect the changes discovered during testing.	**Action Plan 10/2016** Yes. Scheduled for November 2016 and then review by EnergySafety late 2016. **Responsible Person** Reticulations and Standards Manager **Target Date** December 2016

Issue 11/2016 *Review of AMS: 12(a) A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current* A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current. In a number of documents having the wrong person as being responsible. Additionally, a number of documents are out of date and need to be modified to reflect the current situation in terms of procedures processes training and competency assessment of personnel.	
Recommendation 11/2016 Undertake a comprehensive review of the Asset management system including the compilation of a document index and details of when the document is modified or reviewed by whom and who is responsible. Include in computer management system a timetable for document reviews and allocate a person responsible for the review.	**Action Plan 11/2016** Yes. Scheduled for June 2017. **Responsible Person** Reticulations and Standards Manager **Target Date** June 2017

Issue 12/2016 *Review of AMS: 12(b) Independent reviews (e.g. internal audit) are performed of the asset management system* Independent reviews (e.g. internal audit) are performed of the asset management system. There is a need to undertake the annual internal audit of the Safety Case.	
Recommendation 12/2016 Undertake an annual internal audit of the safety case as required under the GSSSR 2000.	**Action Plan 12/2016** Yes. **Responsible Person** Reticulations and Standards Manager **Target Date** June 2017

Appendix B: References

Kleenheat staff participating in the review

- Reticulations and Standards Manager
- Manager, Commercial and LPG Sales
- Commercial Account Manager
- Maintenance and Training Specialists
- Project Engineer
- IT Operations Manager

Deloitte staff participating in the review

Name	Position	Hours
• Hendri Mentz	Partner	5.5
• Vincent Snijders	QA Partner	3
• Andrew Baldwin	Specialist Leader – Internal audit & Regulatory compliance	51.5
• Wei Hao Tan	Specialist Senior	58
• Kecheng Shen	Engineer and Technical Specialist	38
• Felicia Tristanto	Engineer and Technical QA Director	2

Key documents and other information sources examined

Document name/description
Retic, Gas Network Asset Management Plan
Design Verification and Compliance Check form
Distribution Network Capacity Check form
Pressure Testing a Gas Main procedure
Health Check Report 2017
2018 Annual Budget
Kleenheat Distribution Safety Case
Kleenheat Distribution Qualitative Risk Assessment
Network Pressure Rectification Procedure
Distribution Network Leak Survey
Capital Expenditure Policy
WESCEF Delegation of Authority
KHG Sales WA 0045 Rapids Landing Retic Stage 6A Capex Authorisation Form
Distribution Network Handover Checklist
Hose assembly test certificate
Manometer calibration service report
Certificate of Conformity – Fittings for PE pipes for pressure applications
Welder Calibration certificate
Distribution Network Commissioning Scope
Kleenheat Distribution Networks – Performance Measures
CISCO Call Statistics Snapshot Report
Systems of Work document
Distribution Network Manual
Retic, Gas Network Asset Register
Budget Cost Control for Reticulation Networks 2017 and 2018
Retic, Gas Network Staff Competence Framework and Plan
Gas Distribution Training Flexibility Report
Gas Test Atmospheres Assessment template
Permit to Work Assessment template
Installation of a Gas Service Assessment template

#	Document name/description
	Commissioning and Purging of a Gas Main Assessment template
	Evidence of training and competency assessment
	Attending a Report Gas Escape procedure
	Distribution Systems Asset Maintenance Plan
	Oracle EAM work attachments/orders
	Retic PM work orders
	Kleenheat Reticulated LPG Fittings Assessment
	Meter Leak Surveys
	Attending a Reported Gas Leak procedure
	Kleenheat Reticulated LPG Corrective Action Request 10
	Kleenheat LPG 2018 Annual Budget
	LPG Upskill Lesson Plans (week 1, 2 and 3)
	Group Electronic Usage Policy
	Group Password Policy
	New Connections Report
	Gas Consumption Calculation Report
	Complaints Register
	Group Risk Review report
	Email Communications – Risk review updates
	Kleenheat LPG Corporate Risk Register
	National Emergency Response Communications Systems procedure
	Guidelines for Emergency Response LPG
	Supply Disruption procedure
	Contingency Plan results for Margaret River, Albany and Leinster 2016 and 2017
	Annual Corporate Commercial Plan 2018
	LPG Distribution Performance Report 2018
	Health Check Report 2017
	ERS Safety Case Audit Final Report 2018
	Wesfarmers Internal Audit Final Reports 2016 and 2017
	ESWA Reticulation System Audits Progress Summary – November 2015
	Final Incident Report – Leinster Incident

Appendix C: Post Review Implementation Plan

<table>
<tr><td colspan="2">Issue 1/2018
Asset planning: 1(a) Asset Management Plan covers key requirements
Asset planning: 1(i) Plans are regularly reviewed and updated
Environmental analysis: 4(c) Compliance with statutory and regulatory requirements
Review of AMS: 12(a) A review process is in place to ensure that the AMP and the AMS described therein are kept current
Review of AMS: 12(b) Independent reviews (e.g. internal audit) are performed of the AMS
Although Kleenheat's AMP (last revised 15 September 2017) provides some direction on Kleenheat's asset management framework and practices, including an overview of the major elements of the reticulated gas assets within Kleenheat's gas distribution system:
Kleenheat has recognised the need for its AMP to be further expanded and restructured to accommodate all elements of an effective AMP, tailored to Kleenheat's purposes and commensurate with the relative size and simplicity of Kleenheat's Tier 1 network assets. Where appropriate, clear reference should be made to the role of the Distribution Network Safety Management System and related Safety Case in describing and managing the distribution network assets
The AMP does not clearly reference the statutory and regulatory requirements relevant to its distribution network assets (note that those requirements are referenced in Kleenheat's current Safety Case)
Regular annual reviews to update the AMP were not in place during the review period
The current AMP does not define how other independent reviews in key areas that are not included in the Safety Case will assist Kleenheat in ensuring the effectiveness and continuous improvement of its AMS.</td></tr>
<tr><td>Recommendation 1/2018
Commensurate with the relative size and simplicity of its network assets, Kleenheat expand and restructure the AMP to accommodate the items raised in the findings above and throughout this report. Ideally the AMP would reference Kleenheat's systems, processes and procedures in place to manage each of the 12 key components of the asset management lifecycle.</td><td>Action Plan 1/2018
Kleenheat will implement this recommendation.
Responsible Person
Reticulation and Standards Manager
Target Date
September 2019</td></tr>
</table>

Issue 2/2018 *Environmental analysis: 4(b) Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved* Although Kleenheat has developed performance measures for its distribution network assets including the effectiveness of distribution control standards, system reliability, system condition, product controls, system damage, contingency management and worker competency, Kleenheat had not reported on its achievement of those performance measures during the review period.	
Recommendation 2/2018 Kleenheat implement a performance measure reporting process, which includes the following elements: • Reporting templates including source system information • Monitoring templates suitable to the network's activities, such as leak surveys and pressure readings • Formal and regular management review and oversight of performance measures.	**Action Plan 2/2018** Kleenheat will implement this recommendation. Monitoring templates will be developed where suitable. **Responsible Person** Reticulation and Standards Manager **Target Date** June 2019

Issue 3/2018 *Asset operations: 5(a) Operational policies and procedures are documented and linked to service levels required* *Asset maintenance: 6(a) Maintenance policies and procedures are documented and linked to service levels required* Although it is evident that Kleenheat's procedures have been designed to support its management of a safe and reliable distribution system, the link to specific service levels required (e.g. interruptions, pressure, service connection, emergency (e.g. leak) response time) does not clearly cascade through to specific procedures.	
Recommendation 3/2018 Kleenheat consider updating its key asset operations and maintenance documents (including the AMP and relevant procedures) to ensure required service levels are recognised and accommodated throughout. Note that such updates should occur as part of Kleenheat's normal cycle for reviewing its procedure documents.	**Action Plan 3/2018** Kleenheat will implement this recommendation through its review and update of the AMP and relevant procedures. **Responsible Person** Reticulation and Standards Manager **Target Date** September 2019

Issue 4/2018 *Asset operations: 5(c) Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data* Although Kleenheat has added to the content of the asset register in response to recommendation 6/2016 of the 2016 AMS review, further improvements can be made to the asset register to assist Kleenheat to understand and manage all key aspects of its asset portfolio. We recognise that there is a cost/benefit balance to achieve in any further expansion asset records to be maintained in eAM.	
Recommendation 4/2018 Kleenheat consider including the following elements in its asset register: • Further description of asset type • Asset working environment • Population sizes • Material/technology applied • Age/remaining life/shelf life/obsolescence • Purchase value/commissioning cost • Logistics data.	**Action Plan 4/2018** Kleenheat will implement this recommendation, giving consideration to the capabilities of the current eAM software. **Responsible Person** Reticulation and Standards Manager **Target Date** June 2019

Issue 5/2018 *Asset operations: 5(e) Staff receive training commensurate with their responsibilities* Kleenheat's training arrangements can be further strengthened by more specifically aligning staff competence with the asset conditions (current risks) as well as current technology in supporting the execution of the AMP.	
Recommendation 5/2018 Kleenheat consider developing a training framework and plan which addresses: • Current staff competence, plus records of assessments of staff competence • Training material update process • Asset technology changes that require new or updated training • Seldom exercised tasks • New skills that need to be added to training • Handling of third party contractors.	**Action Plan 5/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** September 2019

Issue 6/2018 *Asset maintenance: 6(b) Regular inspections are undertaken of asset performance and condition* Kleenheat's requirements for asset inspections can be strengthened to more clearly link with underlying risks and asset condition.	
Recommendation 6/2018 Kleenheat consider further updating its Asset Maintenance Plan to include the following elements in its asset inspections: • The basis for inspection strategies, linked with the network risk assessment • Compliance metrics/targets • Technology required • How inspection results are used to support wider asset management decisions.	**Action Plan 6/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** December 2018

Issue 7/2018 *Asset maintenance: 6(d) Failures are analysed and operational/maintenance plans adjusted where necessary* Kleenheat's Asset Maintenance Plan and its procedures applied in practice do not adequately address the need for demonstrating analyses of any failures (corrective work, leaks, emergency attendance etc.), with conclusions or recommendations on future changes in operation and maintenance, as well as for engineering/asset renewal.	
Recommendation 7/2018 Kleenheat consider a developing an asset and system reliability/availability performance process which addresses the following elements: • Major identified failure modes with various assets • How work order information is used to feedback to the operation/maintenance plan and strategy • RACI behind maintenance strategy development/improvement • When root cause analysis is applied • How work (engineering, operation and maintenance) is prioritised by analysing the past occurrences (or non-occurrences) • Assessment of consequences for past failures including near-misses.	**Action Plan 7/2018** Kleenheat will implement this recommendation **Responsible Person** Reticulation and Standards Manager **Target Date** June 2019

Issue 8/2018 *Asset maintenance: 6(e) Risk management is applied to prioritise maintenance tasks* Although there is evidence of relevant risks and hazards being recognised within the Asset Maintenance Plan and associated procedures, Kleenheat has not clearly documented the link between those key risks and hazards, and its asset maintenance strategies, plans and priorities. Kleenheat had recognised this matter through an independent assessment of the adequacy of it Safety Case, conducted in January 2018.	
Recommendation 8/2018 Kleenheat consider including the following elements in its Asset Maintenance Plan: • Reference to those major risks and hazards that drive maintenance tasks (per examples outlined in the Safety Case), including any prioritisation of tasks to address risks relating to safety, reliability, compliance, environment etc. • A mechanism for accommodating instances where maintenance tasks themselves have an impact on risks and hazards (including introducing new risks).	**Action Plan 8/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** June 2019

Issue 9/2018 *Risk management: 8(b) Risks are documented in a risk register and treatment plans are actioned and monitored* *Risk management: 8(c) The probability and consequences of asset failure are regularly assessed* Kleenheat has not developed a process for monitoring the control activities and actions listed in its distribution qualitative risk assessment or the impact of recent events and incidents in order to regularly assess the probability and consequence of asset failure, which impacts the residual risk rating.	
Recommendation 9/2018 Kleenheat consider implementing a regular review process of its distribution qualitative risk assessment to assess and update the residual risk of each threat as at a point in time, including the following considerations: • Monitoring through updating recent results of the listed treatment plans and actions • Recent impact on threats and treatment plans and actions from recent events and incidents • Reassessing the probability and consequence of asset failure regularly which impact the low, medium or high residual risk rating.	**Action Plan 9/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** October 2018

Issue 10/2018 *Contingency planning: 9(a) Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.* The Kleenheat distribution safety case stipulates frequency of testing of the contingency plans as annual, which does not exactly align with requirements of AS/NZS 4645.1, which requires the frequency of testing of contingency plans to be "on a regular basis, not less than once per year". The Contingency plan for Leinster was tested in May 2016 and November 2017. The frequency of this testing for Leinster was not executed in line with the requirements of AS/NZS 4645.1 of "… not less than once per year".	
Recommendation 10/2018 Kleenheat consider: • Updating the frequency of testing of the contingency plans within the Kleenheat distribution safety case to be in line with requirements of AS/NZS 4645.1, being "on a regular basis, not less than once per year" • Scheduling and executing the testing of the contingency plan for each locality to ensure compliance with the Safety Case.	**Action Plan 10/2018** Kleenheat will implement this recommendation. **Responsible Person** Reticulation and Standards Manager **Target Date** December 2018