



# McGill Engineering Services Pty Ltd

Engineering, Adjudication & Arbitration Services ABN 45 106 691 169

## Asset Management System Review Report Leinster GDL4 Coastal Region GDL5 Wesfarmers Kleenheat Gas Pty Ltd

Prepared By Kevan McGill  
Date 29 January 2008



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Mr Ian Allison  
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Murdoch WA 6150

Dear Ian

## **Asset Management System Review Gas Distribution Licences GDL4 & 5**

The fieldwork on the asset management system review of Gas Distribution Licences GDL4 & GDL5 for the period to 31 January 2007 is complete and I am pleased to submit the report to you.

In my opinion, except for matters referred to in the qualification section, the licensee maintained control procedures in relation to the Distribution Licences (GDL4&5) for the period to 31 January 2007 based on the relevant clauses referred to within the scope section of this report.

Yours sincerely

Kevan McGill  
Director

29 January 2008

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## Executive Summary

### Background

Under the *Energy Coordination Act 1994* (the Act) section 11Y, the licensee must develop and maintain an asset management system to manage the significant asset base for ongoing service delivery to its customers. The Act requires a review of the asset management system every two years (or other time approved by the Economic Regulation Authority - *Authority*).

The *Authority* has prepared a set of guidelines<sup>1</sup> for reviewing the effectiveness of asset management for water, electricity and gas business licences. These have been applied in this review.

This review covers the period up to 31 January 2007 and was conducted by McGill Engineering Services Pty Ltd. It was undertaken during December 2007 and January 2008 with the final review to be submitted to the Authority by 31 January 2008.

### Overall conclusion

In my opinion, except for matters referred to in the qualification section, the licensee maintained control procedures in relation to the Distribution Licences (GDL4&5) for the period to 31 January 2007 based on the relevant clauses referred to within the scope section of this report.

### Qualification

The systems are small and while sophisticated asset management systems may not be required, the licensee's systems are very basic and some improvements are recommended. These improvements are:

1. The licensee should develop a basic asset management plan to improve assurance of outcomes. The addition of formalised processes rather than reactive activities has a greater assurance of success. The plan should reflect the key risks to the systems.
2. Establish remote monitoring of the bulk supplies to improve security of supply.
3. Establish processes for regular scheduled monitoring of pressures at strategic points in the networks to ensure service standards are achieved.
4. Ensure that an effective leak detection system is in place to mitigate safety issues.
5. Conduct regular and scheduled exercises of the emergency plans and action consequent updates.
6. The maintenance procedures manual has scheduled reviews and consequent upgrades.
7. While the asset management system is small it should be periodically reviewed. The licensee should put in place a scheduled review of the AMS.

### Findings

The conclusions of each of the elements of the licence are summarised in the following table. The audit risk as determined for each licence condition is also shown.

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<sup>1</sup> Audit Guidelines: Electricity, Gas and Water Licences, September 2006

Asset management process	Review risk assessment	Rating	
Asset planning	2	Not Performed	0
Asset creation/ acquisition	2	Performed Informally	1
Asset disposal	4	Performed Informally	1
Environmental analysis	4	Performed Informally	1
Asset operations	2	Performed Informally	1
Asset maintenance	2	Performed Informally	1
Asset Management Information System	2	Planned and tracked	2
Risk management	4	Planned and tracked	2
Contingency planning	4	Not Performed	0
Financial planning	4	Performed Informally	1
Capital expenditure planning	4	Performed Informally	1
Review of AMS	4	Not Performed	0

## Ratings

The Authority guidelines require the asset management review report will provide a table that summarises the auditor's assessment of the effectiveness ratings for each key process in the licensee's asset management system using the 6-point scale described below.

### Asset management review effectiveness rating scale

Effectiveness	Rating	Description
Continuously improving	5	Continuously improving organisation capability and process effectiveness
Quantitatively controlled	4	Measurable performance goals established and monitored
Well-defined	3	Standard processes documented, performed and coordinated
Planned and tracked	2	Performance is planned, supervised, verified and tracked
Performed informally	1	Base practices are performed
Not performed	0	Not performed (indicate if not applicable)

The overall effectiveness rating for each licence condition is based on an assessment of the effectiveness of the licensee's existing control procedures to manage its assets.

The following table is a summary of the review findings.

**Asset management effectiveness summary**

<b>ASSET MANAGEMENT SYSTEM</b>	Not performed	Performed informally	Planned and tracked	Well defined	Quantitatively controlled	Continuously improving
Process Effectiveness rating	0	1	2	3	4	5
Asset planning	☒					
Asset creation/ acquisition		☑				
Asset disposal		☑				
Environmental analysis		☑				
Asset operations		☑				
Asset maintenance		☑				
Asset Management Information System			☑			
Risk management			☑			
Contingency planning	☑					
Financial planning		☑				
Capital expenditure planning		☑				
Review of AMS	☑					

**Audit priority**

The *Authority* guideline for asset management system reviews sets out a rating for audit priority based on inherent risk and existing controls. The following priorities were determined in accordance with the guidelines and audit plan and accepted by the licensee.

This gives the review priorities being as follows.

Item	Licence obligation	Consequence	Likelihood	Inherent Risk	Controls risk requirement	Review priority	Rating				
1	Asset planning	Major	Unlikely	High	Strong	2					
2	Asset creation/ acquisition	Major	Unlikely	High	Strong	2					
3	Asset disposal	Moderate	Possible	Medium	Moderate	4					
4	Environmental analysis	Moderate	Unlikely	Medium	Moderate	4					
5	Asset operations	Major	Unlikely	High	Strong	2					
6	Asset maintenance	Major	Possible	High	Strong	2					
7	Asset Management Information System	Major	Possible	High	Strong	2					
8	Risk management	Moderate	Unlikely	Medium	Moderate	4					
9	Contingency planning	Moderate	Possible	Medium	Moderate	4					
10	Financial planning	Moderate	Unlikely	Medium	Moderate	4					
11	Capital expenditure planning	Moderate	Unlikely	Medium	Moderate	4					
12	Review of AMS	Moderate	Unlikely	Medium	Moderate	4					

## Use of Audit Processes and Practices

Accepted audit processes and practices have been used to complete the review. These include the sampling techniques associated with process reviews such as interviews to define accountability, observations, document sighting and testing of users.

The review has addressed four key elements of successful delivery of asset management to allow the assessment of the effectiveness of the asset management system. These elements are:

- Process – the existence of a suitable process for activities
- Documentation – the existence of a document defining a process
- Availability/accessibility/understanding – the process is understood, available to those required to use it and accessible to them
- Use- confirmation the process is used consistently

The audit priorities are set out above and the audit activities are as in the table below.

The review was conducted by McGill Engineering Services Pty Ltd during December 2007 and January 2008 with the final audit report to be submitted to the Authority by 31 January 2008.

## Recommendations

1. That the Licensee puts in place a basic asset management plan that responds to the key risks the system faces.
2. Remote monitoring should be commissioned at Leinster and installed on the tanks for the Coastal (Margaret River) region.
3. Regular, planned and scheduled monitoring of pressures at strategic points in both systems should take place each peak load season.
4. Quality control processes need to be ungraded to ensure compliance with gas quality regulations.
5. Further research should take place to ensure an accurate leak detection process is used.
6. Regular and scheduled exercises of the emergency plans takes place and consequent updates are actioned.
7. The maintenance procedures manual has scheduled reviews and consequent upgrades.
8. While the asset management system is small it should be periodically reviewed. The licensee should put in place a scheduled review of the AMS.

## Post Review implementation plan

Item	Action	Responsible	When
1	The Licensee will implement a basic asset management plan	Technical Services Manager	December 2008
2	The licensee will commission remote monitoring at Leinster and install remote monitoring on the Coastal region tanks.	Technical Services Manager	June 2008 Kleenheat will strive to meet this date but it will be subject to the installation of

			additional storage or other suitable arrangements that will allow the tank to be degassed and internal inspection being done, this will not be possible during winter and time is limited prior to then. If not practical then Dec 2008 or Jan 2009 would be an achievable target.
3	The licensee will implement regular (annual), planned and scheduled monitoring of pressures at strategic points in both systems each peak load season.	Technical Services Manager	August 2008
4	Quality control processes will be upgraded to ensure compliance with gas quality regulations.	Technical Services Manager	March 2008
5	An accurate leak detection process will be used by the Licensee	Technical Services Manager	June 2008
6	The licensee will conduct regular (at least annual) and scheduled exercises of the emergency plans and consequent updates are actioned.	Technical Services Manager	August 2008
7	The Licensee will conduct scheduled reviews of the maintenance procedures manual and make consequent upgrades.	Technical Services Manager	August 2008
8	The licensee should put in place a scheduled review of the AMS.	Technical Services Manager	June 2008

### **Objectives**

Under the *Energy Coordination Act 1994* (the Act) section 11Y, the licensee must develop and maintain an asset management system to manage the significant asset base for ongoing service delivery to its customers. The Act requires a review of the asset management system every two years (or other time approved by the Economic Regulation Authority - *Authority*).

An asset management system is to set out the measures to be taken by the licensee for the proper maintenance of assets used in the supply of gas and in the operation and maintenance of, and, where relevant, the construction or alteration of, the distribution system.

## Review Results and Recommendations

<b>Asset Planning</b>						Effectiveness rating Not performed - 0
1. Asset planning Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).						
<b>Observations</b>						
Process	<input checked="" type="checkbox"/>	Documentation	<input checked="" type="checkbox"/>	Availability	<input checked="" type="checkbox"/>	Use <input checked="" type="checkbox"/> NO <sup>2</sup>
<p>The licensee has two small distribution networks with a very simple asset register for an asset management system. Expansion of the distribution network at Leinster is dependent on decisions of the mining operator. The Coastal region (Margaret River) is being expanded on a case by case basis. Approval within financial limits is given by the General Manager Kleenheat Gas, and then above that limits the Managing Director Wesfarmers Energy and above that limit by the Board of Wesfarmers.</p> <p>The existing systems are appropriately planned for their size using appropriate materials such as PE piping for the coastal region and uPVC for Leinster. Most of the mains are 40 &amp; 63mm PE for the coastal (Margaret River) region and 50mm uPVC &amp; 40mm PE for Leinster.</p>						
<b>Issues</b>						
<p>The Leinster distribution system is in place and distribution mains are not currently being extended, so there is no planning taking place to form an opinion about the processes.</p> <p>For the Coastal region (Margaret River) no systemic planning is occurring and system expansions being considered on a case by case basis for each sub-development. When expansion has been considered the capacity requirements have been addressed and provision made to provide additional supply points and interconnect these supplies.</p> <p>Customers are being connected in accordance with the licence requirements.</p> <p>The distribution pressures are low at 35 kPa and allow additional capacity by raising the distribution pressures. The Coastal (Margaret River) region piping is tested in accordance with regulatory requirements to allow it to operate at 200 kPa but the regulators are 70 kPa rated so that would be the practical limit. Leinster has mainly uPVC mains installed and would thus be limited to 70kPa anyway.</p> <p>The evaporation rates from liquid to vapour could be a restraint and heaters would increase the utilization of capacity. The Licensee plans to upgrade storage capacity at both sites and this will not only increase then allowable time between deliveries but the vaporisation rates available and improved security of supply.</p> <p>The activities on the system are taking place not because of good process, rather in a reactive way to issues arising. Although the system is small and not complex, the assurance of outcomes would be improved by the establishment of a basic asset management plan that responds to the key risks that the systems face.</p>						
<b>Recommendation</b>						
That the Licensee puts in place a basic asset management plan that responds to the key risks the system faces.						
<b>Rating</b>						
Asset planning in the context of an asset management system is not performed - rating						

<sup>2</sup> No opinion able to be formed

0

<b>Asset Creation</b>						Effectiveness rating Performed informally - 1	
<b>Asset creation and acquisition</b> 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.							
<b>Observations</b>							
Process	<input checked="" type="checkbox"/>	Documentation	<input checked="" type="checkbox"/>	Availability	<input checked="" type="checkbox"/>	Use	NO
<p>The licensee has a very basic asset management system. Asset creation is on a case by case basis.</p> <p>For the Coastal region (Margaret River) system expansions being considered on a case by case basis for each sub-development. When considered the capacity requirements have been addressed and provision made to provide additional supply points and interconnect these supplies.</p>							
<b>Issues</b>							
<p>The Leinster distribution system is in place and distribution mains are not currently being extended, so there is no asset creation taking place to form an opinion about complying with the documented processes. There are possible options for extending the bulk supply capacity for Leinster but that is dependent on an agreement with the mining operator. For the coastal region, management approval is required for capital extensions with the General Manager Kleenheat Gas, and then the Managing Director Wesfarmers Energy having delegated approval to a limit and above that Wesfarmers Board approval is required.</p> <p>Customers are being connected in accordance with the licence requirements.</p>							
<b>Rating</b>							
The system is performed informally - 1							

<b>Asset Disposal</b>						Effectiveness rating Performed informally - 1	
<b>3. Asset disposal</b> 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.							
<b>Observations</b>							
Process	<input checked="" type="checkbox"/>	Documentation	<input checked="" type="checkbox"/>	Availability	<input checked="" type="checkbox"/>	Use	NO
<p>The licensee has a very basic asset management system. The coastal region system is relatively new there are no items that are obsolete or under-performing required disposal, to demonstrate the behaviour for disposal. For the Leinster system the meters have reached their tested life (18 years) and are being replaced by tested meters which are also larger. There is no documented asset disposal process.</p>							
<b>Issues</b>							
<p>The coastal region system is new, so there is no asset disposal taking place to form an opinion about the processes. For the Leinster system an asset maintenance process is taking place but no asset disposal to form an opinion.</p>							

<b>Rating</b>
The system is - performed informally 1

<b>Environmental analysis</b>	Effectiveness rating Performed informally - 1
<b>4. Environmental analysis</b> Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.	
<b>Observations</b>	
Process	<input checked="" type="checkbox"/> Documentation <input checked="" type="checkbox"/> Availability <input checked="" type="checkbox"/> Use
	NO
The licensee is carrying out an environmental analysis process only to the extent required by Dangerous Goods for the bulk storage sites.	
<b>Issues</b>	
The Leinster system is static with no activities requiring environmental analysis taking place to form an opinion about complying with the documented processes. No environmental processes were observed for the coastal region.	
<b>Rating</b>	
The system is performed informally - rating 1	

<b>Asset operations</b>	Effectiveness rating Performed informally - 1
<b>5. Asset operations</b> Operations functions relate to the day-to-day running of assets and directly affect service levels and costs.	
<b>Observations</b>	
Process	<input checked="" type="checkbox"/> Documentation <input checked="" type="checkbox"/> Availability <input checked="" type="checkbox"/> Use
<p>The licensee has a very basic asset operation system. The system currently operates unattended with no remote monitoring or alarms. Failures at the source cause total system failures and therefore needs monitoring. The system relies on reported faults and observations by tank refilling staff to keep the system within performance standards. Remote monitoring of tank level is being installed at Leinster and this is a positive step.</p> <p>System pressure and flows are not monitored to see if they are kept in acceptable ranges. Gas quality and odorant levels are monitored regularly at source and locally to confirm odorant is reaching the consumer. The gas did not meet the regulated specification on 12 out of 44 samples (27%) where the ethane content was higher than the required 2 Mole %. This was a technical breach as the butane content was also higher giving the same higher heating value as the other samples. Accordingly there are unlikely to be safety matters but non compliance with requirements is a concern.</p> <p>A leakage survey has been carried out and no leaks were detected but as the unaccounted for gas is relatively high this could either be undetected leaks or better monitoring of input levels. Further examination of the testing process is needed to confirm that heavier than air LPG is being properly detected.</p> <p>Emergency plans exist but do not have regular scheduled reviews.</p>	
<b>Issues</b>	
The process is currently operating effectively but is growing to a point where remote	

<p>alarming and regular monitoring of pressures and flows should be undertaken to guarantee service standards. Remote monitoring has started at Leinster and should be commissioned as soon as possible and the coastal region should have remote monitoring installed on the tanks.</p> <p>Monitoring of pressures and flows at strategic points of the networks at peak load periods would provide confidence that the systems have the capacity to provide the service quality required.</p> <p>While attention appears to be placed on some elements of gas quality such as sulphur levels, gas should always be within the regulated quality and that deviations were undetected raises concerns about quality control. It is understood that the Australian Standard for LPG does not prescribe a limit on ethane (C2 molecules) and while EnergySafety should look to adopting a national standard, compliance with regulations is not optional.</p> <p>The systems have emergency plan but these need to be exercised to ensure that the plans are adequate and up to date.</p>
<p><b>Recommendation</b></p>
<p>Remote monitoring should be commissioned at Leinster and installed on the tanks for the Coastal (Margaret River) region.</p> <p>Regular, planned and scheduled monitoring of pressures at strategic points in both systems should take place each peak load season.</p> <p>Quality control processes need to be upgraded to ensure compliance with gas quality regulations.</p> <p>Further research should take place to ensure an accurate leak detection process is used.</p> <p>Regular and scheduled exercises of the emergency plans takes place and consequent updates are actioned.</p>
<p><b>Rating</b></p>
<p>The system is Performed informally - rating 1</p>

<b>Asset Maintenance</b>							Effectiveness rating Performed informally - 1	
<b>6. Asset maintenance</b>								
Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.								
<b>Observations</b>								
Process	<input checked="" type="checkbox"/>	Documentation	<input checked="" type="checkbox"/>	Availability	<input checked="" type="checkbox"/>	Use	<input checked="" type="checkbox"/>	
<p>The licensee has documentation of its asset maintenance system, with a substantial maintenance procedures manual. Maintenance of the system is contracted to local gas fitters.</p> <p>The maintenance manual needs to be made more current.</p>								
<b>Issues</b>								
The maintenance manual needs to be more up to date.								
<b>Recommendation</b>								
The maintenance procedures manual has scheduled reviews and consequent upgrades.								
<b>Rating</b>								

The system is Performed informally - rating 1

<b>Asset Management Information System</b>							Effectiveness rating Planned and tracked- 2
<b>7. Asset Management Information System (MIS)</b>							
An asset management information system is a combination of processes, data and software that support the asset management functions.							
<b>Observations</b>							
Process	<input checked="" type="checkbox"/>	Documentation	<input checked="" type="checkbox"/>	Availability	<input checked="" type="checkbox"/>	Use	<input checked="" type="checkbox"/>
The licensee uses a spreadsheet for his asset register which is backed up during regular backups of the server. Graphical information is used to manage the customer data base.							
<b>Issues</b>							
The system has been developed to an adequate level of sophistication appropriate for a network of this scale and complexity.							
<b>Rating</b>							
The system is Planned and tracked - rating 2							

<b>Risk management</b>							Effectiveness rating Planned and tracked- 2
<b>8. Risk management</b>							
Risk management involves the identification of risks and their management within an acceptable level of risk.							
<b>Observations</b>							
Process	<input checked="" type="checkbox"/>	Documentation	<input checked="" type="checkbox"/>	Availability	<input checked="" type="checkbox"/>	Use	NO
There are procedures for employees and for contractors but there is no system risk management taking place other than that for Dangerous Goods for bulk storage sites.							
<b>Issues</b>							
There is very little risk management taking place to form an opinion of the appropriateness of risk management for an asset management system. It is anticipated that the proposed basic asset management plan (Item 1) would incorporate some basic system risk management.							
<b>Rating</b>							
The system is Planned and tracked- rating 2							

<b>Contingency planning</b>							Effectiveness rating Not performed - rating 0
<b>9. Contingency planning</b>							
Contingency plans document the steps to deal with the unexpected failure of an asset.							
<b>Observations</b>							
Process	<input checked="" type="checkbox"/>	Documentation	<input checked="" type="checkbox"/>	Availability	<input checked="" type="checkbox"/>	Use	<input checked="" type="checkbox"/>
There is no contingency planning taking place.							

<b>Issues</b>
The licensee has such a small system relative to the resources of the owner and as no system risk management processes are taking place, there is no risk identified that requires contingency planning hence no contingency plan. Contingencies such as additional bulk storage to improve security of supply are being added not as a result of a risk analysis but in response to increased demand.
<b>Rating</b>
The system is not performed - rating 0

<b>Financial planning</b>	Effectiveness rating Performed informally - rating 1
<b>10. Financial planning</b>	
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.	
<b>Observations</b>	
Process	<input checked="" type="checkbox"/> Documentation
	<input checked="" type="checkbox"/> Availability
	<input checked="" type="checkbox"/> Use
No systematic financial planning is taking place. Extensions are judged on an as needs basis.	
<b>Issues</b>	
The system is small and not complex and is performing financially so the need for a financial management plan is not high.	
<b>Rating</b>	
The system is Performed informally - rating 1	

<b>Capital expenditure planning</b>	Effectiveness rating Performed informally- rating 1
<b>11. Capital expenditure planning</b>	
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.	
<b>Observations</b>	
Process	<input checked="" type="checkbox"/> Documentation
	<input checked="" type="checkbox"/> Availability
	<input checked="" type="checkbox"/> Use
Extensions are assessed on an as needs basis and no systematic capital expenditure planning is taking place.	
<b>Issues</b>	
The licensee has such a small system relative to the resources of the owner hence the need for a capital expenditure plan is currently low.	
<b>Rating</b>	
The system is Performed informally - rating 1	

<b>Review of AMS</b>							Effectiveness rating Not performed - rating 0
<b>12. Review of AMS</b>							
The asset management system is regularly reviewed and updated.							
<b>Observations</b>							
Process	<input checked="" type="checkbox"/>	Documentation	<input checked="" type="checkbox"/>	Availability	<input checked="" type="checkbox"/>	Use	<input checked="" type="checkbox"/>
The AMS is simple straightforward but there are no explicit reviews planned.							
<b>Issues</b>							
The licensee has such a small system and the AMS is basic but should be periodically reviewed.							
<b>Recommendation</b>							
While the asset management system is small it should be periodically reviewed. The licensee should put in place a scheduled review of the AMS. In particular the appropriateness of the AMS should be assessed, consistent with the action under asset planning.							
<b>Rating</b>							
The system is Not performed - rating 0							

### **Audit Evidence**

The following evidence was gathered for the audits and asset management system review.

1. Legislation and standards
  - *Energy Coordination Act 1994*
  - *Gas Standards Act 1972*
  - *Gas Standards (Gas Supply and System Safety) Regulations 2000*
  - *AG 755 1998 Natural Gas Customer Service Code*
  - Auditing and Assurance handbook
  - Gas Distribution Licences 4 and 5
  - Gas Trading Licences 4 and 5
  
2. Licensee's documents
  - Annual report for balance sheets and financial indicators
  - Financial report by Ernst and Young
  - Gas quality samples
  - Prospective customers package
  - Maintenance procedures
  - Emergency response plans
  - Customer safety awareness program

- Hazard identification and risk assessment procedures
- Customer service charter
- Standard form contract
- Complaints handling system
- Certificate of insurance currency
- Samples of marketing information - sighted
- Notices of completion
- Annual information returns
- Plans of coastal region reticulation
- Bulk refill records
- Audit of inspection plan
- Type B installation guidelines
- Asset register for Coastal (Margaret River) region and Goldfields-Esperance (Leinster) region

### ***Audit Time***

The audits and asset management review were undertaken by Kevan McGill and took approximately 118 hours aggregate for the 3 reviews.