



**WorleyParsons**

resources & energy

**WA GAS NETWORKS PTY LTD**

# **GDL8 ASSET MANAGEMENT SYSTEM REVIEW**

**Review Report for WA Gas Networks Pty Ltd**

401012-01595 – 401012-01595 - REP 002

30 May 2011

**Hydrocarbons**

Level 7, QV1 Building,  
250 St. Georges Terrace Perth WA 6000  
Australia

Telephone: +61 8 9278 8111

Facsimile: +61 8 9278 8110

[www.worleyparsons.com](http://www.worleyparsons.com)

ABN 61 001 279 812

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GDL8 ASSET MANAGEMENT SYSTEM REVIEW  
REVIEW REPORT FOR WA GAS NETWORKS PTY LTD**

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PROJECT 401012-01595 - GDL8 ASSET MANAGEMENT SYSTEM REVIEW							
REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
0	Issued for Use	T Prezwanski	R Brooke-Smith	R Brooke-Smith	27-Apr-2011	N/A	
1	Re- Issued for Use	T Prezwanski	R Brooke-Smith	R Brooke-Smith	28-Apr-2011		
2	Re-issued for Use	T Prezwanski	R Brooke-Smith	R Brooke-Smith	30-May-2011		B Johnson



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## **1 EXECUTIVE SUMMARY**

WA Gas Networks Pty Ltd (hereinafter "WA Gas Networks") is the asset owner and operator of Gas Distribution System (GDS) in Western Australia. The networks incorporate supply to Goldfields/Esperance, Great Southern and Perth Greater Metropolitan areas, including Mandurah. These combined networks constitute approximately 12,918km of gas mains including the newly commissioned 7km Mandurah Gas Lateral (MGL), 9.65km of Mandurah High Pressure pipeline and 5.8 km Karrinyup High Pressure pipeline, associated infrastructure and service to over 637,100 customers. WA Gas Networks is responsible for the operation, construction, maintenance and asset management of the GDS.

WA Gas Networks is required under Section 11Y of the Energy Coordination Act 1994, to provide the Economic Regulation Authority (hereinafter "the Authority"), an independent report on the effectiveness of the Asset Management System.

This review covers WA Gas Networks' Gas Distribution Licence GDL 8 for the period 1 February 2009 to 31 January 2011. The licence GDL 8 covers the Coastal, Great Southern and Goldfield areas of WA. GDL 8 commenced 1 July 2000 and expires 30 June 2021.

Specifically the grant of licence GDL 8 is:

- a) to construct a distribution system and to transport gas through the distribution system; or
- b) to transport gas through an existing distribution system and if required for that purpose to make alterations to the distribution system, and
- c) to operate and maintain the distribution system.

The WA Gas Networks asset management system was reviewed using the approved WorleyParsons Review Plan (WorleyParsons Document No: 401012-01595 – REP 001, Rev 0, dated 29 March 2011), based on the Authority's Audit Guidelines: Electricity, Gas and Water Licences.

The details of the issues are discussed in Section 5 of the report, but in summary, it was found that WA Gas Networks require some improvement in their asset management processes, which, on the basis of this review, has evidenced further improvement since the 2009 AMS Review.

In summary, the below 21 issues were identified and recommendations made for the current review.



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<b>Rec. No</b>	<b>Recommendation</b>	<b>Topic</b>
1	It is recommended that the initiatives and studies into underlying factors contributing to UAFG, which are being discussed with Energy Safety and UAFG trends continue to be monitored in conjunction with Energy Safety Division (ESD).	Asset Planning
2	As the pipeline infrastructure age is yet to reach the economic life expectancy of the corrosion protection coatings, the life expectancy of 120 years applied to the currently used coatings is unproved. It is recommended that a review is conducted to confirm the validity of the asset life assumption.	Asset Planning
3	It is recommended that the engineering documents used for the design of the system, which have not been updated, are given priority and revised as soon as practicable.	Asset Creation and Acquisition
4	It is recommended that Engineering Services staff are afforded the opportunity to attend professional development training or information sessions to remain abreast of current trends or emerging practices within the area of gas network infrastructure and gas distribution.	Asset Creation and Acquisition
5	It is recommended that the WA Gas Networks Environmental Advisor periodically attends the regional depots to provide presentations of the environmental information, typically provided in the Safety Focus meetings and Envirograms within the metropolitan area.	Asset Operations
6	It is recommended that WA Gas Networks carry out a risk assessment to consider if an increased frequency of patrols in areas where the signs are damaged often is required.	Asset Maintenance
7	It is recommended that WAGN reviews its current approach to inspection of crossings to ensure alignment with AS2885.3, creation of firebreaks where necessary, and reviews current protection of facilities against falling trees and vehicles.	Asset Maintenance



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Rec. No	Recommendation	Topic
8	It is recommended that intelligent pigging of the Class 600 pipelines be considered by WA Gas Networks	Asset Maintenance
9	It is recommended that a procedure is developed for the verification of formulas within spreadsheets used by Engineering Services.	Asset Management Information Systems
10	It is recommended that all engineering spreadsheets are retained on the server in accordance with the company policies.	Asset Management Information Systems
11	It is recommended that WA Gas Networks develop an action management procedure that clearly outlines responsibilities of various parties.	Risk management
12	It is recommended that all actions raised on WA Gas Networks during external risk assessments are stored in the Action register. WA Gas Networks should request the final copy of the 3 <sup>rd</sup> party (eg. developer's) Formal Safety Assessment (FSA) reports to ensure that they are aware of the 3 <sup>rd</sup> party responsibilities (in case there is a dispute later on).	Risk management
13	It is recommended that all risk management documentation contains the current approved Risk Matrix.	Risk Management
14	It is recommended that WA Gas Networks finalises the <i>Engineering Services Design Guideline – Pipelines</i> and ensures that it references <i>Guidance of Gas Distribution Formal Safety Assessments</i> , particularly Appendix C for further information on requirements for FSA for different studies/assets.	Risk Management



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Rec. No	Recommendation	Topic
15	It is recommended that WA Gas Networks finalises <i>Guidance of Gas Distribution Formal Safety Assessments</i> . Where information has not been finalised HOLDS can be used to alert the reader to contact Technical Compliance for latest advice rather than leaving highlighted, unfinished sections.	Risk Management
16	It is recommended that WA Gas Networks finalises the Formal Safety Assessment and HAZOP reports shortly after workshops and do not leave unfinished ambiguous sections of the document.	Risk Management
17	It is recommended that a full HAZOP/HAZID is replaced with a workshop template that captures all the pertinent information for each workshop: study team, scope, objectives and exclusions. Reference can be made to guidance documents that detail how to conduct each workshop and only deviations from the standard methodologies are noted on the template. The worksheet with all the relevant information can be published.	Risk Management
18	It is recommended that the close out actions from exercises and real emergencies that are included in the action tracking register be examined regularly by WA Gas Networks management to ensure close out dates are not overdue.	Contingency Planning
19	It is recommended that WA Gas Networks provides written evidence of close out of actions. In case it has been decided that the recommended action should not be implemented documented justification should be prepared, including risk assessment.	Contingency Planning
20	It is recommended that issues mentioned in recommendations 18 and 19 have KPIs allocated.	Contingency Planning
21	It is recommended that the 5-year Emergency Exercise Plan be updated to include information regarding details of previous exercises.	Contingency Planning





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WA Gas Networks has made significant efforts to implement the required action items from the 2007 and 2009 Reviews (covering the period 1 February 2007 to 31 January 2009). The status of the previous reviews recommendations has been included in Appendix 4.

In summary, the control environment for WA Gas Networks' distribution asset management system was reviewed for all 12 areas of review as required by the Guidelines and the results are shown in Section 5.1.

### **1.1 Compliance Statement**

This review report was prepared by WorleyParsons for WA Gas Networks using "Economic Regulation Authority Western Australia – Audit Guidelines: Electricity, Gas and Water Licences – August 2010".

This review report is an accurate presentation of WorleyParsons findings and opinions.

A handwritten signature in cursive script that reads "R Brooke-Smith".

Richard Brooke-Smith

Manager, Pipelines & Terminals WA & NT

WorleyParsons

Level 7, QV1 Building

250 St. Georges Terrace

Perth WA 6000

Date: 30 May 2011



## **2 INTRODUCTION**

### **2.1 Background to WA Gas Networks**

WA Gas Networks is the owner of the majority of the reticulated gas infrastructure in Western Australia. The networks incorporate supply to Geraldton, Goldfields/Esperance, Great Southern and Perth Greater Metropolitan areas, including Mandurah. These combined networks constitute approximately 12,918 km of gas mains and associated infrastructure and service over 637,100 customers.

### **2.2 Review Context**

Under section 11ZA(1) of the *Energy Coordination Act 1994* (the Act), it is a requirement that every licensee provide the Authority not less than once in every period of 2 years with an asset management system review conducted by an independent expert acceptable to the Authority.

The primary objective of the asset management system review is to assess the measures taken by the licensee for the proper management of assets used in the provision and operation of services and, where appropriate, the construction and alteration of relevant assets.

WA Gas Networks has engaged WorleyParsons to conduct this Asset Management System Review of its West Australian Gas Distribution Licence GDL8. The Gas Distribution Licence 8 covers coastal, great southern and the Goldfields areas of WA. The review covered the period 1 February 2009 to 31 January 2011 inclusive. The draft review report was submitted to the ERA by 29 April 2011 and revised following receipt of comments. The review was conducted in accordance with the prevailing ERA document "Audit Guidelines: Electricity Gas and Water Licences (hereinafter "Guidelines")<sup>1</sup> which identifies the 12 key processes of an asset management system (Section 6.2), each of which was addressed individually by the review. Review worksheets were specifically prepared for this review. Completed audit sheets are included in Appendix 1.

### **2.3 Review Requirements**

The review focused on the effectiveness of the licensee's asset management systems and processes used to ensure compliance with the standards, outputs and outcomes required by the licence. The review utilised a risk rating scheme based on types of risk, risk consequences and the likelihood of the risk occurring to quantify the inherent risk. The adequacy of the internal controls of the licensee to mitigate these inherent risks were then used to determine for each asset management system key process, a review priority on a 5-point scale (plus 2 exception categories). The review priority was then used to determine the nature and extent of testing required for each key process.

The auditor undertook sufficient testing to provide the licensee and the *Authority* with reasonable assurance that the performance against each asset management system key process is accurate and

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<sup>1</sup> Economic Regulation Authority: Audit guidelines: Electricity, Gas and Water Licences Aug 2010



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represents a true picture of the effectiveness of the licensee's asset management. The review assessed areas where improvement is required and recommended corrective action as necessary. In accordance with the standard ASAE 3000 the auditor obtained sufficient appropriate evidence on which to base its conclusions.

## **2.4 Review Objectives**

The objectives of the review were to:

- Assess effectiveness and implementation of business strategies and plans for proper operation, maintenance, construction and alteration of the assets
- Provide an overall ranking of the effectiveness of the asset management system processes
- Detail action items or recommendations for improvement of the asset management system.



### **3 METHODOLOGY**

The review was conducted in accordance with the Guidelines through examination of documents, interviews with key persons and observations. The review examined the asset management processes used by WA Gas Networks in delivering the services to its customers. These services include lifecycle processes for:

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

As well as the processes, the asset management supporting systems were tested as to their use and effectiveness. Data used by WA Gas Networks was also examined with respect to its effectiveness for asset management and the delivery of outcomes. The recommendations identified in the previous review by consultant OSD in August 2009 and June 2007 were examined and the outcomes included in the report. A list of previous recommendations from the last review is shown in Appendix 4.

The review was undertaken through interviews of the WA Gas Networks asset management personnel and investigation of the processes to assess whether they are being performed as documented. Latest revisions of the documents were reviewed and considered as evidence of an effective asset management system for the delivery of services covered by WA Gas Networks Pty Ltd Gas Distribution License GDL8, Version 6, 18 November 2010.

#### **3.1 Review Personnel**

The review was conducted by the following WorleyParsons personnel. Their relevant industry and audit experience was included in the Audit Plan.



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Name	Role	Hrs Utilised
Tom Prezwanski	Lead Auditor	197
Geoff Lane	Senior Auditor	2
Marina Karyagina	Senior Auditor	29

**3.2 Review/Field Review**

WorleyParsons carried out the review in WA Gas Networks’ offices during the period 14.March to 14 April 2011. It involved visiting the WA Gas Networks offices in Perth and Jandakot, and conducting fieldwork to inspect assets in Perth and Albany.

WA Gas Networks provided copies of the requested documents for review by WorleyParsons auditors in WA Gas Networks’ Perth office. WA Gas Networks made all relevant network infrastructure and corporate staff available for interview as required.

The asset management system was reviewed using the protocol outlined in the Audit Plan and worksheets, which are based on the criteria outlined in Table 16 – Appendix 4 (A guide to the AMS effectiveness framework, Audit Guidelines: Electricity, Gas and Water Licences – Economic Regulation Authority WA).

The review incorporated a review of documentation and systems, a review of legislative documentation and interviews with relevant personnel from WA Gas Networks.

The review also included a review of the previous audit action plans to verify that actions had been completed, or were not yet complete. All outstanding actions have been incorporated into the current audit review action plan where required.

**3.3 Review Priority Rating**

The following priority rating was used to identify the review priorities for the auditor in assessing the effectiveness of the asset management system. The table has been prepared in compliance with Section 9.5 of the Guidelines.

Item	Asset Management System Key Process	Consequence	Likelihood	Inherent Risk	Adequacy of Existing Controls	Review priority
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



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4	Environmental analysis	Moderate	Possible	Medium	Moderate	4
5	Asset operations	Major	Unlikely	High	Strong	2
6	Asset maintenance	Major	Possible	High	Moderate	2
7	Asset Management Information System	Major	Unlikely	High	Strong	2
8	Risk management	Moderate	Possible	Medium	Moderate	4
9	Contingency planning	Moderate	Possible	Medium	Moderate	4
10	Financial planning	Moderate	Probable	Medium	Weak	3
11	Capital expenditure planning	Moderate	Probable	Medium	Weak	3
12	Review of AMS	Major	Probable	Medium	Weak	3

### 3.4 Interviewees and Documents Reviewed

#### 3.4.1 Interviewees

The following WA Gas Networks personnel were interviewed during performance of the review:

#### Key WA Gas Networks Personnel – Operations Areas

##### Jandakot

Asset Services Manager	-	Maswadi Marsuki
Asset Performance Engineer	-	Yama Azizi
Network Operations Manager South	-	Russell Godsall
Network Operations Manager North	-	Michael McCarthy
Manager Engineering Services	-	Dean Solmundson
Network Construction Manager	-	Matthew Marshall



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Environmental Advisor	-	Caitlin Bridgland
Technical Compliance Manager	-	Stuart Jobling
Chief Operating Officer	-	Pat Donovan
Network Control Manager	-	Stephen Hughes
Facilities Maintenance & CP Supervisor	-	Darryl Powell
Technical Compliance Analyst	-	Cameron Mablesen
Monita Leong	-	Document Controller
Veronika Brockoff	-	Training Coordinator

**Albany**

Supervisor Albany	-	Stephen Casey
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**Key WA Gas Networks Personnel – Corporate**

**Perth**

General Manager Commercial & Business Development	-	Justin Scotchbrook
Chief Financial Officer	-	Gunter Hoppe
Senior Management Accountant	-	Luke Burns
Risk, Compliance and Internal Audit Manager	-	Ben Johnson

**3.4.2 Documents Reviewed**

- WA Gas Networks ASSET MANAGEMENT SYSTEM STRATEGY
- WA Gas Networks ASSET REPLACEMENT STRATEGY
- WA Gas Networks HIGH PRESSURE DEVELOPMENT PLAN 2009-2014
- WA Gas Networks NETWORK PLANNING STRATEGY
- WA Gas Networks RCM AND RISK ANALYSIS FOR WA Gas Networks ASSETS 2009/10
- WA Gas Networks OPERATING PLAN 09/01
- WA Gas Networks ASSET MANAGEMENT PLAN 2010-2015
- WA Gas Networks DISTRIBUTION NETWORK ASSET MAINTENANCE PLAN 2010-2011
- MOC DOCUMENTATION
- SAP REPORT FOR MAINTENANCE WORK
- MAOP REPORT



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- FIRST QUARTER 2010/2011 KPI REPORT;
- POLICY DOCUMENTATION – DECOMMISSIONING OF ASSETS
- WA Gas Networks INSPECTION POLICY STATEMENT AND PLAN
- REFURBISHMENT OF ALBANY METER SET
- ENVIRONMENTAL PERFORMANCE INDEX DECEMBER 2010, JANUARY 2011, FEBRUARY 2012
- SPILL MANAGEMENT (CONTAINMENT AND CLEAN UP) POLICY INSTRUCTIONS
- SITE VISIT REPORT - NATIVE VEGETATION CLEARING
- EXAMPLE OF CORRESPONDENCE WITH REGULATOR (Department of Environment and Conservation)
- MANAGEMENT OF CHANGE PROCEDURES DOCUMENT
- COMPLETED FORM FOR CHANGE
- NOTIFIABLE INCIDENT REPORT
- COMMISSIONING – TURNAROUND SHEETS (GIS INPUT) (HIGH PRESSURE AND LOW PRESSURE)
- COMPANY WIDE KPI's
- BUSINESS CASES
  - (a) UPGRADE OF CP PROTECTION – CORROSION
  - (b) DEMAND REINFORCEMENT – CANNINGVALE
  - (c) DEMAND REINFORCEMENT - WEAPONNESS
- CORRESPONDENCE WITH ENERGY SAFETY
- WA Gas Networks EMERGENCY RESPONSE MANAGEMENT PLAN
- WA Gas Networks SAFETY SNAPSHOT
- CATHODIC PROTECTION ANNUAL REPORT
- SAP EXAMPLE – CONTROL ROOM MATTER
- DELEGATED FINANCIAL AUTHORITY POLICY
- STRATEGIC BUSINESS PLAN
- LIST OF AMS AUDIT RECOMMENDATIONS & ACTIONS: 2007 & 2009
- PREVIOUS AMS REVIEW AUDIT REPORTS: 2007 & 2009
- WA Gas Networks OPERATIONAL RISK MANAGEMENT & COMPLIANCE COMMITTEE





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CHARTER

- ENGINEERING SERVICES DESIGN GUIDE
- WA Gas Networks GD ENVIRONMENTAL MANAGEMENT GUIDELINE
- BROADENING OF GAS SPECS: DOCUMENTATION
- REPLACEMENT OF SIGNAGE INFO
- CORRO ON REVISION TO AMP
- WA Gas Networks DOCUMENT CONTROL PROCEDURE
- EMERGENCY RESPONSE EXERCISES REPORTS
- OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN & ENVIROGRAMS
- EAST PERTH LATERAL RECORDS AND DRAWINGS
- PIPELINE INTEGRITY MANAGEMENT DECLARATION
- EAST PERTH LATERAL ARCHIVED BOX LIST
- FIVE YEAR EMERGENCY EXERCISE PLAN
- INTEGRATED MANAGEMENT SYSTEM – CONTROLLED DOCS
- INDUCED VOLTAGE MITIGATION – GARRETT ROAD
- WA Gas Networks BUDGET PROCEDURES AND GUIDELINES
- BOARD REPORT EXTRACTS - APPROVAL OF CAPEX BUSINESS CASES AND BOARD MINUTES
- EAST PERTH LATERAL – DRAWINGS OF EPL NEAR RESIDENTIAL AND BRICKWORKS
- Induced Voltage Mitigation – Guildford Road
- WNG IT Services Access Control Policy
- Certificate of Conformity: AS/NZS ISO 9001:2008 – Quality management systems – Requirements
- Certificate of Conformity: AS/NZS ISO 14001:2004 – Environmental management systems – Requirements with guidance for use.
- Certificate of Conformity: AS/NZS 4801:2001 – Occupational health and safety management systems – Specification with guidance for use.
- WAGN Technical Recovery Plans: SAP and GNIS
- UAFG Initiative Documentation



## **4 PREVIOUS REVIEWS**

The previous reviews undertaken in 2007 and 2009 identified areas for improvement. Post-review Implementation Plans detailing Management actions for implementation of the identified recommendations for improvement were prepared by WA Gas Networks Management.

Implementation of the recommendations from the two previous reviews was assessed as part of the 2011 review. All recommendations from the previous reviews were addressed and closed, except for two, one of which is currently being negotiated with the regulator. The unresolved issue of the unaccounted for gas requires a change in the way it is assessed in order to align it with the approach taken in other states.

The overall response indicates the licensee's willingness to improve, learn and adopt the best practices available under the regulatory guidelines.

All recommendations from the previous reviews were addressed and closed, except for two, one of which is currently being negotiated with the regulator.

The tabulated response to previous audit recommendations is contained in Appendix 4.



## **5 REVIEW FINDINGS**

### **5.1 Asset Management Review Effectiveness Summary**

An outline of the key findings against the ERA' s twelve review areas are presented below, with further details summarised in Section 5.2. The review effectiveness summary is prepared utilising the ratings described in Table 5 and Table 6 of the Guidelines.

The auditor's ranking is shown in the table below. Due to change in the ranking methodology a comparison with the previous reviews is not able to be made.

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



## 5.2 Discussion of Review Results

This section provides discussion additional to issues mentioned in the worksheets in Appendix 1.

### 5.2.1 Asset Planning

Effectiveness Rating: A-1

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).

Review Trails and source of evidence:

- WAGN Asset Management Plan 2010-2015
- Project business cases
- Review of performance indicators for 2010
- WA Gas Networks Network Planning Strategy 2010
- WA Gas Networks High Pressure Development Plan 2009-2014
- WA Gas Networks Operating Plan 2009

Summary: WA Gas Networks asset planning is carried out in accordance with procedures developed by the company, which are updated if and when required. The auditor considers the process sufficient to plan development of the asset and the Asset Management Plan adequate for its purpose.

The auditor assesses WA Gas Networks' asset planning strategies as adequate to meet the customer needs in an effective and efficient manner within the statutory framework.

Discussion: WA Gas Networks is using procedures developed in the last two years, some of which are updated annually. These procedures form a logical system for planning and development of the gas network.

Network planning commences from the review of the performance of the system in the previous 12 months. Performance is reviewed utilising steady state network modelling software Stoner SynerGEE and data logger information from key points on the network. This performance review indicates the requirement for reinforcement of the network due to the increased usage of gas. In addition, modelling of the new developments is carried out to assess if changes will be required to the system to allow delivery of gas to predicted new users of gas. Dynamic (transient) modelling has not been implemented as yet.

Modelling assumes an annual growth rate of 0.5% per annum per customer on the basis of new/replacement appliances per customer.

In addition, plans for replacement of the cast iron and steel pipelines are added to the asset plan to determine the best replacement strategy.

A High Pressure Development Plan is prepared and updated which details capacities of major pressure reduction stations, anticipated growth forecasts, and timing of required upgrades.



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For large demand driven reinforcement projects, and large asset replacement projects, project specific business cases are prepared. Three project business cases were reviewed during this review. These business cases followed a predetermined format and had a strict financial evaluation, which reviewed:

- Net present value;
- Present Value rate;
- Internal rate of return;
- Return on net assets; and
- Payback period.

The business cases were considered suitable for their intended purpose of justifying large projects.

It is noted that steel pipelines are assumed to have an economic life of 120 years. However, the life of such assets may be affected by the type of coating which has been applied. As the pipeline infrastructure age is yet to reach the economic life expectancy of the corrosion protection coatings, the life expectancy of 120 years applied to the currently used coatings is unproved. It is recommended that a review is conducted to confirm the validity of the asset life assumption.

Similarly, the assumed life of the PVC and PE pipes is unproven and a review is warranted to confirm the validity of the asset life assumptions.

It is noted that a number of initiatives and studies into underlying factors contributing to UAFG are being discussed with Energy Safety, including the establishment of a new UAFG measurement being energy loss per kilometre and per customer which is more appropriate for benchmarking. The following targets are proposed for the WA Gas Networks system:

		UAFG Targets		
		TJ/10 km	TJ/1000 Customers	% Throughput
Region	Coastal	0.66	1.32	2.9
	Kalgoorlie	0.34	0.94	2.9
	Albany	1.49	3.58	15.9

Recommendation:

- 1 It is recommended that the initiatives and studies into underlying factors contributing to UAFG, which are being discussed with Energy Safety and UAFG trends continue to be monitored in conjunction with Energy Safety Division (ESD).**
- 2 As the pipeline infrastructure age is yet to reach the economic life expectancy of the corrosion protection coatings, the life expectancy of 120 years applied to the currently used coatings is unproved. It is recommended that a review is conducted to confirm the validity of the asset life assumption.**

**5.2.2 Asset Creation and Acquisition**

Effectiveness Rating: B-2



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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.

Review trails and sources of evidence:

- Engineering Services Design Guide 2010
- WAGN Environmental Management Guide 2010
- WAGN Asset Replacement Strategy 2010

Summary:

WA Gas Networks is in a process of revising its procedures used for asset creation. Many of the existing procedures are old and based on historical information. Documents should be updated to include changes introduced by the current standards used for the design and construction. Small projects are designed by WA Gas Networks engineering group and larger projects, such as Mandurah lateral are subcontracted. The majority of the projects are installed by contractors.

Discussion:

During the review it was noted that the WA Gas Networks design group is using materials specifications, which have not been updated for some time. These specifications should be revised to align with the current codes and industry practices.

The design and construction process for a high pressure pipeline was reviewed. The design is based on typical specifications with only a minimum of the project specific calculations carried out. Material and equipment specifications rely on vendors supplying ordered items in accordance with the current revisions of the codes. Engineering Services Design Guide 2010 (which the auditor notes a review of this document is on track for completion by June 2011 and for inclusion in the Safety Case implementation plan) complies with AS2885.1-2007 and AS4645-2008.

The engineering staff are familiar with the current codes for the design and construction of the pipelines and stations. High pressure pipelines designed to AS2885-2007 use a design factor of 0.2 and the design attempts to limit energy release to not exceed 1 GJ/s in high density and sensitive areas.

A review carried out in 2009 noted that WA Gas Networks internal resources focused on system improvements involving review and upgrading of procedures, "which may have fallen out of date". This process has not been completed as yet and needs to be continued.

All pipelines and facilities are constructed by contractors with inspection and supervision provided by WA Gas Networks staff from the Construction Group.

There is no record of the engineering staff attending professional development training.

Recommendation:

- 3 It is recommended that the engineering documents used for the design of the system, which have not been updated, are given priority and revised as soon as practicable.**



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- 4 It is recommended that engineering services staff are afforded the opportunity to attend professional development training or information sessions to remain abreast of current trends or emerging practices within the area of gas network infrastructure and gas distribution.**

### **5.2.3 Asset Disposal**

Effectiveness Rating: B-2

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

Review trails and sources of evidence:

- WAGN Graphic Information System (GNIS)
- Policy Documentation – Decommissioning of Assets

Summary:

WA Gas Networks has in place procedures for decommissioning of pipelines and meter sets. These procedures enable pipelines to be made safe by purging of gas and capping the ends of the pipeline. A second procedure deals with removal of meters and gas service from buildings, which are to be demolished.

Discussion:

The auditor considers the procedures and work instructions for decommissioning of the pipelines and meter sets to be safe and resulting in the decommissioning facilities being free of gas and safe. The ongoing checks shall only be carried out if the pipeline is intended to be returned into service in the future.

WA Gas Networks advised that asset disposal by sale of the assets to another organization, ie. for the use as a conduit, especially in built up areas, was an unusual occurrence having last taken place in excess of ten years ago. No formal procedure exists on how to undertake assets sales. Being an unusual event, it is not considered justified to develop a formal procedure, as it can be dealt with on a case by case basis.

Decommissioned assets are marked in the Asset Register, SAP and GNIS as non working.

Recommendation:

Nil.

### **5.2.4 Business Environment Analysis**

Effectiveness Rating: A-1

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



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Review trails and sources of evidence:

Summary:

The environment of a business means the external forces influencing business decisions. They can be forces of economic, social, political and technological factors. These factors are to a large extent, outside the control of the business, and as such WA Gas Networks can do little to change them.

The Operational Risk Management and Compliance Committee reviews the implementation of legislative and regulatory changes and oversees audits required under the distribution license and the retail market rules and reports on breaches. There are functions within the organization that are responsible for keeping abreast of changes in external influences, economic regulation, technical compliance, legislative changes and assessing the impact of these changes on business operations, practices and procedures. The auditor also notes WA Gas Networks is in the process of developing a Master Obligations Register which is a central repository of all its legislative and regulatory obligations. This is due to be completed by December 2011.

Discussion:

Specific forces influencing WA Gas Networks immediately in their day-to-day operations are:

- **Investors**, WA Gas Networks has no influence over their investors. It operates as a ring fenced company with its owner having an interest in WA Gas Networks' largest customer.
- **Customers**: The main customer of WA Gas Networks is Alinta Sales Pty. Ltd.. This company is experiencing financial difficulties and its collapse will have an immediate negative impact on the WA Gas Networks' cash flow.
- **Competitors**: WA Gas Networks does not have competitors in its areas of operation.
- **Suppliers**: There are many suppliers of services, materials and equipment. If WA Gas Networks can pay its suppliers there are always many companies wishing to do business with WA Gas Networks.

General forces (social, political, legal and technological conditions) have an impact on all enterprises and thus may affect an individual firm only indirectly. WA Gas Networks is exposed to these forces as is any other company operating in Western Australia. The auditor has not discovered any specific threats due to general forces.

The business environment is dynamic in that it keeps changing whether in terms of technological improvement, shift in consumer preferences or entry of new competition in the market.

WA Gas Networks is not exposed to the risk of technological changes. These changes take a long time to enter the gas distribution market and provisions can be made in future Access Arrangements and/or license, if required.

A shift in consumer preferences is currently observed through a decline in the volume of gas transported and peak loads due to the trend to replace storage water gas heaters with instantaneous heaters, which create higher than expected demand at peak periods. Gas tariffs are likely to have a significant impact on the gas distribution business environment.





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Entry of a new competitor is unlikely until there is one gas specification on the market. However, there is an option being discussed of industrial gas being supplied to Perth when the DBNGP is fully looped. If different quality gas is delivered to Perth the second distribution system will be required. This may create competition or force WA Gas Networks to split its existing system to distribute different gases.

The gas distribution business is stable in the near future, but may become uncertain as it is very difficult to predict future events, especially with the impact of the expected carbon tax, or potential changes to the ownership of WA Gas Networks' customers. Liberalisation of the gas market is unlikely to have a significant impact on the gas distribution system.

In a regulated environment, WA Gas Networks can expect relatively stable policies and practices.

Recommendations:

Nil

### **5.2.5 Asset Operations**

Efficiency Rating: A-1

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

Review trails and sources of evidence:

- WAGN Operating Plan,
- WAGN Inspection Policy Statement and Plan,
- WAGN Emergency Response Management Plan,
- SAP System
- GNIS System
- Environmental Performance Index December 2010, January 2011, February 2011
- WA Gas Networks GD Environmental Management Guideline 2009
- Operational Environmental Management Plan 2010
- Containment of spills procedure
- Reinstatement procedure
- Weed management plan.
- Envirograms
- Operational Risk Management and Compliance Committee Charter



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Summary:

System operations are well documented and performed. All of the KPIs directly depending on the operations group meet the requirements. Documentation guiding activities of the operations group have been mostly updated.

Since 2009 environmental functions have been strengthened and documents guiding WA Gas Networks' environmental activities have been updated and new documents issued. Staff receives training about protection of the environment and Envirograms are issued frequently advising employees about new issues or developments related to the network.

A KPI system has been established to monitor environmental performance. As part of the KPIs internal environmental audits are carried out.

For more complex issues, or larger projects an external consultant is usually employed.

Contacts with the relevant authorities are maintained.

WA Gas Networks has environmental accreditation to ISO14001. As such, WA Gas Networks has in place high level environmental management policy documents.

Discussion:

Jandakot is the central works depot for WA Gas Networks. It contains the call centre, control room, stores and office location for senior field staff.

The SAP system is used to generate jobs and forward these jobs to the corresponding required works crews. The job remains open in SAP until job completion forms are signed off and forwarded back for closing the loop in SAP. The Jandakot depot is also the location of the WA Gas Networks internal training school. A copy of the current staff training register was viewed and observed that staff training records were being maintained to a high standard.

The Network Operations team is responsible for all aspects of planned and breakdown maintenance as required on the WA Gas Networks asset in the Perth Metro area as well as the four country regions; Kalgoorlie, Geraldton, Bunbury and Albany. This operation is divided into two groups –North and South. Furthermore, team responsibilities also include the implementation and compliance of the WA Gas Networks Utilisation Inspection Plan as well as Planning and Scheduling activities across the WA Gas Networks asset. Both teams ensure these activities are delivered safely, on time, within budget and to the required quality standards.

The key aims are:

- The delivery of 24 Hour Faults and Emergency response to breakdown customer faults.
- Maximising operational efficiency through planning and scheduling activities
- Ensuring emergency response procedures are implemented and all team members involved are trained and competent in the execution of these procedures



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- Promote and implement all health and safety strategies, guidelines and legislation to ensure compliance and develop a culture of continuous improvement within the team
- Ensure compliance with the WA Gas Networks Safety Case having particular regard to the Accountabilities and Responsibilities outlined in the Safety Case.

The key external stakeholders for the team included Energy Safety, FESA, Local Authorities, Contractors and the General Public.

Recommendation:

- 5 It is recommended that the WA Gas Networks Environmental Advisor periodically attends the regional depots to provide presentations of the environmental information, typically provided in the Safety Focus meetings and Envirograms within the metropolitan area.**

### **5.2.6 Asset Maintenance**

Effectiveness Rating: B-2

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

Review trails and source of evidence:

- WAGN RCM and Risk Analysis for WAGN Assets,
- WAGN Distribution Network Asset Maintenance Plan 2010-2011,

Summary:

WA Gas Networks is using Risk Assessment and Reliability Centred Maintenance to define the maintenance requirements for preparation of the maintenance plan. The SAP system is used to record and schedule activities. The Maintenance plan is updated annually.

Discussion:

Some of the key maintenance activities include:

- Managing the delivery of the planned maintenance program and the reactive faults and maintenance activities on WA Gas Networks assets.
- Ensuring that the maintenance work program and services are delivered safely, on time, within budget and to the required quality standards.
- Ensuring utilisation efficiencies are maximised for internal and external resources, through efficient process development and implementation, efficient resource and activity scheduling and appropriately robust contingency planning.
- Developing the WA Gas Networks Gas Utilisation Inspection Plan in consultation with Energy Safety and then implement, whilst ensuring ongoing compliance.



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- Delivery of planning and scheduling functions for the WA Gas Networks operation via the Planning Team.
- Delivering operational reporting for the Network Infrastructure Team including trending, compliance verification and KPI monitoring
- Project Management and facilitation of business improvement, end to end process re-engineering initiatives, so as to deliver enhanced operational efficiencies.

Activities are generally carried out efficiently and with good quality of work.

Maintenance of the warning signs is a difficult task. It has been confirmed by the auditor that the patrols report defaced signs and the repair is then scheduled in SAP. Complete elimination of vandalism is considered unachievable. Assessment of the condition of pipelines and facilities is carried out with defined intervals. Based on the reports an assessment of the condition of the asset is made. However, it is recommended that for the high pressure, ASME Class 600 pipelines and stations, an integrity report is prepared every five years. This report should take into account all of the condition assessments and analyse the overall integrity of each asset.

Some of the high pressure pipelines have been designed for pigging. As these assets are reaching their design life it could be beneficial to consider intelligent pigging to check the internal and external corrosion. PIG is an acronym for "Pipeline Inspection Gauge". Modern intelligent pigs are highly sophisticated instruments that vary in technology and complexity by the intended use and by manufacturer. An intelligent pig, or smart pig, is basically a computer that collects various forms of data during the trip through the pipeline.

Work Instructions used by the maintenance staff are prepared very well and instigate a good quality and safe work.

Recommendation:

- 6. It is recommended that WA Gas Networks carry out a risk assessment to consider if an increased frequency of patrols in areas where the signs are damaged often is required.**
- 7. It is recommended that WAGN reviews its current approach to inspection of crossings to ensure alignment with AS2885.3, creation of firebreaks where necessary, and reviews current protection of facilities against falling trees and vehicles.**
- 8. It is recommended that intelligent pigging of the Class 600 pipelines be considered by WA Gas Networks.**

### **5.2.7 Asset Management Information Systems**

Effectiveness Rating: B-2

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



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### Review trails and sources of evidence:

- WAGN IT Services Access Control Policy
- WAGN Technical Recovery Plan - SAP
- WAGN Technical Recovery Plan - GINIS

### Summary:

There was no significant change in the Asset Management Information System during this review period. SAP and GNIS remain the primary systems in operation and control and track various tasks and operation to ensure overall asset integrity is maintained. Livelink is WA Gas Networks' corporate document management system, and is a centralised repository which allows the business to effectively create, manage, publish and re-use business information in a consistent and accurate manner.

### Features of Livelink include:

A centralised and secure repository to save and manage all organisational documentation;

- Tight control and management of document versions, reviews and publishing;
- A powerful search engine to quickly and accurately locate and retrieve content;
- Integration with Microsoft applications such as Word, Excel, PowerPoint, Outlook, Visio and Project;
- The ability to move email documents to and from the repository;
- Tight control over content permissions and ownership through permissions structures - security is structured through defined security structures / groups and restricts access at the folder level;
- A comprehensive audit trail against all content that automatically records the date, time and person for every type of event that can be performed on a document.

### Discussion:

In addition to the two main systems, some sections of the company use Microsoft Office applications, mainly the Excel spreadsheets. These applications include statistical information, KPI tracking, training, action lists from various audits and reviews and some of the engineering calculations. These applications do not have IT support in terms of expert Excel knowledge. Verification of the Excel spreadsheet based formulas is not always carried out, and it was identified that some staff do not save their spreadsheets to the company server, in accordance with the company policies.

Technical Recovery Plans are in place for the two main Asset Management Information Systems, SAP and GNIS, as is an Access Control Policy, which seeks to protect information from access by unauthorised users.

It is also acknowledged that WA Gas Networks is subject to ring fencing obligations imposed by the National Gas Law. These obligations extend to content which previously resided on the network managed by WestNet Infrastructure Group (WNG). To ensure compliance with their ring fencing obligations, WA Gas Networks recently undertook a Role Based Access (RBAC) Project, which



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sought to identify 'ring-fenceable' content on the WNG servers, and migrate this information to the WA Gas Networks' server, whilst also removing this content from the WNG server. This process was further underpinned by an internal audit undertaken by Ernst & Young in February 2011, which concluded that WA Gas Networks' RBAC approach and process was robust in identifying, migrating, managing and supporting WA Gas Networks' operationally critical content and ring fencing obligations.

IT support is provided for the main systems through the WestNet IT group. WestNet Group have developed the following policies and procedures:

- 2 Acceptable Usage Policy;
- 3 Access Control Policy;
- 4 Data Backup Policy;
- 5 Email Security Policy;
- 6 External Parties Policy;
- 7 IT Compliance Policy;
- 8 Malicious Code Management Policy;
- 9 Media Handling Policy;
- 10 Password Management Policy;
- 11 Physical Security Policy;
- 12 Remote Access Policy;
- 13 Security Incident Management Policy;
- 14 Server Security Policy; and
- 15 Wireless Network Security Policy.

Recommendation:

- 9 **It is recommended that a procedure is developed for the verification of formulas within spreadsheets used by Engineering Services.**
- 10 **It is recommended that all engineering spreadsheets are retained on the server in accordance with the company policies.**

### **5.2.8 Risk Management**

Effectiveness Rating: B-2

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

Review Trail and sources of Evidence:

*Corporate Risk Framework & Communications*

- Management Policy



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- Risk Management Plan,
- Risk Management Procedure,
- WAGN Risk Management Cultural Initiative,
- Strategic Risk Register
- Corporate Risk Register
- Presentations: Launch of Business Strategy (copy of power point slides provided)
- Risk Management (copy of power point slides provided)
- Risk of the Month Report: Risk Management
- Risk, compliance & internal audit update

*Engineering Services*

- CAPEX Business Case Template
- Network Infrastructure Business Case Template
- Upgrade CP protection for HP Pipelines to mitigate corrosion issues,
- Demand reinforcement project Canningvale main extension,
- Demand reinforcement project Weaponess Rd NORTH BEACH,
- Engineering Services Design Guideline – Pipelines
- Change Request Form

*Asset Management*

- Asset Management System,
- Asset Replacement Strategy,
- RCN and Risk Analysis for

*Technical Compliance*

- Guidance of Gas Distribution Formal Safety Assessments,
- Formal Safety Assessment Tracking Register,

*Operations and Maintenance*

- Operating Plan WAGN 09/10,
- Asset Management Plan 2011
- Job Risk Analysis (JRA) Sheets for the following SAP Notifications: 6039163 (4/3/11); 6032669 (4/3/11); 301010892 (4/3/11); 300970611 (9/3/11 and 11/3/11)
- Safe Work Procedure (no date / revision)



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- MAOP Review (no date/revision/author or signatures)

Summary:

WA Gas Networks is currently undergoing an audit against the Safety Case in a separate exercise. Therefore, this review specifically excluded assessment of any Safety Case compliance issues and concentrated primarily on a broader assessment of the risk management framework, attitudes towards risk management within different departments and processes that are in place for risk management. The objective was to establish how entrenched risk management is within the organisation, particularly amongst those concerned with asset management: Asset Services, Technical Compliance, Engineering Services and Operations & Maintenance.

It is evident that WA Gas Networks have a strong risk management culture. A risk-based approach to operations and management is evident on all levels of the organisation and in various functional areas. Assets are created, designed, constructed and maintained using the risk-based approach where issues and assets that have higher risk, be it in terms of risk to personnel or public safety or interruption or quality of supply to customers, receive higher attention than issues that are low risk.

Several strategies are employed to effectively monitor and communicate risks on the corporate level (eg. fortnightly communications, monthly meeting & report, cultural initiatives).

Further effort is required to finalise key documents concerned with management of technical, network-level risks and for management of actions raised during various formal safety assessments.

The auditor is aware of the Safety Case audit being undertaken at the moment and has no knowledge of any major issues being identified or recommendations made by the auditors.

Discussion:

There are three types / streams of risk management in the organisation (as illustrated in the Appendix A of *Guidance of Gas Distribution Formal Safety Assessments*):

- the corporate risk management group responsible for setting up organisational framework and maintenance of strategic and corporate risk registers,
- the HSEQ group responsible for safety and environmental risks associated with execution of field work,
- the Technical Compliance group which provides advice on risk management related to technical issues to Engineering and Construction groups.

Risk management policy and other corporate risk management documents exist and are of high quality. The risk management framework dictates a hierarchy of risk registers, eg. network level risks are kept on the network level but risks from the network risk register that are intermediate or higher or 'Not ALARP' are elevated to the corporate register (Ref. *Interview with S Jobling, Corporate and Strategic Risk registers*). The following network-level risks have been elevated to the Corporate/Strategic Risk registers:

- Risk ID 80: Discharge of gas into multi-storey dwelling with internal gas distribution network
- Risk ID S1: A major incident such as an explosion on a high pressure asset





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Corporate-level risk registers are reviewed regularly and updated as required. There was evidence of some risks changing ranking with time due to feedback from stakeholders.

A risk-based approach is evident in other WA Gas Networks activities in the area of asset management. Some examples are given below:

- Asset maintenance strategies take into account consequence of failure and condition of the asset. For example, inspection regime proposed for corroded HP pipelines is more extensive than for MP pipelines in good condition (as described in *RCM and Risk Analysis for WAGN Assets – 2009/10*). Methods for the pipeline corrosion assessment are shown in Australian Standard AS2885.3 and ASME B31G.
- Asset creation / upgrades take into account risk of supply interruption, safety risks to personnel (Ref. *Project Business Cases GD RP 0510, 1521-1011-GCA1-SM-054, GDW RP0300*)
- Latest business case templates for CAPEX and other projects have a section on risks and require a review/sign-off by the Risk, Compliance and Internal Audit manager (refer to *CAPEX Business Case Template* and *Network Infrastructure Business Case Template*). It is noted that the three completed business cases reviewed did not have a Risk Assessment section in them but all three had risk considerations.
- Risk-based approach is practiced during design with the Technical Compliance group deciding the extent of formal safety assessments required depending on the type of project/asset and code requirements. Formal Safety Assessment studies are required for projects that involve assets with high consequence of failure, eg existing/new Class 600/300 pipelines whereas for small projects with well understood hazards, standard safe work instructions (SWI) are used (Ref. *Guidance of Gas Distribution Formal Safety Assessments, GD PR 0690 GU 001, interview with D. Solmundson (Engineering), interview with S. Jobling and K. Grace (Technical Compliance)*)).
- Route considerations for new assets take into account (where possible) outcomes from hazard and risk assessments (*interview with D Solmundson*); proximity to buildings is driven by consequence distance with greater separation required from HP assets (*Engineering Services Design Guideline – Pipelines*)
- Job risk assessments are completed for maintenance tasks (Ref. *JRA Sheets for the following SAP Notifications: 6039163 (4/3/11); 6032669 (4/3/11); 301010892 (4/3/11); 300970611 (9/3/11 and 11/3/11)*).
- 3<sup>rd</sup> party interference being the main risk to gas distribution assets is recognised. Patrol frequencies are 'risk-based' and take into account land use, population density, pipeline criticality to network operations and safety risk in case of failure. Patrol frequencies differ from twice weekly for 'riskier' assets to 4-weekly for lower risk assets. (Ref: *Asset Management Plan 2011*).
- Land Management reviews planning application and pro-actively proposes conditions to be imposed on the development (eg. requirement to contact WA Gas Networks, requirement for risk assessment) (Ref. *interview with S. Jobling and K. Grace (Technical Compliance)*).

Communication of corporate level risks is more than adequate with risks discussed in the Risk of the Month report as well as communicated via fortnightly updates to the Executive team.



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Actions from all internal FSA studies are collated in the Actions Register (commenced June 2010) by the Technical Compliance group and periodically reviewed with the responsible parties. No formal close-out reports are issued, rather brief close-out responses are recorded within the register. Review of the responses against Closed actions indicate that better wording and better referencing to the documents that demonstrate implementation of the actions is required (eg. SWI no, document numbers, SAP notification number etc).

The following minor inconsistencies were noticed during the review:

- Version of the risk matrix used for RCM analysis differs slightly from the corporate risk matrix
- The majority of documents had document numbers and revisions indicated but there were a small number that are in the draft form (*Engineering Services Design Guideline – Pipelines*) or had not been completed (*Guidance of Gas Distribution Formal Safety Assessments*, in particular had a number of highlighted sections with comments within the document indicated that it is not complete). There were two documents that had no document number or author's names (MAOP Review and Safe Work Procedure presented for the review residing in Review folders)

#### Recommendations

- 11 It is recommended that WA Gas Networks develop an action management procedure that clearly outlines responsibilities of various parties. For example, it should be the responsibility of a project (construction) manager to ensure that all actions raised against their engineering (construction) project have been closed prior to hand over to operations.**
- 12 It is recommended that all actions raised on WA Gas Networks during external risk assessments are stored in the Action register. WA Gas Networks should request the final copy of the 3<sup>rd</sup> party (eg. developer's) Formal Safety Assessment (FSA) reports to ensure that they are aware of the 3<sup>rd</sup> party responsibilities (in case there is a dispute later on).**
- 13 It is recommended that all risk management documentation contains the current approved Risk Matrix.**
- 14 It is recommended that WA Gas Networks finalises the *Engineering Services Design Guideline – Pipelines* and ensure that it references *Guidance of Gas Distribution Formal Safety Assessments*, particularly Appendix C for further information on requirements for FSA for different studies/assets.**
- 15 It is recommended that WA Gas Networks finalises *Guidance of Gas Distribution Formal Safety Assessments*. Where information has not been finalised HOLDS can be used to alert the reader to contact Technical Compliance for latest advice rather than leaving highlighted, unfinished sections.**

Action management of technical risks was discussed (interview with S. Jobling and K. Grace (Technical Compliance)). There is an Excel-based action tracking register that contains items from



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workshops conducted internally or from workshops solely for WA Gas Networks. These actions are reviewed periodically and the status updated by the Technical Compliance group.

Current position by the Technical Compliance group that actions from workshops that were conducted externally for a 3<sup>rd</sup> party where WA Gas Networks personnel were in attendance, should not be stored in this Action Register. This would be a case where a workshop was conducted for a development near a HP pipeline or above ground facility. There is a possibility that actions raised on WA Gas Networks during these workshops can get lost, especially if they are of "important but not urgent" variety.

Documents reviewed:

- AS2885 Risk Assessment HP Regulator Set (CoCon) Abbey St & Morley Dr East, 23/03/2011 GD RP0790 (note that the workshop was conducted on 15/05/2009)
- HAZOP HP Regulator Set (CoCon) Abbey St & Morley Dr East, 23/03/2011 GD RP0810 (note that the workshop was conducted on 15/05/2009 but majority of actions have due date of 28/02/2011)
- Construction/Commissioning report for HP125 Karrinyup Pipeline, GD RP0450, Rev. 0, 27.10.2009 (two workshops were conducted on 8/04 and 5/10 2009)
- HAZOP Report for Karrinyup bus depot meter set, GD RP 0480 rev. 0 27/10/09 (workshop conducted on 5/10/2009)
- AS 2885 Risk Assessment Report for HP125 Karrinyup Pipeline, GD RP 0440 Rev. 0 27/10/09 (workshop conducted on 24/03/2009)

The review of these documents indicated that:

- appropriate risk assessment studies are conducted for projects
- at least some reports are produced a long time after workshops
- selection of personnel for workshops is appropriate and represents required skills
- quality of the report is high
- quality of worksheets ranges from 'less than OK' to 'very good'
- at least one report (GD RP0810) had an incomplete worksheet.

Recommendations:

- 16 **It is recommended that WA Gas Networks finalises the Formal Safety Assessment and HAZOP reports shortly after workshops and do not leave unfinished ambiguous sections of the document.**
- 17 **It is recommended that a full HAZOP/HAZID is replaced with a workshop template that captures all the pertinent information for each workshop: study team, scope, objectives and exclusions. Reference can be made to guidance documents that detail how to conduct each workshop and only deviations from the standard methodologies**



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are noted on the template. The worksheet with all the relevant information can be published.

### **5.2.9 Contingency Planning**

Effectiveness Rating: A-1

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

Review trails and sources of evidence:

- Emergency Response Management Plan, Rev 4, dated 3/08/2010
- Emergency Exercises Procedure, 2011
- Five Year Emergency Exercise Plan, 2011
- Emergency Response Exercises Reports

Summary:

WA Gas Networks has prepared an Emergency Exercise Procedure with a five year plan of exercises, which is updated annually. Training scenarios are realistic and all stakeholders participate in the major exercises. Reports issued following the exercise are comprehensive and include stakeholders' inputs. Close out of the actions identified during the exercise should be improved.

Discussion:

During interviews emergency response exercises were discussed with a number of WA Gas Networks representatives. WA Gas Networks has Breathing Apparatus Teams, which train on a regular basis to maintain their licenses. This team benefits from many years of experience. It appears that there is no formal report prepared after each exercise and evidence of implementation of lessons learned was unavailable.

The Emergency Exercise Procedure provided guidelines for conducting planned emergency exercise. However, there is no requirement for follow on training incorporating lessons learned from previous exercises.

Exercise reports from Albany, Perth and Jandakot were reviewed. These documents are comprehensive and address all issues identified by the participants and stakeholders. Each report provides recommendations, which are assessed by WA Gas Networks specialists. The required actions are identified, allocated and completion dates nominated. Most of the actions are completed on time. It was noted that some of the actions are not closed more than 12 months past the due date.

It has been noted that the evidence for close out of the recommended actions is not kept with the action tracking register and sometime has not been prepared.

The auditor further notes the development and implementation of a 5-year Emergency Exercise Plan. However, as identified in the 2009 Asset Management System Review, such a plan should include details of where previous exercises were held and it is evident that this information has not been included.



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Recommendations:

- 18 **It is recommended that the close out actions from exercises and real emergencies that are included in the action tracking register be examined regularly by WA Gas Networks management to ensure close out dates are not overdue.**
- 19 **It is recommended that WA Gas Networks provides written evidence of close out actions should be provided. In case it has been decided that the recommended action should be not be implemented documented justification should be prepared, including risk assessment.**
- 20 **It is recommended that the 5 year Emergency Exercise Plan be updated to include information regarding details of previous exercises.**
- 21 **It is recommended that issues mentioned in recommendations 13 and 14 should have KPIs allocated.**

### **5.2.10 Financial Planning & Capital Expenditure Planning**

Effectiveness Rating: A-1

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.

Review trails and sources of evidence:

- WA Gas Networks Asset Management Plan,
- Board Report Extracts – Approval of CAPEX Business Cases and Board Minutes
- Delegated Financial Authority Policy,
- Strategic Business Plan – Extracts

Summary:

WA Gas Networks operations are highly regulated. Its capital expenditure and financial planning follows a methodology dictated by its Access Arrangement. Firm financial plans are prepared for five year periods and updated annually.

The Capital Expenditure Plan, included in the Asset Management Plan, provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five years.

Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least ten years, preferably longer. WA Gas Networks does not have current plans for a large project, which would take more than five years to complete. Projections over the next five years would usually be based on firm estimates.

In addition, WA Gas Networks uses a 20 year financial model, which includes capital expenditure predictions, to prepare its budgets. The first five years of this plan include costs of the approved



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projects and the subsequent years are calculated as averages from the last five years indexed by the CPI. The 20 year financial model is noted by the WA Gas Networks Board.

Discussion:

Capital expenditures identified as required for a five year period and financial planning are prepared based on the network performance analysis and network replacement strategy. The cost estimates are based on quotes and recently completed projects.

Financial analyses are carried out for each proposed project before the task is included in the Asset Management Plan. This plan is approved by the WA Gas Networks board every year.

Before a project is implemented final financial analyses are carried out to check if the project still meets the company criteria.

The WA Gas Networks financial planning system is robust and subject to external audits and reviews.

Recommendations:

Nil.

### **5.2.11 Review of Asset Management System**

Effectiveness Rating: A-1

Key Process: The asset management system is regularly reviewed and updated.

Review trails and sources of evidence:

- Asset Management System Strategy, 2010
- WAGN Asset Replacement Strategy, 2010
- WAGN Asset Management Plan 2010-2015, 2010
- WAGN High Pressure Development Plan 2009-2014
- WAGN Network Planning Strategy
- WAGN RCM and Risk Analysis for WAGN Assets 2009/10
- WAGN Operating Plan 09/01

Summary:

WA Gas Networks asset management system is comprehensive, well managed and documented. It combines the operational requirements with financial targets to deliver an outcome expected by the stakeholders.

Discussion:

The Asset Management System document describes the asset management system implemented by WA Gas Networks and combines key elements from a suite of documents related to management of



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the network. It provides an assessment of the current "health" of each component of the network, plans for upgrades, and reinforcements or replacements per year for each year of the five year plan.

Long term network development plans are based on the information provided by the planning authorities and in-house data.

The replacement strategy is described in the Asset Replacement Strategy and takes into account current and predicted condition of the asset, operating cost trend and risks associated with operating the individual pipeline or facility.

The Asset Management System addresses performance of the system by analysis of the KPIs. Performance indicators for 2010 were reviewed. They generally meet the targets set by the company. The Unaccounted for Gas (UAFG) Key Performance Indicator (KPI) continuously fails as shown in the 2007 and 2009 reviews and the 2010 report. This indicates that the attempts to identify the problem causing high UAFG have not resulted in an effective solution.

The final decision in the Access Arrangement has included a provision of 2.9% for UAFG recognising, in consultation with ESD, that previous targets, based on % throughput, were not an appropriate benchmark. As previously outlined it is proposed to move to energy loss per kilometre and per customer based benchmarks and to continue with the initiatives already on foot to manage UAFG levels while continually monitoring trends in conjunction with ESD.

The Internal Quality Audit Program KPI failed due to the shortage of the resources. The original target for the Progress of the Internal Quality Audit Plan was established in isolation without the context of the audits required for the Safety Case. For this reason, the number of actual audits completed reflects only audits which were mandatory and not covered elsewhere (such as under the safety case regime).

Recommendations:

Nil.

## **5.3 Post Review Implementation Plan**

### **5.3.1 Post Review Activities**

The auditor issued the Asset Management System Review Report to WA Gas Networks on **27 May 2011**.

WA Gas Networks has reviewed the recommendations and agreed to complete the actions required in this post – audit implementation plan, as stated in the following table.



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Rec. Number	Recommendation	WA Gas Networks' Action
1	It is recommended that the initiatives and studies into underlying factors contributing to UAFG, which are being discussed with Energy Safety and UAFG trends continue to be monitored in conjunction with Energy Safety Division (ESD).	<p>Action: WA Gas Networks acknowledges this recommendation and will continue to monitor UAFG trends in conjunction with ESD.</p> <p>Responsibility: Pat Donovan, Chief Operating Officer</p> <p>Due Date: Ongoing</p>
2	As the pipeline infrastructure age is yet to reach the economic life expectancy of the corrosion protection coatings, the life expectancy of 120 years applied to the currently used coatings is unproved. It is recommended that a review is conducted to confirm the validity of the asset life assumption.	<p>Action: A review will be undertaken to confirm the validity of the asset life assumption.</p> <p>Responsibility: Pat Donovan, Chief Operating Officer</p> <p>Due Date: 30 June 2012</p>
3	It is recommended that engineering documents used for the design of the system, which have not been updated, are given priority and revised as soon as practicable	<p>Action: WAGN will give priority to and revise the relevant documentation as recommended.</p> <p>Responsibility: Pat Donovan, Chief Operating Officer</p> <p>Due Date: 30 June 2011</p>
4	It is recommended that Engineering Services staff are afforded the opportunity to attend professional development training or information sessions to remain abreast of current trends or emerging practices within the area of gas network infrastructure and gas distribution.	<p>Action: While this recommendation focuses solely on Engineering Services staff, WAGN will incorporate the requirement to attend relevant professional development training and or information sessions into all WAGN staff performance development plans.</p> <p>Responsibility: Natalia Smith, Human Resources Manager.</p> <p>Due Date: 31 August 2011</p>





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Rec. Number	Recommendation	WA Gas Networks' Action
5	It is recommended that the WA Gas Networks' Environmental Advisor periodically attends the regional depots to provide presentations of the environmental information, typically provided in the Safety Focus meetings and Envirograms within the metropolitan area	<p>Action: The Environmental Advisor will develop a calendar of depot visits for the 2011/12 financial year.</p> <p>Responsibility: Caitlin Bridgland, Environmental Advisor.</p> <p>Due Date: 30 July 2011</p>
6	The auditor recommends that WA Gas Networks carry out a risk assessment to consider if an increased frequency of patrols in areas where the signs are damaged often is required.	<p>Action: A risk assessment will be carried out to consider if an increase in the frequency of patrols is required.</p> <p>Responsibility: Ben Johnson, Risk, Compliance and Internal Audit Manager.</p> <p>Due Date: 30 September 2011</p>
7	It is recommended that WAGN reviews its current approach to inspection of crossings to ensure alignment with AS2885.3, creation of firebreaks where necessary, and reviews current protection of facilities against falling trees and vehicles.	<p>Action 1: WA Gas Networks will conduct a review of existing practices for inspection of crossings to ensure alignment with relevant Standards.</p> <p>Responsibility: Darryl Powell, Facilities Maintenance and CP Supervisor</p> <p>Due Date: 31 October 2011</p> <p>Action 2: Guidelines for identifying the need for firebreaks and location of asset.</p> <p>Responsibility: Richard Cain, Senior Health &amp; Safety Advisor.</p> <p>Due date: 30 September 2011</p>
8	It is recommended that intelligent pigging of the Class 600 pipelines be considered by WA Gas Networks	<p>Action: WA Gas Networks, in consultation with ESD, shall conduct a risk assessment to determine the operational risks associated with intelligent pigging versus the risk of corrosion.</p> <p>Responsibility: Pat Donovan, Chief Operating Officer</p>



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Rec. Number	Recommendation	WA Gas Networks' Action
		Due Date: 30 September 2011
9	It is recommended that a procedure is developed for the verification of formulas within spreadsheets used by Engineering Services.	<p>Action: WA Gas Networks will develop a procedure to ensure verification of formulas within the spreadsheets used by Engineering Services.</p> <p>Responsibility: Dean Solmundson, Engineering Services Manager</p> <p>Due Date: 30 September 2011</p>
10	It is recommended that all engineering spreadsheets are retained on the server in accordance with the company policies.	<p>Action: The existing policy for document retention will be enforced. A project to facilitate the transfer of existing spreadsheets to the server will be implemented.</p> <p>Responsibility: Dean Solmundson, Engineering Services Manager</p> <p>Due Date: 31 December 2011</p>
11	It is recommended that WA Gas Networks develop an action management procedure that clearly outlines responsibilities of various parties.	<p>Action: WAGN will develop a procedure for the management of actions arising from risk assessments associated with engineering projects.</p> <p>Responsibility: Pat Donovan, Chief Operating Officer</p> <p>Due Date: 30 December 2011</p>
12	It is recommended that all actions raised on WA Gas Networks during external risk assessments are stored in the Action register. WA Gas Networks' staff should request the final copy of the 3 <sup>rd</sup> party (e.g. developer's) FSA reports to ensure that they are aware of the 3 <sup>rd</sup> party responsibilities (in case there is a dispute later on).	<p>Action: As per the Action identified in response to recommendation 6, this requirement will be incorporated in to the aforementioned procedure.</p> <p>Responsibility: Pat Donovan, Chief Operating Officer</p> <p>Due Date: 30 December 2011</p>



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Rec. Number	Recommendation	WA Gas Networks' Action
13	It is recommended that all risk management documentation contains the current approved Risk Matrix	<p>Action: WA Gas Networks was recently subjected to an internal audit of its Risk Management Framework, as part of its Internal Audit Plan for 2010/11. This audit recognised that WA Gas Networks has placed significant emphasis on establishing an effective risk management framework, including through the creation of a Risk and Compliance Team that has driven a considerable amount risk management activity over the past 6 to 12 months.</p> <p>The report also indicated that WA Gas Networks risk management approach and practices have been established and cover core components of an effective framework. The focus for WA Gas Networks moving forward is to further embed risk management across all organisational levels and within strategic and operational planning processes, while sustaining the current risk management awareness and culture that has been created to date.</p> <p>A key short-term focus for WA Gas Networks is to review and up date all risk management documentation to ensure that they reflect current practice</p> <p>Responsibility: Ben Johnson, Risk, Compliance &amp; Internal Audit Manager</p> <p>Due Date: 31 August 2011</p>
14	It is recommended that WA Gas Networks finalises the Engineering Services Design Guideline – Pipelines and ensures that it references Guidance of Gas Distribution Formal Safety Assessments, particularly Appendix C for further information on requirements for FSA for different studies / assets	<p>Action: As per the Action identified in response to recommendation 2, WAGN will give priority to and revise the relevant documentation as recommended.</p> <p>Responsibility: Pat Donovan, Chief Operating Officer</p> <p>Due Date: 30 June 2011</p>



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Rec. Number	Recommendation	WA Gas Networks' Action
15	Finalise Guidance of Gas Distribution Formal Safety Assessments. Where information has not been finalised, HOLDS can be used to alert the reader to contact Technical Compliance for latest advice rather than leaving highlighted, unfinished sections	<p>Action: WAGN is currently in the process of developing an information management framework which will provide a structure for the development, implementation and review of all policies and procedures. This will ensure that all documentation is finalised before release to the business and will include the Guidance of Gas Distribution Formal Safety Assessment documents.</p> <p>Responsibility: Ben Johnson, Risk, Compliance &amp; Internal Audit Manager</p> <p>Due Date: 31 December 2011</p>
16	It is recommended that WA Gas Networks finalises the Formal Safety Assessment and HAZOP reports shortly after workshops and do not leave unfinished ambiguous sections.	<p>Action: WAGN will devise an appropriate timetable to incorporate into the FSA Guidance Procedure for the completion of reports.</p> <p>Responsibility: Stuart Jobling, Technical Compliance Manager.</p> <p>Due Date: 31 July 2011</p>
17	It is recommended that a full HAZOP / HAZID is replaced with a workshop template that captures all the pertinent information for each workshop: study team, scope, objectives and exclusions. Reference can be made to guidance documents that detail how to conduct each workshop and only deviations from the standard methodologies are noted on the template. The worksheet with all the relevant information can be published.	<p>Action: WAGN will develop a workshop template which will include details as recommended.</p> <p>Responsibility: Pat Donovan, Chief Operating Officer</p> <p>Due Date: 31 Dec 2011</p>
18	It is recommended that the close out actions from exercises and real emergencies that are included in the action tracking register be examined regularly by WA Gas Networks management to ensure close out dates are not overdue.	<p>Action: WAGN will incorporate a requirement for the close out and tracking of actions from exercises and real emergencies into Emergency Exercise Procedure.</p> <p>Responsibility: Stuart Jobling, Technical Compliance Manager.</p> <p>Due Date: 31 July 2011</p>



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Rec. Number	Recommendation	WA Gas Networks' Action
19	It is recommended that WA Gas Networks provides written evidence of close out of actions. In case it has been decided that the recommended actions should not be implemented, documented justification should be prepared, including a risk assessment.	Action: As per the Action identified in response to recommendation 13, WAGN will incorporate the requirement for written evidence to close out actions into the Emergency Exercise Procedure.  Responsibility: Stuart Jobling, Technical Compliance Manager.  Due Date: 31 July 2011
20	It is recommended that Issues mentioned in Recommendations 18 and 19 have KPI's allocated.	Action: KPIs shall be established as recommended and reported monthly as part of the operations report.  Responsibility: Pat Donovan, Chief Operating Officer  Due Date: 31 August 2011
21	It is recommended that the 5-year Emergency Exercise Plan be updated to include information regarding details of previous exercises.	Action: WA Gas Networks will establish a database linked to the Emergency Exercise Plan to record the actions and learnings from previous exercises.  Responsibility: Stuart Jobling, Technical Compliance Manager.  Due Date: 31 December 2011



## **6 CONCLUSIONS**

On the basis of evidence gathered and the interviews undertaken with WA Gas Networks staff, the Auditors consider the asset management processes as effective.

The effectiveness rating, as shown in Section 5, demonstrates that WA Gas Networks achieved seven maximum grades and five second best marks. With the new method of the efficiency assessment introduced in Guidelines comparison between the previous and current reports is not possible. The auditor, after review of the previous reports and current methods and practices, observes that almost all recommendations made in earlier reports were addressed diligently.

The key areas of the asset management system are improved ahead of the activities having a lesser impact on the overall performance of WA Gas Networks.

A total of 18 recommendations were made during this review. These are detailed in the report and have been discussed with WA Gas Networks, and a post-audit implementation plan was prepared by WA Gas Networks for their resolution.

The auditor recognizes progress achieved since WA Gas Networks were ring-fenced and is of the opinion that with an evident management commitment, continuous improvement process in place and a concerted effort in ensuring that all affected areas of the business continue to progress - the recommendations made in this report will be implemented in the near future. It is also recognised that the implementation of the information management strategy will enhance WA Gas Networks' ability to manage such change.

This report has been prepared by WorleyParsons and is to the best of their knowledge an accurate representation of the findings and opinions gathered during the conduct of the review.



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## **Appendix 1     Asset Management System Review**



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
1	<p>ASSET PLANNING: Review Priority: WA Gas Networks interviewee: Asset Services Manager - Maswadi Marsuki; Asset Performance Engineer - Yama Azizi Manager Engineering Services - Dean Solmundson Network Construction Manager - Matthew Marshall Manager Network Infrastructure - Pat Donovan</p> <p>Interview/site visit/location: WA Gas Networks – Perth and Jandakot offices Effectiveness Rating: A-1</p>			<p>WP Asset planning system has been assessed on the basis of interviews of WA Gas Networks' staff, review of the relevant procedures, plans and reports.</p>
1.1		Demonstration of 2009 Review Findings Resolution		See Appendix 4





ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
1.2		Changes in strategy implementation since 2009	There were no changes in strategy since 2009 review	<p>During the review period the following procedures were re-issued:</p> <ul style="list-style-type: none"><li>• WAGN Asset Management Strategy</li><li>• WAGN Asset Replacement Strategy</li><li>• WAGN Network Planning Strategy</li><li>• WAGN RCM and Risk Analysis for WAGN Assets 2009/2010</li><li>• WAGN Asset Management Plan</li></ul> <p>All identified changes were updates only and did not reflect a change in the overall strategy.</p>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
1.3		Current key documents (date & revision)	<ul style="list-style-type: none"><li>• WAGN Asset Management System Strategy, WAGN-ST-001, Rev C, 15/03/2010</li><li>• WAGN Asset Replacement Strategy WAGN-ST-002, Rev B, 01/06/2010</li><li>• WAGN High Pressure Development Plan 2009-2014, GDW RP0110, Rev C, 24/02/2009</li><li>• WAGN Network Planning Strategy, GD ST 0080, Rev A, 01/05/2010</li><li>• WAGN RCM and Risk Analysis for WAGN Assets 2009/10, GD RP 0750, Rev A, 28/01/2011</li><li>• WAGN Asset Management Plan 2010-2015, WAGN PL 10/01, Rev A, 01/06/2010</li></ul>	
1.4		Demonstration of process implementation. Specific areas for review:		





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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
			<p>2 As the pipeline infrastructure age is yet to reach the economic life expectancy of the corrosion protection coatings, the life expectancy of 120 years applied to the currently used coatings is unproved. It is recommended that a review is conducted to confirm the validity of the asset life assumption.</p>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
1.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning</li><li>• Service levels are defined</li><li>• Non-asset options (eg demand management) are considered</li></ul>	<ul style="list-style-type: none"><li>• Planning process is guided by the statutory requirements. It is integrated in the WA Gas Networks Access Arrangement process. Required technical and financial analyses are carried out prior to projects being included in Asset Management Plan, which is updated annually.</li><li>• Service levels are defined in procedures.</li><li>• Demand management is considered, however, there is not much that could be done to change the daily and seasonal gas usage pattern.. As pre-investment in larger diameter or higher pressure pipelines is unacceptable – non-asset options are limited.</li></ul>	<ul style="list-style-type: none"><li>• The auditor assesses planning process as effective.</li><li>• The auditor assesses service level definition as adequate.</li><li>• The auditor assesses that WA Gas Networks properly considers non-asset options.</li></ul>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
1.5		<ul style="list-style-type: none"><li>• Lifecycle costs of owning and operating assets are assessed</li><li>• Funding options are evaluated</li><li>• Costs are justified and cost drivers identified</li><li>• Likelihood and consequences of asset failure are predicted</li><li>• Plans are regularly reviewed and updated</li></ul>	<ul style="list-style-type: none"><li>• Life cycle costs of owning and operating asset are calculated and included in asset planning assessment.</li><li>• The following funding options are used:<ul style="list-style-type: none"><li>• Self funding</li><li>• Developer pays/contributes</li><li>• User pays/contributes</li></ul></li><li>• Cost estimates are prepared on the basis of quotes and recent completed projects.</li><li>• Risk assessments are carried out</li><li>• Plans are reviewed and updated on annual basis.</li></ul>	<p>WP</p> <ul style="list-style-type: none"><li>• The auditor assesses that the life cycle costs are calculated correctly and included in asset planning assessment.</li><li>• The auditor assessed that funding options are evaluated.</li><li>• The auditor assesses that the cost estimate method is effective and practical.</li><li>• The auditor assessed that risk assessment is acceptable for assessment of likelihood and consequences of asset failure.</li><li>• The auditor assessed that annual review of plans is an efficient planning.</li></ul>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
2	Asset Creation and Acquisition WA Gas Networks interviewees: Asset Services Manager - Maswadi Marsuki; Asset Performance Engineer - Yama Azizi Manager Engineering Services - Dean Solmundson Network Construction Manager - Matthew Marshall Manager Network Infrastructure - Pat Donovan Interview/site visit/location: WA Gas Networks Jandakot office Effectiveness Rating: B-2			Asset Creation and Acquisition system has been assessed on the basis of interviews of WA Gas Networks' staff, review of the relevant procedures, plans and reports.  In addition, familiarity of the staff with the relevant standards and statutory regulations was assessed.  Adherence to safety requirements, as defined in the standards, has been reviewed.
2.1		Demonstration of 2009 Review Findings Resolution		See Appendix 4.



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
2.2		Changes in strategy implementation since 2009 review	There were no changes in strategy since 2009 review	
2.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• WAGN Asset Management System Strategy, WAGN-ST-001, Rev C, 15/03.2010</li><li>• WAGN Asset Replacement Strategy, WAGN-ST-002, Rev B, 01/06/2010</li><li>• WAGN High Pressure Development Plan 2009-2014, GDW RP0110</li><li>• WAGN Asset Management Plan, WAGN PL 10/01, Rev A, 01/06/2010</li><li>• Engineering Services Design Guide, GD PR 0500, Rev 0, 17/12/2010</li><li>• AS2885.1-2007</li><li>• AS4645-2008</li><li>• Gas Standards (Gas Supply and System Standards) Regulations 2000</li></ul>	





ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
2.4		<p>Demonstration of process implementation:</p> <p>Specific areas for review:</p> <ul style="list-style-type: none"><li>• Materials inspection and reviews of suppliers</li><li>• Work site inspections and reviews</li><li>• Contract management, performance measurement &amp; reviews</li></ul>	<ul style="list-style-type: none"><li>• Materials are procured from suppliers on an approved suppliers list. Materials datasheets checked when materials received.</li><li>• WA Gas Networks staff is being used as work site quality control inspectors.</li><li>• Contracts are managed by the Network Construction Group. Contractor's performance is measured on quality of work, cost and schedule.</li></ul>	<p>The auditor has made the following recommendations:</p> <p>2 As the pipeline infrastructure age is yet to reach the economic life expectancy of the corrosion protection coatings, the life expectancy of 120 years applied to the currently used coatings is unproved. It is recommended that a review is conducted to confirm the validity of the asset life assumption.</p> <p>3 It is recommended that the engineering documents used for the design of the system, which have not been updated until now are given priority and are revised as soon as practicable.</p> <p>4 It is recommended that engineering services staffs are afforded the opportunity to attend professional development training or information sessions to remain abreast of current trends or emerging practices within the area of gas network infrastructure and gas distribution.</p>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
2.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions</li><li>• Evaluations include all life-cycle costs</li><li>• Projects reflect sound engineering and business decisions</li><li>• Commissioning tests are documented and completed</li><li>• Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood</li></ul>	<ul style="list-style-type: none"><li>• Full project evaluations, including alternative routes and non-asset solutions, are undertaken.</li><li>• Evaluations include life-cycle cost (CAPEX and OPEX).</li><li>• Projects are initiated by a comprehensive engineering assessments and cost estimates for options. Financial analyses are carried out before project is included in the Asset Management Plan. Before commencement of the project analysis are repeated.</li><li>• All construction activities are well documented.</li><li>• All ongoing activities are assigned and understood. The staff is familiar with the standards, procedures and licence requirements.</li></ul>	<p>The auditor made the following observations:</p> <ul style="list-style-type: none"><li>• Project evaluations meet the effectiveness criteria and take into account non-asset options, as well as alternative routes for the pipelines.</li><li>• Evaluations meet the effectiveness criteria.</li><li>• Evaluations meet the effectiveness criteria</li><li>• Evaluations meet the effectiveness criteria.</li><li>• Evaluations meet the effectiveness criteria.</li></ul>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
		<ul style="list-style-type: none"><li>The application of the Gas Standards (Gas Supply and System Standards) Regulations 2000 to the design and construction of the gas network, material selection for components and the operating pressure of the system.</li></ul>	<ul style="list-style-type: none"><li>The Gas Standards (Gas Supply and System Standards) Regulations 2000 and relevant Australian Standards are applied to the design and construction of the gas network, material selection for components and the operating pressure of the system.</li></ul>	<ul style="list-style-type: none"><li>Evaluations meet the effectiveness criteria. The review of the typical designs and specifications should be completed as soon as practicable.</li></ul>
3	Asset Disposal WA Gas Networks Interviewees: Asset Services Manager - Maswadi Marsuki; Manager Engineering Services - Dean Solmundson Manager Network Infrastructure - Pat Donovan Interview/site visit/location: WA Gas Networks Jandakot office Effectiveness rating: B-2			Asset Disposal system has been assessed on the basis of interviews of WA Gas Networks' staff, review of the relevant procedures, plans and reports. In addition, familiarity of the staff with the relevant standards and statutory regulations was assessed. Adherence to safety requirements, as defined in the standards, has been reviewed.



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
3.1		Demonstration of 2009 Review Findings Resolution		Assets removed from service were noted in the asset register and One-Cal system.
3.2		Changes in strategy implementation since 2009	There were no changes in strategy since 2009 review	
3.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• Policy Documentation – Decommissioning of Assets</li><li>• Work Instructions</li></ul>	The auditor noted high quality of the updated work instructions.
3.4		Demonstration of process implementation. Specific areas for review: <ul style="list-style-type: none"><li>• Procedures for asset decommissioning disposal (CP, DBYG, GIS, asset register etc)</li><li>• Procedures for asset transfer to other authority</li></ul>	Abandonment procedure has not been prepared, as the assets are not usually decommissioned and abandoned. <ul style="list-style-type: none"><li>• Decommissioned assets are made safe by purging with air and left in the ground.</li><li>• There is no specific procedure for transfer of assets to other user. WAGN does not expect further disposal of its assets.</li></ul>	The auditor observed that in vast majority only the low pressure connections and meters are decommissioned. This work is carried out as routine and well covered by work instructions.. Albany system does not allow significant development due to possibility of pressure dropping to below acceptable minimum. At the moment the Albany system operates within the required operating pressure band.



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
3.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>Under-utilised and under-performing assets are identified as part of a regular systematic review process</li><li>The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken</li><li>Disposal alternatives are evaluated</li><li>There is a replacement strategy for assets</li></ul>	<ul style="list-style-type: none"><li>Performance of all assets is monitored continuously. Underperforming assets (pressure) are reinforced. Assets, which do not bring expected revenues, can not be disposed off.</li><li>Analyses of reasons for underperformance are carried out. WA Gas Networks does not have impact on the sales of the gas. WA Gas Networks believes that disposal of an underperforming asset is not an option as the assets supplies customers who can not be disconnected.</li><li>Disposal of assets is not considered as an option.</li><li>WA Gas Networks has a replacement strategy for its assets. [Ref 2]</li></ul>	<p>The auditor made the following observations:</p> <ul style="list-style-type: none"><li>Under-utilised and under-performing assets are handled effectively, within the constraints of the licence and statutory regulations.</li><li>The reasons are analysed effectively. Ability to improve performance of the asset is very limited.</li><li>The asset replacement strategy is effective within the Access Arrangements.</li></ul>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
4	Environmental Analysis WA Gas Networks interviewee: Ben Johnson – Risk Compliance and Internal Audit Manager Interview/site visit/location: Jandakot Office Effectiveness Rating: A-1			
4.1		Demonstration of 2009 Review Findings Resolution		
4.2		Changes in strategy implementation since 2009	Since August 2010 WAGN operates as separate entity.	All corporate services, except for the IT, are fully independent.



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
4.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• WAGN Operational Risk Management &amp; Compliance Committee Charter, RMT-CH0001, Rev 1, 07/01/2011</li><li>• WAGN Strategic Objectives – Our Vision and Values</li><li>• Extracts from WAGN's Master Obligations Register dated February &amp; March 2011 (Commercial, Finance, Human Resources, Information Technology, Legal, Network Infrastructure)</li><li>• E-mail from Ross Caldwell, WAGN CEO, dated 2/02/2011, Subject: Confirmation Required: WA Gas Networks Ring Fencing &amp; Confidential Information Compliance</li><li>• Master Obligations Register</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
4.4		<p>Demonstration of process implementation.</p> <p>Specific areas for review:</p> <ul style="list-style-type: none"><li>• Is compliance with statutory &amp; regulatory requirements maintained &amp; measured</li><li>• Investigations into breaches and corrective action taken</li></ul>	<ul style="list-style-type: none"><li>• Compliance with statutory and regulatory requirements is maintained by KPIs. WAGN monitors KPIs on monthly basis and the reportable KPIs are monitored by the Board.</li><li>• Investigations into breaches by WA Gas Networks staff and contractors and corrective actions are closed by a dedicated staff.</li></ul>	<ul style="list-style-type: none"><li>• Measurement of the compliance is in a process of being implemented. (by December 2011)</li><li>• WAGN's management is not aware of any breaches of obligations and ring fencing, as stated in the CEO's e-mail.</li></ul>





ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
4.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• Opportunities and threats in the system environment are assessed</li><li>• Compliance with statutory and regulatory requirements</li><li>• Operational policies and procedures are documented and linked to service levels required</li><li>• Staff receive training commensurate with their responsibilities</li></ul>	<ul style="list-style-type: none"><li>• Risk management group staff identifies threats in the system environment, assesses the threats and implements appropriate actions, if possible.</li><li>• Gas distribution system is highly regulated and conducting of business by WA Gas Networks is fully guided by Access arrangements.</li><li>• Operational policies and procedures are developed to meet the service levels required and are documented and linked to service as required.</li><li>• Staff receives training as part of induction and additional training with every new document issued.</li></ul>	<p>The auditor makes the following observations:</p> <ul style="list-style-type: none"><li>• As explained in Section 5.2.5, threats can be recognised, but the solutions could be beyond control of WA gas Networks. Opportunities can only be realised through Access Arrangement.</li><li>• WA Gas Networks efficiently complies with the rules.</li><li>• WA Gas Networks complies with efficiency criteria.</li><li>• WA Gas Networks complies with efficiency criteria.</li></ul>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
		<ul style="list-style-type: none"><li>Compliance with statutory and regulatory requirements</li></ul>	<ul style="list-style-type: none"><li>Gas distribution system is highly regulated and conducting of business by WA Gas Networks is fully guided by Access Arrangement.</li></ul> <p>The following statement was extracted from WAGN's Master Obligations Register:</p> <p>"The purpose of the Master Obligations Register is to record and monitor the relevant legislative and statutory obligations across all areas of the business. Where non-compliances or potential non-compliances are identified, actions are assigned to the relevant executive member and monitored and reported to the WAGN executive team on a fortnightly basis. All executive owners are required to provide six-monthly compliance assurance statements to the Operational Risk Management and Compliance Committee and the Audit and Risk Committee. The statements require a confirmation of the level of compliance with each obligation, the progress of any actions/treatments and reporting of any breaches or potential breaches. The first series of compliance assurance statements are due in August 2010. Note that the development of the MOR is ongoing and at present we are focusing on the key risk acts only."</p>	After review of the key documents, the auditor confirms that WAGN meets obligations to comply with statutory and regulatory requirements.
WAGN Asset Management System Review Report May 2011 FINAL.doc				401012-01595 - REP 002Rev 2 : 30 May 2011



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
5	Asset Operations WA Gas Networks interviewees: Network Operations Manager South - Russell Godsall; Network Operations Manager North - Michael McCarthy; Supervisor Albany – Stephen Casey Environmental Advisor - Caitlin Bridgland; Interview/site visit/location: Jandakot and Albany offices Effectiveness Rating: A-1			
5.1		Demonstration of 2009 Review Findings Resolution		See Appendix 4
5.2		Changes in strategy implementation since 2009	There were no changes in strategy since 2009 review	



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**GD L8 ASSET MANAGEMENT SYSTEM REVIEW - REVIEW REPORT FOR WA GAS NETWORKS PTY LTD**

ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
5.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• WAGN Operating Plan, WAgN 09/01 . Rev A, 01/06/2009</li><li>• WAGN Inspection Policy Statement and Plan, GD PL 0170, Rev 3, 31/10/2009</li><li>• Draft WAGN Emergency Response Management Plan, GD PL 0160, Rev 4, 03/08/2010</li><li>• SAP System</li><li>• GNIS System</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
5.4		<p>Demonstration of process implementation.</p> <p>Specific areas for review:</p> <ul style="list-style-type: none"><li>• Is asset register maintained &amp; updated regularly</li><li>• Are there sufficient operating staff resources within WA Gas Networks &amp; contractors</li><li>• Training programs for WA Gas Networks &amp; contractors; currency &amp; records</li></ul>	<ul style="list-style-type: none"><li>• Asset register is maintained and updated regularly.</li><li>• WA Gas Networks has sufficient own and contracted resources to perform required activities. Insufficient staff in Technical Compliance team caused failure in achieving Progress of Internal Quality Audit Program KPI in 2010.</li><li>• Comprehensive training programme has been implemented for the workforce, including induction and refresher training. Records of training for each employee are kept in computerised system. All Training is up to date. Training records for employees and contractors were reviewed at Jandakot depot, where company training group is located.</li></ul>	<p>5 It is recommended that the WA Gas Networks Environmental Advisor periodically attends the regional depots to provide presentations of the environmental information, typically provided in the Safety Focus meetings and Envirograms within the metropolitan area.</p>
WAGN Asset Management System Review Report May 2011 FINAL.doc		<ul style="list-style-type: none"><li>• Emergency/Incident reporting reports</li></ul>		401012-01595 - REP 002Rev 2 : 30 May 2011



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
		<ul style="list-style-type: none"><li>• Emergency response plans</li><li>• Emergency/Incident reporting reports</li><li>• Is compliance with statutory &amp; regulatory requirements maintained &amp; measured</li><li>• Investigations into breaches and corrective action taken</li></ul>	<ul style="list-style-type: none"><li>• Emergency response plans are available for all scenarios.</li><li>• Emergency reports are provided in SAP system. Major emergencies are analysed and reported individually. Reports are distributed depending on type of emergency/incident. [Ref 22}</li><li>• Compliance with statutory and regulatory requirements is maintained and measured by KPIs.</li><li>• Investigations into breaches by WA Gas Networks staff and contractors and corrective actions are closed by a dedicated staff.</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
		<ul style="list-style-type: none"><li>Leakage surveys, odorant levels and KPIs used to report system performance.</li></ul>	<ul style="list-style-type: none"><li>Pressure in key points of the system is monitored by telemetry linked to the control room. Leakage surveys are carried out in accordance with the approved plan. Odorant levels are checked by sampling in accordance with plan. Samples are analysed by an independent laboratory. UAFG levels exceed the KPI. Ongoing investigation to determine the cause of unacceptable levels of UAFG and to propose required remedial actions. Number of "Operating Outside Expected Range" Incidents KPI failed in 2010. WAGN carries out Ongoing Investigation to determine the cause of unacceptable level of UAFG and to propose required remedial action/s. In Albany installation of a pressure booster for commercial customer is considered to allow further development of the network.</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
5.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>Operational policies and procedures are documented and linked to service levels required</li><li>Risk management is applied to prioritise operations tasks</li><li>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.</li></ul>	<ul style="list-style-type: none"><li>Operational policies and procedures are listed in section 5.3. Service levels are based on maintenance plan for routine activities and inspection reports for non routine activities. Activities resulting from periodic inspections are recorded in SAP.</li><li>Risk management is extensively used to prioritise maintenance tasks.</li><li>Assets are well documented in Asset Register and SAP system. In addition, crews are carrying documentation of the facilities maintained. Documentation for the Albany network and East Perth Lateral was checked by the auditor and found acceptable. Historical documentation is stored properly, some in archives and some in the SAP system.</li></ul>	<p>The auditor makes the following observations</p> <ul style="list-style-type: none"><li>Operational policies and procedures meet the effectiveness criteria.</li><li>Risk management is discussed in detail in Section 5.2.8. Risk management relevant to asset operations meets the effectiveness criteria.</li><li>Documentation of the existing assets meets the acceptance criteria.</li></ul>





ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
		<ul style="list-style-type: none"><li>• Opportunities and threats for the environment are assessed</li><li>• Staff receive training commensurate with their responsibilities</li><li>• Operational costs are measured and monitored</li></ul>	<ul style="list-style-type: none"><li>• Environmental staff identifies threats in the system environment, assesses the threats and implements appropriate actions.</li><li>• Staff receives training as part of induction and additional training with every new document issued. In addition, training section keeps records of all compulsory re-training required and arranges necessary sessions. The auditor noted that since the last review the training records indicate a significant increase of activities in this area of operations.</li><li>• All WA Gas Networks activities costs are recorded and monitored on monthly basis. These costs are reported as part of the obligations and used for future operating cost predictions. A comprehensive capital expenditure and operating cost monitoring spreadsheet was reviewed.</li></ul>	<ul style="list-style-type: none"><li>• Environmental review of threats and opportunities meets the effectiveness criteria.</li><li>• Training and work instructions meet the effectiveness criteria.</li><li>• Operational cost measurement and recording meets the effectiveness criteria.</li></ul>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
6	Asset Maintenance WA Gas Networks interviewees: Network Operations Manager South - Russell Godsall; Network Operations Manager North - Michael McCarthy; Interview/site visit/location: Jandakot office Effectiveness Rating: B-2			
6.1		Demonstration of 2009 Review Findings Resolution		See Appendix 1
6.2		Changes in strategy implementation since 2009	There were no changes in strategy since 2009 review. However, the Asset Maintenance plan is updated annually.	No action required.
6.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• WAGN RCM and Risk Analysis for WAGN Assets, GD RP 0750, Rev A, 28/01/2011</li><li>• WAGN Distribution Network Asset Maintenance Plan 2010-2011, WAGN 10/02, Rev A, 21/06/2010</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
6.4		<p>Demonstration of process implementation.</p> <p>Specific areas for review:</p> <ul style="list-style-type: none"><li>• Maintenance Plan FY 2009/10- preventative, corrective, emergency etc</li><li>• Maintenance schedules-current &amp; work completed</li><li>• Are failures analysed &amp; appropriate adjustments made to operational/maintenance plans</li></ul>	<ul style="list-style-type: none"><li>• Routine/preventative maintenance jobs are generated in SAP based on annual plan. Non routine activities generated from patrols and inspections are generated in SAP separately. Emergency jobs are generated by controllers based on notifications of emergency situation.</li><li>• Controlled through SAP and Job Completion notices. Measured by KPIs. All maintenance work KPIs were achieved in 2010.</li><li>• All failures are analysed and results used to update the Asset Maintenance Plan every year.</li></ul>	<p>Maintenance activities are mainly carried out well and the network is operating without incidents caused by the lack of proper maintenance. However, a number of potential improvements were identified. The following activities that are required are not carried out:</p> <ul style="list-style-type: none"><li>• Inspection of crossings (watercourse, roads and railway)</li><li>• Fire break and bush fire protection of facilities within hazardous zones.</li><li>• Protection of meter stations against damage by falling trees (Perth) and vehicles (Albany)</li></ul> <p>6 The auditor recommends that WA Gas Networks carry out a risk assessment to consider if an increased frequency of patrols in areas where the signs are damaged often is required</p>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
				<p>7 It is recommended that WAGN reviews its current approach to inspection of crossings to ensure alignment with AS2885.3, creation of firebreaks where necessary, and reviews current protection of facilities against falling trees and vehicles.</p> <p>8 It is recommended that intelligent pigging of the Class 600 pipelines be considered by WA Gas Networks</p>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
6.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• Maintenance policies and procedures are documented and linked to service levels required.</li><li>• Regular inspections are undertaken of asset performance and condition</li><li>• Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule.</li></ul>	<ul style="list-style-type: none"><li>• Maintenance policies, procedures and work instructions are linked to service level required. All documents are available through Livelink system.</li><li>• Regular inspections are undertaken at frequencies depending on importance of the facility. Inspection results are analysed and if required, actions are generated in SAP. Corrosion severity is assessed in accordance with relevant standards and appropriate action is planned. Maintenance records for Albany network and East Perth Lateral were reviewed and found in good order.</li><li>• Maintenance activities are controlled through SAP and Job Completion Notices. Activities are generally completed on schedule. In rare instances of delays, mainly caused by emergency situations, the activities are rescheduled and completed as soon as practicable. All activities are documented in SAP either directly or through hard copies.</li></ul>	<p>WP</p> <p>The auditor makes the following observations:</p> <ul style="list-style-type: none"><li>• Maintenance policies and procedures meet the effectiveness criteria.</li><li>• Inspections of asset performance meet the effectiveness criteria.</li><li>• Maintenance plans and activities meet the effectiveness criteria.</li></ul>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
		<ul style="list-style-type: none"><li>• Failures are analysed and operational/maintenance plans adjusted where necessary</li><li>• Risk management is applied to prioritise maintenance tasks</li><li>• Maintenance costs are measured and monitored</li><li>• System maintenance strategy, including the methodology used to maintain the system and frequency of maintenance activities.</li></ul>	<ul style="list-style-type: none"><li>• Failures are analysed and operational/maintenance plans adjusted where necessary. Since mainly proven equipment and methods are used, failures caused by equipment are rare events. Most of the failures are related to third party activities. Most of the asset management KPIs are comfortably met.</li><li>• Risk management and Reliability Centered Maintenance analysis are undertaken to prioritise maintenance tasks and update the Asset management Plan.</li><li>• Maintenance costs are captured and monitored.</li><li>• System maintenance strategy is based on statutory requirements, risk management and RCM. WAGN has historical data, which are used in preparation of methodology and frequency of maintenance activities.</li></ul>	<ul style="list-style-type: none"><li>• Failure analysis and operational/maintenance plan adjustments meet the effectiveness criteria.</li><li>• Risk management meets the effectiveness criteria.</li><li>• All WA Gas Networks activities costs are recorded and monitored on monthly basis. These costs are reported as part of the obligations and used for future operating cost predictions. A comprehensive capital expenditure and operating cost monitoring spreadsheet was reviewed.</li><li>• System maintenance strategy meets the effectiveness criteria.</li></ul>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
7	Asset Management Information Systems (AMIS) WA Gas Networks interviewees: Asset Services Manager - Maswadi Marsuki; Manager Engineering Services - Dean Solmundson Manager Network Infrastructure - Pat Donovan Interview/site visit/location: Jandakot office Effectiveness Rating: B-2			
7.1		Demonstration of 2009 Review Findings Resolution		See Appendix 4
7.2		Changes in strategy implementation since 2009	The computer system is currently operated by an IT group providing services to the WestNet Group of companies. It is understood that there is a possibility that this arrangement will be changed in the near future.	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
7.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• Five Year IT Strategy</li><li>• Technical Recovery Plan</li><li>• WNG IT Services Access Control Policy</li></ul>	
7.4		Demonstration of process implementation. Specific areas for review: <ul style="list-style-type: none"><li>• IT systems in place &amp; licence documents</li><li>• IT service failures &amp; corrective actions</li><li>• Security processes in place; breaches &amp; remedial actions recorded; monitoring actions recorded</li></ul>	<ol style="list-style-type: none"><li>2 Proven licensed IT systems are used.</li><li>3 There have been no failures of either SAP or GNIS within the reviewed period.</li><li>4 Access is strictly controlled and based on as required basis. System has been ring fenced from other entities using this same IT group.</li></ol>	





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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
				<p>9 It is recommended that a procedure is developed for the verification of formulas within spreadsheets used by Engineering Services.</p> <p>10 It is recommended that all engineering spreadsheets are retained on the server in accordance with the company policies.</p>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
7.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• Adequate system documentation for users and IT operators.</li><li>• Input controls include appropriate verification and validation of data entered into the system.</li><li>• Logical security access controls appear adequate, such as passwords</li><li>• Physical security access controls appear adequate</li><li>• Data backup procedures appear adequate</li></ul>	<ul style="list-style-type: none"><li>• System is adequately documented and training provided for the users. Procedures cover all aspects of the IT operations. Documentation is audited by an outside auditor.</li><li>• Inputs are controlled by restricted access. Verification and validation of data entered is guided by procedures.</li><li>• Security is provided through Access Control Policy.</li><li>• Physical security access controls appear adequate. Access to facilities is restricted.</li><li>• Data back-up procedures are in place and are audited by a third party auditors.</li></ul>	





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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
8	<p>Risk Management</p> <p>WA Gas Networks interviewees:</p> <p>Session1: Dean Solmundson – Manager – Engineering Services</p> <p>Session 2: Russell Godsall – Manager – Network Operations South ; Michael McCarthy – Manager – Network Operations North</p> <p>Session 3: Stewart Jobling – Manager – Technical Compliance Kelvin Grace – Risk and Safety Engineer</p> <p>All sessions and through out the audit: Ben Johnson – Manager – Risk, Compliance and Internal Audit</p> <p>Interview/site visit/location: Jandakot office</p> <p>Effectiveness Rating: B-2</p>			



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
8.1		<p>Demonstration of 2009 Review Findings Resolution</p> <p>Recommendation 5: It is recommended that the "LiveLink" document management issue process be validated to ensure that documents are issued as final.</p>		<p>The majority of documents reviewed had document numbers and revisions indicated but there were a small number that are in the draft form (Engineering Services Design Guideline – Pipelines GD PR0500) or had not been completed (Guidance of Gas Distribution Formal Safety Assessments, GD PR 0690 GU 001, in particular had a number of highlighted sections with comments within the document indicated that it is not complete). There were two documents that had no document number or author's names (MAOP Review and Safe Work Procedure presented for the review residing in Audit folders)</p> <p>Further effort is required to finalise key documents and upload them into Document Control system in final form.</p> <p>STATUS: ONGOING</p>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
8.2		Issue 6: It is recommended that Job Safety Analysis task reviews, be reviewed to ensure that they are adequate and suitable for their intended purpose		WA Gas Networks has carried out a review of all their safe work instructions (SWIs). The reviews included multi-disciplinary team. One SWI and several JRAs were sighted as part of this asset management review (see list of documents in 8.3). The ones reviewed were found to be adequate although SWI did not have a document no or revision date. STATUS: CLOSED. Recommendation 8.3 remains unresolved. There are still documents with Rev A, B or C being used as well as documents with revisions 0, 1, 2 ..... The current document control procedure defines letters as drafts and numbers as issued for use.
		Changes in strategy implementation since 2009		No significant changes as risk management was found to be in a strong position at the 2009 review.  Much better communication of corporate risk issues (newsletters, cultural initiatives).  Collation of actions from FSA studies in a single spreadsheet-based action register.  Both are positive changes



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
8.3		Current key documents (date and revision)	CORPORATE RISK FRAMEWORK & COMMUNICATIONS Management Policy, doc no. WAGN PO 0600, rev. 0, 01/09/2010 Risk Management Plan, doc. No WAGN PR 0600 PL001, rev. 3, 23/02/2011 Risk Management Procedure, doc no. WAGN PR 0600, rev. 0, 01/09/2010 WAGN Risk Management Initiative, doc id: WAGN PR 0600 PL 002, rev. 1, 11/11/2010 Strategic Risk Register Corporate Risk Register Presentations: Launch of Business Strategy (copy of power point slides provided) Risk Management (copy of power point slides provided) Newsletters: Risk Management (first issue 14/03/2011) Risk, compliance & internal audit update (17/03/2011, 3/03/2011, 17/02/2011, 3/02/2011)	



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
8.3			<p>ENGINEERING SERVICES CAPEX Business Case Template Network Infrastructure Business Case Template Upgrade CP protection for HP Pipelines to mitigate corrosion issues, GD RP 0510, issue 1, Mar-2010 Demand reinforcement project Canningvale main extension, 1521-1011-GCA1-SM-054, Issue 1, May-2010 Demand reinforcement project Weaponness Rd NORTH BEACH, GDW RP0300, Issue 1 Dec-2009 Engineering Services Design Guideline – Pipelines GD PR0500, Ver. 00 17/12/2010 (Draft) Change Request Form ASSET MANAGEMENT Asset Management System, WAGN-ST-001, rev. C, 15-Mar-2010 Asset Replacement Strategy, WAGN ST002, rev. B, 01-Jun-2010 RCN and Risk Analysis for WAGN Assets – 2009/10, GD RP 0750</p>	





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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
8.3			<p>TECHNICAL COMPLIANCE</p> <p>Guidance of Gas Distribution Formal Safety Assessments, GD PR 0690 GU 001, Rev. 0 26/2/2010</p> <p>Formal Safety Assessment Tracking Register, rev. E, 21/03/2011</p> <p>OPERATIONS AND MAINTENANCE</p> <p>Operating Plan WAGN 09/10, rev. A June 2009</p> <p>Asset Management Plan 2011, rev. A 21-Jun-2010</p> <p>Job Risk Analysis (JRA) Sheets for the following SAP Notifications: 6039163 (4/3/11); 6032669 (4/3/11); 301010892 (4/3/11); 300970611 (9/3/11 and 11/3/11)</p> <p>Safe Work Procedure (no date / revision)</p> <p>MAOP Review (no date/revision/author or signatures)</p>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
8.4		<p>Demonstration of process implementation.</p> <p>Specific areas for review:</p> <ul style="list-style-type: none"><li>• Risk assessment studies, HAZOP, design reviews</li><li>• MAOP reviews</li><li>• Evidence of communications with Regulatory Authorities</li></ul>		<p>Requirements for various safety studies (formal safety assessment) are documented in the Guidance of Gas Distribution Formal Safety Assessments.</p> <p>Technical Compliance personnel conducts all the in-house workshops and consider themselves independent from projects and possessing sufficient competence for the required workshops, incl. AS2885 risk assessments</p>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
8.4				<p>11 It is recommended that WA Gas Networks develop an action management procedure that clearly outlines responsibilities of various parties, for example, it should be the responsibility of a project (construction) manager to ensure that all actions raised against their engineering (construction) project have been closed prior to hand over to operations.</p> <p>12 It is recommended that all actions raised on WA Gas Networks during external risk assessments are stored in the Action register. WA Gas Networks should request the final copy of the 3<sup>rd</sup> party (eg. developer's) FSA reports to ensure that they are aware of the 3<sup>rd</sup> party responsibilities (in case there is a dispute later on).</p> <p>13 It is recommended that all risk management documentation contains the current approved risk matrix.</p>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
8.4				<p>14 It is recommended that WA Gas Networks finalises the Engineering Services Design Guideline – Pipelines and ensure that it references Guidance of Gas Distribution Formal Safety Assessments, particularly Appendix C for further information on requirements for FSA for different studies/assets.</p> <p>15 It is recommended that WA Gas Networks finalises Guidance of Gas Distribution Formal Safety Assessments. Where information has not been finalised HOLDS can be used to alert the reader to contact Technical Compliance for latest advice rather than leaving highlighted, unfinished sections.</p> <p>16 It is recommended that WA Gas Networks finalises the FSA and HAZOP reports shortly after workshops and do not leave unfinished ambiguous sections of the document.</p>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
				17 It is recommended that a full HAZOP/HAZID is replaced with a workshop template that captures all the pertinent information for each workshop: study team, scope, objectives and exclusions. Reference can be made to guidance documents that detail how to conduct each workshop and only deviations from the standard methodologies are noted on the template. The worksheet with all the relevant information can be published.



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
8.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system</li><li>• Risks are documented in a risk register and treatment plans are actioned and monitored</li><li>• The probability and consequences of asset failure are regularly assessed</li></ul>		<p>Risk management policy and other corporate risk management documents exist and are of high quality.</p> <p>Risk-based approach is evident in WA Gas Networks activities in the area of asset management (refer to examples given in the main text).</p> <p>Risk management framework dictates a hierarchy of risk registers, eg. network level risks are kept on the network level but risks from the network risk register that are Intermediate or higher or 'Not ALARP' are elevated to the corporate register (Ref., Corporate and Strategic Risk registers). The following network-level risks have been elevated to the Corporate/Strategic Risk registers:</p> <ul style="list-style-type: none"><li>• Risk ID 80: Discharge of gas into multi-storey dwelling with internal gas distribution network</li><li>• Risk ID S1: A major incident such as and explosion on a high pressure asset</li></ul>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION WP
				<p>Corporate-level risk registers are reviewed regularly and updated as required. There was evidence (from review of monthly report and fortnightly newsletters) of some risks changing ranking with time due to feedback from stakeholders.</p> <p>Action Register exists for actions from FSA studies by Technical Compliance. It is reviewed periodically with the date of last review for each item noted in the Date last reviewed column.</p> <p>Asset maintenance strategies take into account consequence of failure and condition of the asset. For example, inspection regime proposed for corroded HP pipelines is more extensive than for MP pipeline in good conditions (as described in RCM and Risk Analysis for WAGN Assets – 2009/10, GD RP 0750).</p> <p>Asset creation / upgrades take into account risk of supply interruption, safety risks to personnel (Ref. Project Business Cases GD RP 0510, 1521-1011-GCA1-SM-054, GDW RP0300)</p>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
9	Contingency Planning WA Gas Networks interviewee: Technical Compliance Manager - Stuart Jobling; Interview/site visit/location: Jandakot Office Effectiveness Rating: A-1			
9.1		Demonstration of 2009 Review Findings Resolution		<ul style="list-style-type: none"><li>• Procedure for undertaking of emergency response exercises has been developed and implemented.</li><li>• Action tracking register has been created, Actions are assigned, due dates nominated and completion dates recorded. Significant delays in completion dates were noted.</li></ul>
9.2		Changes in strategy implementation since 2009	Emergency response training exercises are carried out in accordance with a five year plan.	





ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
9.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>Emergency Response Management Plan, GD PL 0160. Rev 4, 03/08/2010</li><li>Emergency Exercises Procedure, GD PL 0160 WI 02, Rev 1, 12/04/2011</li><li>Five Year Emergency Exercise Plan, GD PL 0160 WI 02, Rev 1, 12/04/2011</li><li>Emergency Response Exercises Reports</li></ul>	
9.4		Demonstration of process implementation. Specific areas for review: <ul style="list-style-type: none"><li>Does current documentation specify intervals of emergency simulations</li></ul>	<ul style="list-style-type: none"><li>Yes, current documentation specifies intervals of emergency simulations</li></ul>	Emergency response exercises are carried out in accordance with a realistic plan. All relevant services participate, as required. Comprehensive exercise reports are prepared, lessons learned are discussed, and recommendations for improvement are evaluated and assigned to responsible person/group for action by specified date.



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
		<ul style="list-style-type: none"><li>• Has the interval between emergency simulations been maintained</li><li>• Evidence of communications with Regulatory Authorities</li></ul>	<ul style="list-style-type: none"><li>• The planned intervals have been maintained.</li><li>• Regulatory Authorities are notified and participate in the exercises and post exercise debriefing.</li></ul>	<p>In some instances the close out dates are not being met and it appears that there is a problem with monitoring close out actions and documentation evidencing agreed task.</p> <p>18 It is recommended that the close out actions from exercises and real emergencies that are included in the action tracking register be examined regularly by WA Gas Networks management to ensure close out dates are not overdue.</p> <p>19 It is recommended that WA Gas Networks provides written evidence of close out actions should be provided. In case it has been decided that the recommended action should be not be implemented documented justification should be prepared, including risk assessment.</p>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
9.5		Effectiveness criteria: <ul style="list-style-type: none"><li>Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks</li></ul>	<ul style="list-style-type: none"><li>Contingency plans are documented, consulted with the Emergency services, Police, FESA and other stakeholders. Plans are tested to cover their operability.</li></ul>	20 Issues mentioned in recommendations 18 & 19 should have KPIs allocated. <b>21</b> It is recommended that the 5 year Emergency Exercise Plan be updated to include information regarding details of previous exercises. <ul style="list-style-type: none"><li>Contingency plans meet the effectiveness criteria.</li></ul>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
10	Financial Planning WA Gas Networks interviewees: Senior Regulatory Accountant – Matthew Greene Manager Commercial & Business Development - Justin Scotchbrook Chief Financial Officer – Gunter Hoppe Senior Management Accountant – Luke Burns Interview/site visit/location Perth Office Effectiveness Rating: A-1			
10.1		Demonstration of 2009 Review Findings Resolution		No action required
10.2		Changes in strategy implementation since 2009	No change required. Yearly expenditure justified from the five year plan included in the Asset Management Plan (approved by the board) and Assess Arrangement (approved by the regulator).	



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
10.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• WAGN Asset Management Plan, WAGN PL 10/01, Rev A, 01/06/2010</li><li>• Board Report Extracts – Approval of CAPEX Business Cases and Board Minutes</li><li>• Delegated Financial Authority Policy, FIN PO-0001, Rev 1, 14/11/2010</li><li>• Strategic Business Plan - Extracts</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
10.4		<p>Demonstration of process implementation.</p> <p>Specific areas for review:</p> <ul style="list-style-type: none"><li>Capital expenditure plans FY 2009/10</li></ul>	<ul style="list-style-type: none"><li>Capital expenditure plan and actual expenditures for April 2010 to April 2011 were reviewed. Annual budget was on target. Monthly actual expenditures for May and June 2010 were significantly higher than the budget. WAGN explained that the variance was caused by change in Customer Initiated Capital. This means that the customer requested earlier delivery of gas.</li><li>Operating expenditure plans are prepared for each year based on activities expected for that year, manpower requirements and other operating expenditures and commitments. Operating expenditures for April 2010 to April 2011 were reviewed. There were significant differences between actual and budget monthly expenditures. For example the April 11 actual expenditure was 30% below</li></ul>	<ul style="list-style-type: none"><li>Capital expenditure plans are explained in more detail in Section 5.2.1 and 5.2.1 of this report.</li><li>All departures from the monthly budget have reasonable explanations.</li></ul>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
		<ul style="list-style-type: none"><li>Do the plans reflect asset management requirements</li></ul>	<p>budget for that month. In Jun 2010 – 14% over budget, July 10 – 10% over budget, February 2011 – 16% under budget. Over all, the actual budget for 12 months was lower by 5%, what the auditor considers a reasonable difference.</p> <ul style="list-style-type: none"><li>Plans reflect asset management plan.</li><li>Plans are prepared to meet Access Arrangement requirements and allow proper asset system management. Both five year plan and 20 year financial model were reviewed, but not analysed. These plans are audited by external auditors.</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
10.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• The financial plan states the financial objectives and strategies and actions to achieve the objectives.</li><li>• The financial plan identifies the source of funds for capital expenditure and recurrent costs</li><li>• The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets).</li><li>• The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period</li></ul>	<ul style="list-style-type: none"><li>• The financial plan states the financial objective and strategy and Access Arrangements requirements. More explanation on this subject is given in Sections 5.2.1 and 5.2.2.</li><li>• The financial plan identifies if the funds are internal, developer pays, contribution from the user of gas or recoverable works.</li><li>• Various plans and models are being prepared. The five year business plan and 20 year financial model provide projections of operating statements and statements of financial position.</li><li>• The financial plan provides firm predictions on income for the next five years and financial a model predicts income for the next 20 years period.</li></ul>	<ul style="list-style-type: none"><li>• The financial plan meets the effectiveness criteria.</li><li>• Identification of source of funds meet the effectiveness criteria.</li><li>• Projections of operating statements and statement of financial position meet the effectiveness criteria.</li><li>• Firm predictions for the next five years and predictions for the next 20 years meet the effectiveness criteria.</li></ul>





ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
11	Capital Expenditure Planning WA Gas Networks interviewees: Asset Services Manager - Maswadi Marsuki; Manager Engineering Services - Dean Solmundson Manager Network Infrastructure - Pat Donovan Interview/site visit/location Effectiveness Rating: A-1	<ul style="list-style-type: none"><li>The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services</li><li>Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary</li></ul>	<ul style="list-style-type: none"><li>The financial plan makes provision for operations and maintenance, administration and capital expenditure requirement of the service.</li><li>Significant differences are identified and corrective actions taken where possible. Significant variances in monthly actual/budget were explained as customer driven and annual actual/budget comparison shows no variance.</li></ul>	<ul style="list-style-type: none"><li>Provisions for operation and maintenance meet the effectiveness criteria.</li><li>Budget variance handling meets the effectiveness criteria.</li></ul>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
11.1		Demonstration of 2009 Review Findings Resolution		Nil outstanding
11.2		Changes in strategy implementation since 2009	There were no changes in strategy since 2009 review.	
11.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• WAGN Asset Management System Strategy, WAGN-ST-001</li><li>• WAGN Asset Replacement Strategy WAGN-ST-002</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
11.4		<p>Demonstration of process implementation.</p> <p>Specific areas for review:</p> <ul style="list-style-type: none"><li>• Is the capital expenditure forecast over 5 years and updated yearly.</li><li>• Is the capital expenditure plan consistent with asset life &amp; condition as per the asset management plan.</li></ul>	<ul style="list-style-type: none"><li>• Capital expenditure forecast is for five years and updated annually.</li><li>• Capital expenditure plan is consistent with asset life and condition as per asset management plan.</li></ul>	<ul style="list-style-type: none"><li>• This issue is discussed in more detail in Sections 5.2.1 and 5.2.2.</li><li>• The auditor considers that the life expectancy of the pipeline assets appears to be, in some instances, too long. For example, it is possible that some of the pipelines will last 120 years, but there is no proof that similar assets lasted that long. It is understood that this life expectancy is used in the NPV calculations. It seems to be a very long period for such calculations.</li></ul>



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ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
11.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates.</li><li>• The plan provides reasons for capital expenditure and timing of expenditure.</li><li>• There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned</li></ul>	<ul style="list-style-type: none"><li>• Capital expenditure plan is included in the Asset Management Plan. It covers issues to be addressed during planning process, actions proposed, responsibilities and dates. This plan is included in the Access Arrangement, which is approved by the regulator.</li><li>• The plan provides justifications for capital expenditure and timing of expenditure. Basis for preparation of the plan are described in Section 5.2.1.</li><li>• There is an adequate process to ensure that the capital expenditure plan is updated on annual basis. WAGN Network Planning Strategy document describes the methods, which need to be employed in preparations of the plans. The plans are subjected to internal and external reviews and finally approved by the board and regulator.</li></ul>	<ul style="list-style-type: none"><li>• Capital expenditure plan meets the effectiveness criteria.</li><li>• Justification for capital expenditure meet the effectiveness criteria.</li><li>• Processes to ensure regular updating of the capital expenditure plans meet the effectiveness criteria.</li></ul>



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
12	Review of Asset Management System WA Gas Networks interviewees: Asset Services Manager - Maswadi Marsuki; Manager Engineering Services - Dean Solmundson Manager Network Infrastructure - Pat Donovan  Interview/site visit/location: Jandakot Office  Effectiveness Rating: A-1			
12.1		Demonstration of 2009 Review Findings Resolution		KPI targets for the UAFG are still not achieved. WA Gas Networks has not managed to find a solution to this problem. is the auditor understood that the Regulator (Energy Safety Division of the Department of Commerce) has agreed to change the value of one of this KPI..



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
12.2		Changes in strategy implementation since 2009	There were no changes in strategy since 2009 review	
12.3		Current key documents (date and revision)	<ul style="list-style-type: none"><li>• Asset management System Strategy, WAGN-ST-001, Rev C, 15/03/2010</li><li>• WAGN Asset Replacement Strategy, WAGN-ST-002, Rev B, 01/06/2010</li><li>• WAGN Asset Management Plan 2010-2015, WAGN PL 10/01, Rev A, 01/06/2010</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	WP COMMENT/ACTION/RECOMMENDATION
12.4		<p>Demonstration of process implementation.</p> <p>Specific areas for review:</p> <ul style="list-style-type: none"><li>• Are the documents referenced in the asset management system current?</li><li>• Does the account review and approval process include review/comment by major contractors (critical &amp; relevant documents)?</li><li>• What is the status of the safety case?</li></ul>	<ul style="list-style-type: none"><li>• All key asset management system documents are current and are being updated annually. The documents are generally of high quality and provide good guide for the process.</li><li>• Contractors are not usually involved in this process. Contractors have an opportunity to review the cost estimate for the project funded by them.</li><li>• The Safety Case is being currently audited by an external auditor.</li></ul>	



ITEM	REVIEW KEY DESCRIPTION	ISSUE FOR REVIEW	WP REVIEW NOTES	COMMENT/ACTION/RECOMMENDATION
12.5		<p>Effectiveness criteria:</p> <ul style="list-style-type: none"><li>• A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current</li><li>• Independent reviews (e.g. internal audit) are performed of the asset management system.</li></ul>	<ul style="list-style-type: none"><li>• There are procedures in place to ensure that any changes to the asset system are recorded. As the Asset Management Plan is updated annually all the changes that took place in the previous year are included in the revised document.</li><li>• Independent reviews by internal and external auditors are carried out. Risk assessments are carried out for every stage of the asset management system.</li></ul>	<p>WP</p> <ul style="list-style-type: none"><li>• The review process meets the effectiveness criteria.</li><li>• Independent reviews meet the effectiveness criteria.</li></ul>





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## **Appendix 2    Field Trip Reports**



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## **Trip to Albany 6.04.2011**

Trip to Albany was organised as a result of ERA's request to review changes implemented after the 2009 review, and in particular the removal of corrosion from AL30 meter station piping.

On arrival the three meter stations identified in 2009 report were visited and inspected. The following observations were made:

1. The stations' piping was painted and did not show signs of pitting and/or corrosion.
2. Two out of three stations were located in fenced cages. The third station was located behind the fitness centre building in an area with a restricted access.
3. The stations did not have WAGN sign informing of the emergency phone number and LPG presence. One of the stations has an old Alinta sticker.
4. The fourth station visited supplies gas to a large commercial laundry. This station's piping is in a reasonable condition and does not require an immediate attention.
5. Two stations (Department of Agriculture and commercial laundry) are unprotected against a possible damage by vehicles parking very close to the piping.
6. Station located near the Department of Agriculture offices does not have a suitable firebreak.

After visits to the stations the WAGN's Albany representative was interviewed. He has described the design of the network and LPG storage facility and operation and maintenance of the local LPG distribution system. During the interview the following observations were made:

- A. The WAGN representative is familiar with his area of responsibility, licence obligations, understands the difference between natural gas and LPG and is familiar with the risks associated with handling the LPG.
- B. The staff of Albany Depot received induction training, but the refreshers are mainly carried out by documentation sent from the head office. This aspect of the operation of this small outpost should be reviewed by WAGN management.
- C. There is a set of procedures and work instructions available in the office and copies of the relevant documents are kept in the vehicles of each employee.
- D. The work instructions are up to date and of a very high quality.
- E. Local Supervisor is in a frequent contact with the stakeholders and authorities.
- F. Measures to protect the network from damage by activities of the local contractors and developers are undertaken.
- G. Maintenance activities are carried out in accordance with a plan and results of routine patrols.
- H. Reliability Centred Maintenance Analysis is carried out to ensure that the maintenance work is carried out when it is required.



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- I. Corrosion is removed either during planned refurbishment of the facilities (if superficial), or immediately when it may cause integrity risk.
  
- J. The warning signs are rarely damaged and repaired immediately after discovery.

In summary, the Albany operations are run efficiently and safely.

Pictures are shown in Appendix 3.



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**Inspection of the East Perth Lateral, 8.04.2011**

East Perth lateral has been selected as a sample of the ASME Class 600, high pressure, pipeline and facilities. This pipeline was built in 1985 and runs from DBNGP MLV station 119 to East Perth Gate Station located near the East Perth Power Station. This pipeline operates significantly below its design capacity.

When the pipeline was built most of the route was located in sparsely populated areas. This situation has changed significantly, especially in Bayswater and Maylands areas where new houses were built near the pipeline Right of Way (ROW).

The pipeline ROW, where inspected, appears to be in a very good condition, including wetland, creek, road and railway crossings. No signs of danger to the integrity of the pipeline were observed.

Based on information provided by WAGN, the pipeline security in areas near housing development has been increased by installation of the concrete slabs placed above the pipeline and reduction of possible release of heat energy to less than 1GJ/sec in case of the pipeline damage. These measures meet the AS2885.1-2007 requirements.

It has been noted that the road, railway and watercourse crossings are not inspected during pipeline patrols or any other inspections. Railway crossings are checked for the CP protection, AC induced voltage from power lines and DC stray current from the electric railway crossing the pipeline.

The road and watercourse crossings do not have any specific inspection carried out. A programme for checking the crossings currently not inspected should be implemented.

The cathodic protection of the pipeline system is being checked properly by a periodic reading of the voltage at the test points. Condition of the pipeline coating is checked by the DCVG surveys. The results of these surveys are summarised in the Maximum Allowable Operating Pressure (MAOP) reports.

Information provided for the Guildford Rd and railway crossing CP measurements indicate that the pipeline is slightly "overprotected" in this area. This means that the voltage recorded is slightly above the optimum level, but still within the safe operating parameters.

There are three metering and two valve stations. These facilities are maintained properly, but look a bit untidy due to the weeds growing between the scheduled inspection visits.

The mainline valve located near the Garratt Road Bridge does not have sufficient protection against bush fires and falling trees. This issue requires attention.

There are some signs of surface corrosion on some fittings and equipment at the metering stations. This corrosion does not require immediate action, but should be monitored and protective coating selected on the bases of analyses of causes of corrosion.

Generally, the East Perth Lateral and associated facilities are in a reasonable condition for a 26 years pipeline.

Pictures are shown in Appendix 3.



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## **Appendix 3    Photos**



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**PART 1 - ALBANY**

AL30 Meter Station next to Department of Agriculture.

Observations:

- 1 Firebreaks should be established.
- 2 Tree branches hanging over the station should be removed.
- 3 WA Gas Networks sign should be placed on the fence.
- 4 Barrier or bollard should be considered to protect the facility from damage by vehicles.





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AL30 Metering Station at Albany Senior High School

Observations:

1. Station in a good condition.
2. WA Gas Networks sign should be placed on the fence.







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AL30 Meter Station next to fitness centre

Observations:

1. Station is in a good condition.
2. WA Gas Networks sign should replace Alinta sticker.





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Albany Commercial Laundry Meter Station.

Observations:

1. The station security should be improved.
2. Customer's cars park very close to the station piping.
3. Facility is in good condition.
4. Operation of main valves is restricted by padlocks, but small valves can be operated by vandals.
5. Surrounding trees and bushes should be removed.





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**PART 2 – EAST PERTH LATERAL**

East Perth Metering Station

Observations:

1. Station in a good condition.
2. Some minor corrosion on fittings and flanges, which will be removed during expected station relocation.





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Garratt Road Mainline Valve

Observations:

1. Station is not well protected against bush fires.
2. Overhanging tree may damage the piping.





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Two Roads, High Voltage Power Line and Railway Crossing



South Caversham Station

Observations:

1. Generally in good conditions.
2. Some signs of vandalism and defaced signs.



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Caversham Station

Observations:

1. Weeds within the fence line.
2. Signs of surface corrosion.
3. Condition not as good as the DBNGP station across the fence.





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## **Appendix 4    Response to previous Review Recommendations**



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**Review 2007**

<b>Key Process</b>	<b>OSD 2009 Recommendation</b>	<b>WorleyParsons Comments &amp; Recommendations (in bold)</b>
# 6 Asset Maintenance	Signage replacement program is nearing completion It is recommended that outstanding Signage be added to SAP, to ensure they are completed in a timely manner.	Signage replacement program has been completed in 2009.  All damaged signs are identified during routine patrols and information is added to SAP to alert relevant staff of the need to replace or repair the sign.  This action is now closed
# 6 Asset Maintenance	However, from the 2009 audit further corrosion was identified at Albany on AL30 meter regulator assemblies. It is recommended that inspection & painting of AL30 meter sets is included in Maintenance Plan. WNE have advised a new database is to be established to capture this maintenance work.	The AL30 meter sets in Albany have been painted and a process for dealing with corroded facilities has been introduced. Detected corrosion is assessed and severity classified. Based on the severity, priority of the repair is defined and appropriate requests are recorded in SAP. During 2011 field inspection in Albany corrosion requiring urgent attention was not found.  WA Gas Networks procedures require assessment of corrosion during routine inspection of the facilities.  This action is now closed
# 9 Contingency Planning	OSD suggest that location and frequency of emergency tests be incorporated into a 5 year Emergency test schedule	5 year Emergency Exercise Plan has been prepared and implemented.  This action is now closed



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**Review 2009**

<b>Rec. No</b>	<b>OSD 2009 Recommendation</b>	<b>WorleyParsons Comments &amp; Recommendations</b>
1	WestNet Energy reviews “Decommissioning of Gas Pipes and Facilities” and upgrades the procedure to include reference to treatment of the decommissioned asset in SAP and GNIS, such that the asset register is updated.	The procedure has been updated as recommended and current practice reflects the requirement of the procedure.  This action is now closed
2	It is recommended that WestNet Energy complete the introduction of day to day operational procedures and provide training in their implementation. In addition, it is recommended that WestNet review their monthly environmental performance targets to reflect the new work place practices.	The auditor notes the development and implementation of environmental procedure as identified in Section 5.2,4 of the 2011 Report and the regular roll-out of environmental training through Envirograms and Safety Focus meetings.  This action is now closed
3	Pipeline marker signage located in difficult to reach areas, (i.e. fenced off fields), has not yet been upgraded in all instances, and may be overlooked. It is recommended that these jobs be identified in SAP, to ensure they are completed in a timely manner.	As per the comments in the recommendation arising from the 2007 review.  This action is now closed.
4	Corrosion and poor security enclosures were located in the 3 meter regulator assemblies visited in Albany; (Details in site visit notes). It is recommended that the maintenance plan for these typical units be changed to include specific mention to security enclosure inspection and corrosion inspection & painting. In addition these sites shall be upgraded.	As stated in Section 3.2 of the 2011 report, a physical inspection of the Albany Meter Sets was undertaken. It can be confirmed that there was no evidence of corrosion and all piping was appropriately painted.  It was further noted that security enclosures were installed, are in reasonable condition and some of the meters had been replaced.  Review of the Asset Maintenance Plan indicated that a corrosion and security enclosure inspection and painting had been included as a specific maintenance requirement for these meter sets.  This action is now closed.
5		The auditor notes the implementation of the



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	<p>“LiveLink” is the WestNet Energy document management system. It is recommended that the issue process be validated to ensure that documents are uploaded as final and approved, such that all documents are issued as final.</p>	<p>WA Gas Networks Document Control Procedure and Integrated Management System (Controlled Documents). It is confirmed that all new and revised documents follow the current procedure. Old documents still have a mixture of numbering systems. WA Gas Networks’ Document Control personnel are monitoring compliance with the new procedures and issues only the documents in the approved format.</p> <p>The auditor notes the implementation of an information management strategy project, which is seeking to implement an information management framework, based on an advisory review undertaken by Ernst and Young as part of the internal audit program for 2009/10. This framework is due to be implemented by December 2011.</p> <p>This action is now closed.</p>
6	<p>Job Safety Analysis in work procedures shall be reviewed to ensure that they are adequate and suitable for their intended purpose.</p>	<p>Safe work instructions are reviewed for all prescribed activities and WA Gas Networks uses a site Job Risk Assessment process to deal with on-site specific hazards.</p> <p>This action is now closed.</p>
7	<p>WestNet Energy develops a 5 year plan describing where emergency exercises are to be conducted. This should also contain details of where the previous exercises were held. The conducting of emergency exercises should be included in the maintenance plan for each year.</p>	<p>The auditor notes the development and implementation of the five year Emergency Exercise Plan and the inclusion of the conduct of emergency exercises in the annual maintenance plan. Current revision of the plan does not provide details of where the previous exercises were held. WA Gas Networks is in a process of reviewing this document and the revised plan will list the locations of previous exercises. Expected completion date – December 2011</p> <p>Ongoing. Responsible B Johnson</p>
8	<p>Procedures be developed for the planning, conduct and implementation of action items when emergency procedures are conducted.</p>	<p>The auditor notes the development and implementation of the WA Gas Networks Emergency Exercise Procedure document, which includes the framework for the five year</p>



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		plan. This action is now closed.
9	Asset Management System document be updated as soon as possible, as it contains references to asset management implementation, which are now out of date.	The auditor reviewed the Asset Management System document and confirms that it is current. This action is now closed.
10	KPI <sup>ns</sup> be produced for UAFG in the Albany and Goldfields regions. In addition it is recommended that a review process be instigated to investigate the UAFG levels, as they are high in comparison with other comparable gas distribution businesses	KPIs produced for all systems. A review of UAFG has been undertaken and in conjunction with ESD a number of initiatives and studies are in progress to manage future UAFG levels. The review is complete and actions are being progressed.