



## FINAL REPORT

### 2008 Performance Audit and Asset Management System Review

Generation Licence EGL15

CSBP Limited

Audit Report	Authorisation	Name	Position	Date
Prepared By		Nicole Davies	Principal Consultant	18 <sup>th</sup> Sept 2008
Agreed By (licensee)		Michael Du Toit	Supply Services Manager CSBP Limited	25 Sept 2008

## Contents

1. Executive Summary .....	4
1.1 Performance Audit Summary.....	7
1.1.2 Limitation of Scope.....	10
1.2 Asset Management System Review Summary.....	10
2. Performance Audit .....	14
2.1 Performance Audit Scope .....	14
2.2 Performance Audit Objective.....	15
2.3 Performance Audit Methodology .....	16
3. Asset Management System Effectiveness Review .....	22
3.1 Scope of the AMS Review .....	22
3.2 Objective of the Asset Management System Review .....	27
3.3 Methodology for Asset Management System Review .....	28
4. Recommendations for Amendment to Audit Process.....	41
4.1 Changes to Licence Conditions.....	42
5. Follow Up Audit Process.....	43

## LIST OF APPENDICES

1. Performance Audit Materiality and Risk Assessment – Generation Licence EGL15
2. Chemicals North - Asset Management System Review Materiality and Risk Assessment – EGL 15
3. Chemicals East - Asset Management System Review Materiality and Risk Assessment – EGL 15

## Glossary of Terms

AMS - Asset Management System  
AMP – Asset Management Plan  
AN2 – Ammonium Nitrate Plant Number Two  
AN- Ammonium Nitrate  
A - Ammonia  
CSBP Ltd – CSBP  
ERA – Economic Regulation Authority  
GES – Geographe Environmental Services  
JDE – JD Edwards Maintenance System  
N – Nitric Acid  
RFP – Request For Proposal  
WPN – Western Power Networks

*This report is prepared by representatives of GES Pty Ltd in relation to the above named client's conformance to the nominated audit standard(s). Audits are undertaken using a sampling process and the report and its recommendations are reflective only of activities and records sighted during this audit process. GES Pty Ltd shall not be liable for loss or damage caused to or actions taken by third parties as a consequence of reliance on the information contained within this report or its accompanying documentation.*

## Quality Control Record

PREPARED BY	Nicole Davies (GES Pty Ltd)	24 <sup>th</sup> September 2008
CHECKED BY	Neema Premji & Brian McKenry (GES Pty Ltd)	24 <sup>th</sup> September 2008
REVIEWED BY	Peter Bastin CSBP Limited	25 September 2008
REVISION	5	11 <sup>th</sup> December 2008

## 1. Executive Summary

CSBP engaged Geographe Environmental Services Pty Ltd (GES) to undertake the first Performance Audit and Asset Management System Review as required by the Economic Regulation Authority (ERA) under Generation Licence EGL15. This combined report contains the audit findings for both the Performance Audit and Asset Management System Review.

The Performance Audit has been conducted in order to assess the licensee's level of compliance with the conditions of its licence.

Sections 13 & 14 of the *Electricity Industry Act* 2004 require as a condition of every licence that the licensee must, not less than once in every period of 24 months (or any longer period that the Authority allows) calculated from the grant of the licence, provide the Authority with a Performance Audit and Asset Management System Review conducted by an independent expert acceptable to the Authority.

The Authority approved the appointment of GES Pty Ltd on the 8<sup>th</sup> July 2008 and subsequently required the development of an audit plan for ERA approval. Notification of the approval of the audit plan for the 2008 Performance Audit of Licence EGL15 was provided on the 13<sup>th</sup> August 2008.

This audit plan has been executed as planned in accordance with the process flowchart for performance/operational audits and asset management system reviews as detailed in the Audit Guidelines – Electricity, Gas and Water Licences (September 2006).

The period for the audit and review is, 26<sup>th</sup> June 2006 to 30<sup>th</sup> June 2008 and the submission of this report before 30<sup>th</sup> September 2008 is evidence of compliance with the Authority's requirements.

## Summary Opinion

The Asset Management System Review and the Performance Audit have been conducted in order to assess the effectiveness of the CSBP's Asset Management Systems and level of compliance with the conditions of its Generation Licence EGL15. Through the execution of the Audit Plan and assessment and testing of the control environment, the information system, control procedures and compliance attitude, the audit team members have gained reasonable assurance that CSBP has established an effective asset management system. The asset management system itself is segmented in accordance with the organisations operational requirements and as an opportunity for improvement the audit team has recommended that an overarching document be compiled to provide clear direction to the relevant aspects of the asset management system. The control environment operated by the licensee is well established and regulated by government organisations, shareholders and corporate requirements which effectively filter through to the organisations operations. During the audit period 26th June 2006 to 30th June 2008, the Licensee has complied with its Generating Licence, with the exception of clauses 12.2, 16.2 and 17. 1. It is noted that all of these breaches were in regards to communication of information to the Authority, and subsequently awareness to the requirements as an outcome of the audit process and systems implemented should reduce the risk of re-occurrence. This audit report is an accurate representation of the audit teams findings and opinions.

## Business Overview

CSBP is a major manufacturer and supplier of chemicals and fertilisers to the Western Australian mining, industrial and agricultural sectors. The company's main operations are at Kwinana in Western Australia with other facilities located at the regional port centres of Geraldton, Bunbury, Albany and Esperance.

The core products in the CSBP chemicals business include ammonia, ammonium nitrate, sodium cyanide and other industrial chemicals. The company operates an ammonia manufacturing plant at Kwinana with an operational capacity of 260,000 tonnes per annum. Ammonia is used by CSBP as a raw material to produce downstream chemicals and fertilisers and is used by customers in nickel refining. The

chemical and fertiliser plants at Kwinana are divided into Chemicals North and Chemicals East. All generation facilities are situated within the processing plant areas.

The generation of electricity is not the core business of the organisation; it is a by-product of the operations. So by nature of the operations, the risk posed by the licensee to the generation of electricity in the SWIS (South West Interconnected System) is minimal.

The Audit Plan included the risk of the failure to maintain assets and subsequent burden on SWIS, however during the audit the following established systems are noted to mitigate this issue;

- A power supply agreement with Synergy has been established which allows for import of a specified amount of electricity to cover operational requirements
- Governor droop characteristics on generators allow for automatic temporary increase on load should there be network stability issues
- Under frequency load shedding relays installed on CSBP system by Western Power

All of the above systems ensure that, whatever limited generation or load capacity, CSBP do actively contribute to maintaining the stability of the SWIS.

## 1.1 Performance Audit Summary

The Audit Teams assessment of the compliance rating for each of the clauses of the Generation Licence EGL15 are summarised in the following table. A comprehensive report of the performance audit findings used to determine these ratings is included in Appendix 1.

### CSBP Performance Audit Compliance Summary

Generating Licence Reference (CI = Clause, Sch = Schedule)	Generation Licence Criteria	Likelihood	Consequences	Inherent Risk	Adequacy of existing controls	Compliance Rating					
						0	1	2	3	4	5
CI 1	Definitions	Unlikely	Major	High	Strong						✓
CI 2	Grant of Licence					✓					
CI 3	Term	Unlikely	Major	High	Strong						✓
CI 4	Fees	Unlikely	Minor	Low	Strong						✓
CI 5	Compliance	Probable	Major	High	Strong					✓	
CI 6	Transfer of Licence					✓					
CI 7	Cancellation of Licence					✓					
CI 8	Surrender of Licence					✓					
CI 9	Renewal of Licence					✓					
CI 10	Amendment of Licence on application of the Licensee	Unlikely	Moderate	Medium	Strong						✓
CI 11	Amendment of Licence by the Authority					✓					

CI 12	Expansion or Reduction of Generating Works, Distribution Systems and Transmission Systems	Unlikely	Moderate	Medium	Strong			✓			
CI 13	Accounting Records	Unlikely	Major	High	Strong						✓
CI 14	Individual Performance Standards					✓					
CI 15	Performance Audit	Unlikely	Major	High	Strong					✓	
CI 16	Asset Management System	Unlikely	Major	High	Strong					✓	
CI 17	Reporting	Unlikely	Major	High	Strong		✓				
CI 18	Provision of Information	Unlikely	Major	High	Strong					✓	
CI 19	Publishing Information	Unlikely	Major	High	Strong						✓
CI 20	Notices	Unlikely	Major	High	Strong						✓
CI 21	Review of the Authority's Decisions	Unlikely	Major	High	Strong						✓

### Operational/Performance Audit Rating Scale

Compliance Status	Rating	Description of Compliance
Compliant	5	Compliant with no further action required to maintain compliance
Compliant	4	Compliant apart from minor or immaterial recommendations to improve the strength of internal controls top maintain compliance
Compliant	3	Compliant with major or material recommendations to improve the strength of internal controls top maintain compliance
Non-Compliant	2	Does not meet minimum requirements
Significantly Non-Compliant	1	Significant weaknesses and/or serious action required
Not Applicable	0	Not Applicable – Not included in audit scope

Auditor hours required for the completion of the Audit between June 2008 and August 2008 as stated in the Audit Plan are detailed below;

- Preliminary site visit - 16 hours (19<sup>th</sup> & 20<sup>th</sup> June 2008)



- 
- Documentation Review – 6 hours
  - Site Audit – 20 hours (13<sup>th</sup> – 15<sup>th</sup> August 2008)

### 1.1.2 Limitation of Scope

There were Generation Licence compliance elements that were not included in the scope of this audit because they did not eventuate in this audit period or have not been established within licence EGL15 (refer to table above).

## 1.2 Asset Management System Review Summary

The various Asset Management Systems established by CSBP at their Kwinana chemical manufacturing facility are effective in the management and maintenance of the assets. The maintenance system is heavily reliant on the JD Edwards (JDE) maintenance management system which is an effective management tool. CSBP's core business involves the manufacture and distribution of ammonia, ammonium nitrate, sodium cyanide, fertilisers and other industrial chemicals and as such electricity generation is a by-product of their manufacturing process. Subsequently the risk posed by the licensee to the generation of electricity is minimal as they can readily import from the grid. At the time of the audit the audit team did note that CSBP were seeking Requests For Proposal (RFPs) from several organisations to supply electricity to CSBP facilities. The current power purchase agreement with Synergy permits CSBP to call on-demand 11MW from the retailer at an agreed premium and export to the system when excess generation is available. During the audit it was also noted that although CSBP did have a legal/safety and environmental register in place, it did not include the Generation Licence.

From the outset CSBP did not have a document that specifically detailed the Asset Management Plan for electricity generation. As a result, during the audit, the auditors had to focus on the individual audit elements and relevant systems in place that still met the requirements of the Audit Element(s). To do this effectively the auditors divided the audit plan into two areas, Chemicals North and Chemicals East, the production and maintenance systems were reviewed separately for each area. All other elements,

financial, safety, risk, environmental, human resources and information systems were reviewed collectively.

The various systems were sighted and provided the audit team with assurance that an asset management approach, philosophy and continual improvement environment exists for the management of the generation assets at CSBP's Kwinana Manufacturing Facilities.

The Audit Teams assessment of the effectiveness ratings for each key process in the licensee's Asset Management System are summarised in the following tables. A comprehensive report of the audit findings is included in Appendix 2 & 3. Auditor hours required for the completion of the review between June 2008 and August 2008 as stated in the Audit Plan are detailed below;

- Preliminary site visit – 16 hours (19<sup>th</sup> & 20<sup>th</sup> June 2008)
- Documentation Review – 20 hours
- Site Audit – 48 hours (13<sup>th</sup> & 15<sup>th</sup> August 2008)

## Chemicals North Asset Management Effectiveness Summary

ASSET MANAGEMENT SYSTEM		Not Performed	Performed Informally	Planned and Tracked	Well Defined	Quantitatively Controlled	Continuously Improving
AMS Criteria	Effectiveness Rating	0	1	2	3	4	5
1. Asset Planning							✓
2. Asset creation/acquisition							✓
3. Asset disposal							✓
4. Environmental analysis						✓	
5. Asset operations						✓	
6. Asset maintenance							✓
7. Asset Management Information System						✓	
8. Risk Management						✓	
9. Contingency Planning						✓	
10. Financial Planning							✓
11. Capital expenditure planning							✓
12. Review of Asset Management System					✓		

## Chemicals East Asset Management Effectiveness Summary

ASSET MANAGEMENT SYSTEM		Not Performed	Performed Informally	Planned and Tracked	Well Defined	Quantitatively Controlled	Continuously Improving
AMS Criteria	Effectiveness Rating	0	1	2	3	4	5
1. Asset Planning							✓
2. Asset creation/acquisition							✓
3. Asset disposal							✓
4. Environmental analysis						✓	
5. Asset operations						✓	
6. Asset maintenance							✓
7. Asset Management Information System						✓	
8. Risk Management						✓	
9. Contingency Planning						✓	
10. Financial Planning							✓
11. Capital expenditure planning							✓
12. Review of Asset Management System					✓		

## 2. Performance Audit

### 2.1 Performance Audit Scope

This is the first audit of CSBP's compliance with obligations relating to Generation Licence EGL15. As such, the scope of the audit is to:

- assess the license holders internal compliance systems
- assess the license holders compliance with its license

for the period 26th June 2006 to 30th June 2008.

As there were no performance standards defined within the generation licence, the Authority's Electricity Compliance Reporting Manual March 2008 was used as the performance criteria for the compliance elements.

The intent of subsequent audits and reviews will be to measure performance over time.

The following personnel participated in the Performance Audit;

The following CSBP personnel participated and were interviewed in the AMS Review.

- Brian McCully , Electrical Project Officer
- Simon Orton, Works Electrical Instrument Superintendent
- Michael Du Toit, Supply Services Manager
- Peter Bastin, Contracting Specialist
- Megan Stewart, Financial Controller
- Allison Walter, Supply Administrative Assistant
- Richard Bilman, Compliance Advisor
- Mark Germain, Senior Environmental Officer
- Kim Eng, Senior Process Engineer Ammonia

## 2.2 Performance Audit Objective

The objective of the performance audit, as defined by the Audit Guidelines, is to assess the effectiveness of measures taken by the licensee to meet obligations of the performance and quality standards referred to in the licence.

In addition to compliance requirements, a specific focus is to be taken on the systems and effectiveness of processes used to ensure compliance with the standards, outputs and outcomes required by the licence. The audit outcome is to identify areas of non-compliance and areas of compliance where improvement is required and recommend corrective action as necessary.

The Audit was conducted in three phases as defined by the Audit Guidelines. The phases and the appropriate audit guide/tool are detailed below;

Phase	Auditor	Relevant Auditing Standard
1. Risk & Materiality Assessment  Outcome - Operational/ Performance Audit Plan	Nicole Davies	AUS 302: Planning  AUS 402: Risk Assessments and Internal Controls  AUS 808: Planning Performance Audits  AS/NZS ISO 19011:2003: Guidelines for quality and/or environmental management systems auditing (i.e. consistent with AUS 302)  AS/NZS 4360:2004: Risk Management
2. System Analysis	Nicole Davies	AS/NZS 9004:2000: Quality Management Systems – Guidelines for performance improvements  AUS 810: Special Purpose Reports on Effectiveness of Control Procedures  As 3806-2006: Compliance Programs
3. Fieldwork  Assessment and testing of;  ▪ The control environment	Nicole Davies  Neema Premji/Brian McKenry	AUS 502: Audit Evidence  AUS 806: Performance Auditing

<ul style="list-style-type: none"><li>▪ Information system</li><li>▪ Compliance procedures</li><li>▪ Compliance attitude</li></ul>		
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### 2.3 Performance Audit Methodology

A risk assessment, assessment of control environment and allocation of audit priority was undertaken in accordance with the Audit Guidelines – Electricity, Gas and Water Licences (September 2006) on each element relating to Generation licensee's of the Electricity Compliance Reporting Manual March 2008 issued by the Authority. It was the opinion of the audit team that this approach would provide an effective assessment of compliance due to each licence condition being incorporated into document.

The Electricity Compliance Reporting Manual (March 2008) as published on the ERA website specifically classifies each licence condition according to a non-compliance rating. As a holder of a Generation Licence, CSBP results in only Minor and Moderate Ratings for non-compliance. According to the criteria within the Electricity Compliance and Reporting Manual, CSBP do not have Major ratings classified (refer Electricity Compliance Reporting Manual (March 2008), Figure 1 Criteria for Classification Section 3.1).

In order to focus the audit effort and identify areas for testing and analysis a preliminary assessment of the risk and materiality of non-compliance with the Generation Licence was undertaken in accordance with the requirements of AS/NZS4360 Risk Management, Section 5.3 and Appendix 1 of the Audit Guidelines. This assessment rating was reviewed during the audit process subject to the verification of control environment.



## Performance Audit Key Findings, Recommendations, Observations & Post Audit Plan

Ref	Licence Condition	Issue	Recommendation	Post-Audit Action Plan
81	A licensee must, not less than once every 24 months, provide the Authority with a performance audit conducted by an independent expert acceptable to the Authority.	Whilst compliance with this requirement is well evidenced through interviews with relevant personnel, the allocation of responsibility and process for ensuring requirements for licence	Potential to use existing systems (i.e. JDE/Site Safe) as a tool for monitoring license and regulatory requirements.	ACTION: Include audit requirement in compliance system i.e. SiteSafe or Internal Audit Schedule  RESPONSIBILITY: Peter Bastin
84	A licensee must provide the Authority with a report by an independent expert as to the effectiveness of its asset management system every 24 months, or such longer period as determined by the Authority.	conditions/legislation are identified was not defined.		DATE: 31 <sup>st</sup> March 2009
103	A licensee must amend the asset management system before an expansion or reduction in generating works, distribution systems and transmission systems and notify the Authority in the manner prescribed, if the expansion or reduction is not provided for in the asset management system.	The Licensee has failed to formally notify the ERA of the expansion of the ammonium nitrate and sodium cyanide businesses during the audit period.	Notify ERA of expansion of AN2 (Ammonium Nitrate Plant Number 2).	ACTION: Notify ERA of expansion of AN2 and subsequent increase in capacity  RESPONSIBILITY: Michael Du Toit  DATE: 15 <sup>th</sup> December 2008
109	A licensee must report to the Authority, in the manner prescribed, if a licensee is under external administration or there is a significant change in the circumstances upon which			

Ref	Licence Condition	Issue	Recommendation	Post-Audit Action Plan
	the licence was granted which may affect a licensee's ability to meet its obligations.	See 103 above	See 103 above	See 103 above
85	A licensee must pay to the Authority the prescribed licence fee within one month after the day of grant or renewal of the licence and within one month after each anniversary of that day during the term of the licence.	System is a requisitional cheque based process with the potential for payment to be delayed (i.e. not received within 30 days)	Include the requirement in the established system as a routine and investigate to the option of paying by EFT to ensure the trail for payment is complete	ACTION: Inclusion of the payment requirement in the Site Safe system/JDE/Compliance Advisor  RESPONSIBILITY: Peter Bastin  DATE: 31 <sup>st</sup> March 2009
319	A Code participant who becomes aware of an outage or malfunction of a metering installation must advise the network operator as soon as practicable.	Through discussions with WPN Metering department it is understood that there is nothing to notify a metering installation malfunction other than a significant deviation in metering data.	Consideration could be given to the following;  - Install voltage relay to facilitate the trigger of an alarm to notify metering installation malfunction.  - Obtain access to the exported energy data from Synergy	ACTION: Undertake investigation into feasibility of installation of Voltage Relays.  Obtain access to exported energy data from Retailer  RESPONSIBILITY: Brian McCully  DATE: 30 <sup>th</sup> November 2008
331	A network operator or a user may require the other to negotiate and enter into a written service level agreement in respect of the matters in the metrology procedure dealt with under clause 3.16(4) of the Code.	The Network Operator has not provided certificates of calibration for any of the meters on site, however the user has several options in verifying the information and to date these have proved adequate in the verification of the metering data provided by the Network Operator.	Consideration could be given to the following - obtain access to the exported energy data from the Retailer.	ACTION: Obtain access to the exported energy data from the Retailer.  RESPONSIBILITY: Brian McCully  DATE:30 <sup>th</sup> November 2008
350	A Code participant must not knowingly permit the registry to be materially inaccurate.			

Ref	Licence Condition	Issue	Recommendation	Post-Audit Action Plan
351	If a Code participant (other than a network operator) becomes aware of a change to or an inaccuracy in an item of standing data in the registry, then it must notify the network operator and provide details of the change or inaccuracy within the timeframes prescribed.	It is noted that no export metering data is provided to the user through the em_Power website.		
349	A network operator and affected Code participants must liaise together to determine the most appropriate way to resolve a discrepancy between energy data held in a metering installation and data held in the metering database.	The current Supply Agreement with Western Power (i.e. Synergy) does not cover dispute resolution processes.  Note: the Supply Agreement was signed pre-desegregation of Western Power and has continued with the retailer Synergy.	Ensure that the revised Supply Agreement adheres with the requirements of the Metering Code in respect to Metering Disputes.	ACTION: Ensure that new negotiated Electricity Supply Agreement complies with the requirements of the Metering Code in respect to Metering Disputes.  RESPONSIBILITY: Peter Bastin Brian McCully  DATE: 30 <sup>th</sup> November 2008
416	A user must, in relation to a network on which it has an access contract, comply with the rules, procedures, agreements and criteria prescribed	Supply Agreement has been established however processes for monitoring requirements of the Agreement have not been established.	Consideration could be given to developing a process for monitoring of requirements of the Supply Agreement.	ACTION: Register Electricity Supply Agreement in CSBP's Site Safe Legal Register  RESPONSIBILITY: Peter Bastin  DATE: 31 <sup>st</sup> March 2009

Ref	Licence Condition	Issue	Recommendation	Post-Audit Action Plan
418	Code participants must use reasonable endeavours to ensure that they can send and receive a notice by post, facsimile and electronic communication and must notify the network operator of a telephone number for voice communication in connection with the Code.	Western Powers Metering Services Department confirmed that some contact information is maintained. However the following information is not held; <ul style="list-style-type: none"> <li>▪ Contact Person is not listed</li> <li>▪ Email not populated</li> <li>▪ Fax not populated</li> </ul>	Provide Metering Services with the following details; <ul style="list-style-type: none"> <li>-CSBP contact person</li> <li>- CSBP email address</li> <li>- CSBP fax number</li> </ul>	ACTION: Contact Metering Services Commercial Co-Ordinator (Grant.woollard@westernpower.com.au or 08-9359-7542 to provide missing contact details). The Meter Number or NMI will be needed as reference. Details missing from database include; <ul style="list-style-type: none"> <li>- CSBP contact person</li> <li>- CSBP email address</li> <li>- CSBP fax number</li> </ul> RESPONSIBILITY: Brian McCully DATE: 30 <sup>th</sup> November 2008
420	A Code participant must notify its contact details to a network operator with whom it has entered into an access contract within 3 business days after the network operator's request			
Generation Licence condition 5.1	Review of Applicable Legislation, including Government Gazette Amendments	The organisation has established systems and procedures for compliance with its Legislative and other requirements (i.e. Site Safe Legal Register, Lawlex subscription) the inclusion of the Electricity Industry Act 2004 was not evidenced.	Ensure that the requirements of the Electricity Industry Act 2004 are incorporated into the organisations compliance systems, for example Lawlex or Site Safe.	ACTION: Register Electricity Industry Act 2004 in CSBP's Site Safe Legal Register RESPONSIBILITY: Peter Bastin DATE: 31 <sup>st</sup> March 2009

Ref	Licence Condition	Issue	Recommendation	Post-Audit Action Plan
Generation Licence condition 14.1	Performance standards are contained in applicable legislation.	Clear accountability/ responsibility for elements of the Generation Licence have not been established.	Accountability and responsibility for requirements of the Generation Licence are required	ACTION: Supply Services Manager made accountable and responsible for Generation Licence  RESPONSIBILITY: Michael Du Toit  DATE: : 31 <sup>st</sup> October 2008

### 3. Asset Management System Effectiveness Review

#### 3.1 Scope of the AMS Review

The review has been established as a requirement of the current Generating Licence EGL 15 issued by the Economic Regulation Authority to CSBP Limited (CSBP) for the CSBP generation units installed at CSBP's Kwinana Manufacturing Facilities.

The scope of the AMS review includes an assessment of adequacy and effectiveness of the CSBP's asset management system, by evaluating during the audit period from 26<sup>th</sup> June 2006 to 30<sup>th</sup> June 2008 the following audit elements:

1. Asset Planning
2. Asset creation/acquisition
3. Asset disposal
4. Environmental analysis
5. Asset operations
6. Asset maintenance
7. Asset management information system
8. Risk management
9. Contingency planning
10. Financial planning
11. Capital expenditure planning
12. Review of asset management system

This is the first Asset Management System Review conducted since the issue of the licence and as such previous audit report findings are not relevant to the content of the report. The review was conducted during June – August 2008 and included a preliminary 2-day site visit and 3-day site audit, desktop review and interview sessions.

To better appreciate the complexities of auditing this particular site it is crucial to understand that electricity generation is not the core business focus of CSBP's Kwinana Manufacturing Facilities but a by-product of their manufacturing operations. The company operates an ammonia manufacturing plant at Kwinana with an operational capacity of 260,000 tonnes per annum with the core business of manufacturing ammonia, ammonium nitrate, sodium cyanide and other industrial chemicals. Ammonia is used by CSBP as a raw material to produce downstream chemicals and fertilisers and is used by customers in nickel refining. The chemical and fertiliser plants at Kwinana are divided into two areas namely, Chemicals North and Chemicals East. All generation facilities are situated within these processing plant areas.

CSBP operates separate business units for operation of its process plants. Each business unit is responsible for the production, performance, costing, maintenance and safety for the process equipment and operation of that equipment.

The business units are:

<b>Fertiliser Production</b>	Manufacture, import, sales and despatch of fertiliser products.
<b>Ammonia &amp; Ammonium Nitrate</b>	Manufacture, import, sales and despatch of ammonia, nitric acid and ammonium nitrate products
<b>Sodium Cyanide</b>	Manufacture, sales and despatch of sodium cyanide products.

All business units utilise the central services which include human resources, safety, risk and environmental management, financial planning, accounting, engineering, maintenance planning, Supply and reliability support.

The ammonia/ammonium nitrate and sodium cyanide business units generate electric power from steam created by waste heat from the manufacturing process.

The purpose of the electric generators is to capture energy that would otherwise be lost and use it to power the electrical requirements of the chemical and other plants at

CSBP Kwinana thus improving the overall efficiency of the chemical processes and reduce both greenhouse gases and the impact on the environment.

Individually the electric generators and associated steam turbines are operated as part of the process plants and not as separate electrical generation systems.

The site electrical distribution system is maintained as a central site service with the Ammonia & Ammonium Nitrate business unit responsible for operation and maintenance.

Each business unit pays for the electric power consumed and gets paid for electrical power generated within its internal financial and accounting systems.

99.5% of electric power generated by CSBP is consumed on the premises. The remaining 0.5% is exported to the South West Interconnected System (SWIS).

### **AMMONIA & AMMONIUM NITRATE**

These plants have three electric generators, 1 for ammonia plant and 1 for each of the ammonium nitrate #1 and ammonium nitrate #2 plants.

Each system is similar in that the electric generator is attached to a steam turbine and a compressor on a common shaft.

The waste heat from reaction of producing ammonia and ammonium nitrate is used to produce steam.

Some of the process steam is used within the process for heating. The remaining steam is converted into rotating energy via the turbine. The primary use of the rotating energy is to drive the compressor as this provides the forced air for the process of manufacture. Any residual energy is converted to electricity by the generator and is then fed into the CSBP electrical distribution network.

### **CYANIDE**

The process of producing cyanide requires the use of an incinerator to burn waste gases. This produces considerable heat which is used to produce steam.



Some of the process steam is used for heating within the process and by the sodium cyanide solids plant. Some of the remaining steam is converted into rotating energy via the cyanide plant #1 and cyanide plant #2 turbines which each drive a generator to produce electric power which is then fed into the CSBP electrical distribution network. Any steam not used for process heating or electric power generation is then dumped through a condenser.

The following CSBP personnel participated and were interviewed in the AMS Review.

- Brian McCully , Electrical Project Officer
- Simon Orton, Works Electrical Instrument Superintendent
- Michael Du Toit, Supply Services Manager
- Peter Bastin, Contracting Specialist
- Megan Stewart, Financial Controller
- Allison Walter, Supply Administrative Assistant
- Roland Lau, Reliability Support Officer
- Barry O'Neill, Technical Officer Maintenance Systems
- Steve Underwood, Supply Services Officer
- Albert Romano, Manager Ammonia / Ammonia Nitrate
- Vinod Verma, Electrical Superintendent Ammonia / Ammonia Nitrate
- Jim Hunter, Project Officer Electrical Maintenance
- Phil Talbot, Manager Engineering
- Mark Tjerkstra, Technical Superintendent Cyanide
- Steve Brandenburg, Capital Accountant
- Andrew Jenner, Emergency Response Coordinator Operations
- Mark Germain, Senior Environmental Officer
- Steve Bettencourt, Maintenance Planner Sodium Cyanide
- Steve Cross, Reliability Group Leader
- Anees Siddiqui, Senior Plant Engineer Ammonia / Ammonium Nitrate
- Darren Thomas, Reliability Group Leader E & I Ammonia / Ammonium Nitrate
- Kim Eng, Senior Process Engineer Ammonia
- Scott Olsen, Technical Superintendent Ammonium Nitrate

- Rodney Hee, IT Applications Administrator

The key documents and other information sources are detailed within Appendix 2 Chemicals North and Appendix 3 Chemicals East.

The Audit Plan for Asset Management System Review included three phases as defined by the Audit Guidelines. The phases and the appropriate audit guide/tool are detailed below;

Phase	Auditor	Relevant Auditing Standard
1. Risk & Materiality Assessment  Outcome – Asset Management System Audit Plan	Nicole Davies  Neema Premji	AUS 302: Planning  AUS 402: Risk Assessments and Internal Controls  AUS 808: Planning Performance Audits  AS/NZS ISO 19011:2003: Guidelines for quality and/or environmental management systems auditing  AS/NZS 4360:2004: Risk Management
2. System Analysis	Neema Premji  Brian McKenry	AS/NZS 9004:2000: Quality Management Systems – Guidelines for performance improvements  AUS 810: Special Purpose Reports on Effectiveness of Control Procedures  AS 3806-2006: Compliance Programs
3. Fieldwork	Neema Premji  Brian McKenry	AUS 502: Audit Evidence  AUS 806: Performance Auditing

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### 3.2 Objective of the Asset Management System Review

The objective of the review is to examine the effectiveness of the processes used by CSBP to deliver asset management, the information systems supporting asset management activities and the data and knowledge used to make decisions about asset management. These elements were examined from a life cycle perspective i.e. planning, construction, operation, maintenance, renewal, replacement and disposal using the guidelines developed by the Economic Regulation Authority.

### 3.3 Methodology for Asset Management System Review

The audit methodology detailed in Appendix 1 & 2 of the Audit Guidelines – Electricity, Gas and Water Licences (September 2006) was used in the execution of the Asset Management System Review and is detailed in a tabular form in Appendix 2/3 of this report

The audit elements for the Asset Management System Review followed the key processes in an asset management lifecycle as defined in the Audit Guidelines.

#### Asset Management System Effectiveness Rating

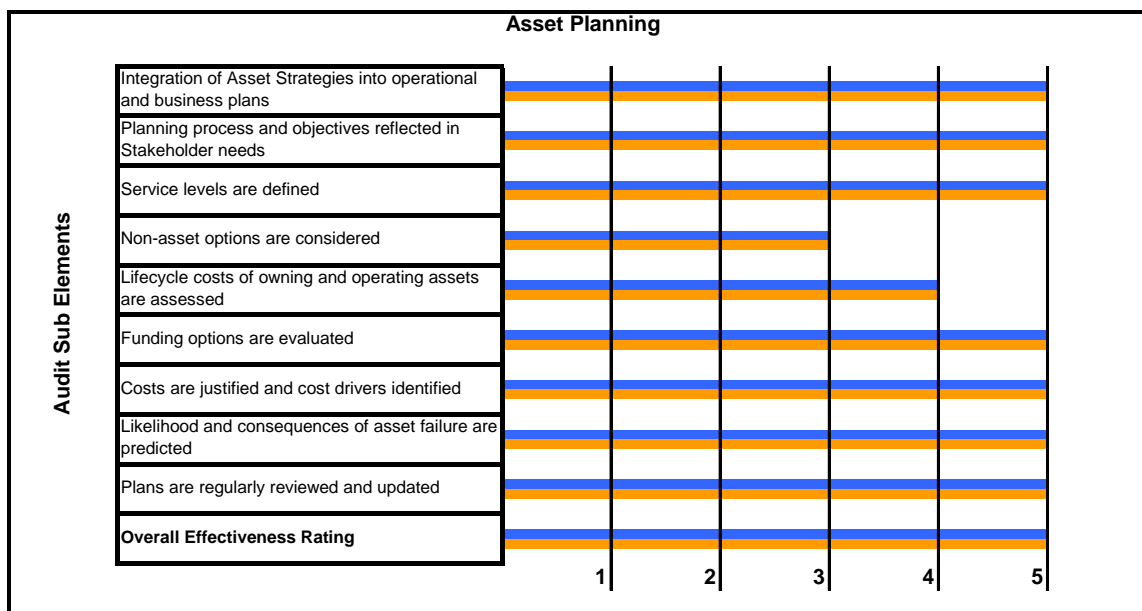
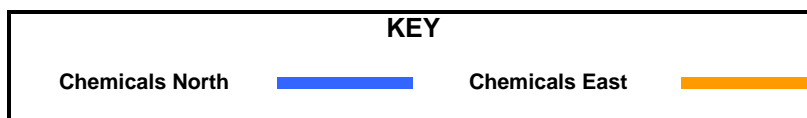
A 6 point rating scale was used as defined in the Audit Guidelines to evaluate the effectiveness of the Asset Management System.

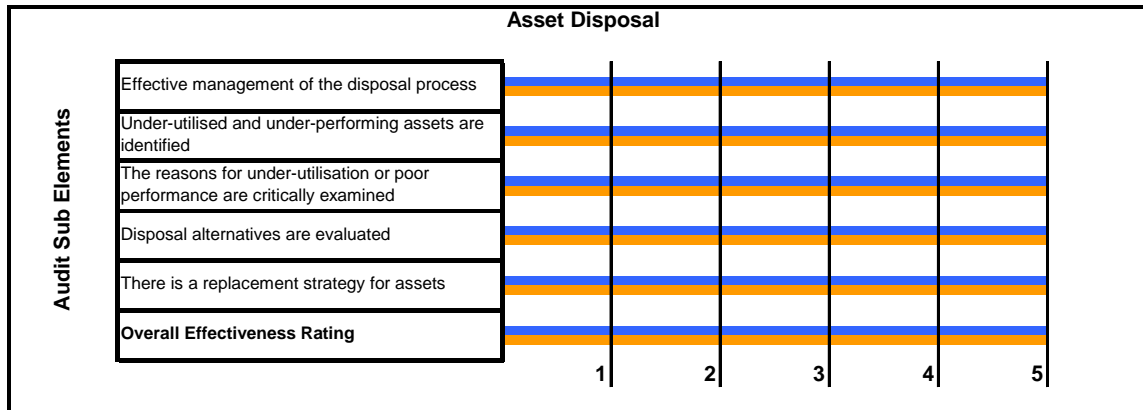
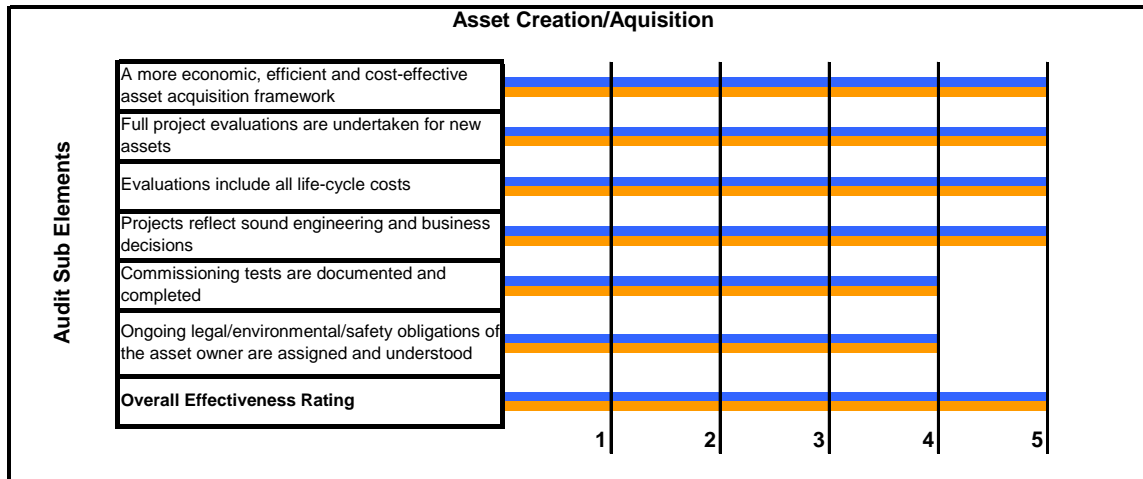
Maturity Rating Model		
Rating	Descriptor	Description
0	Not Performed	
1	Performed Informally	Base practices performed
2	Planned & Tracked	Committing to perform Planning performances Disciplined performance Tracking performance Verifying performance
3	Well Defined	Defining a standard process Tailoring standard process Using data Perform a defined process
4	Quantitatively Controlled	Establishing measurable quality goals Determining process capability to achieve goals Objectively managing performance
5	Continuously Improving	Establishing quantitative process for effective goals Improving process effectiveness

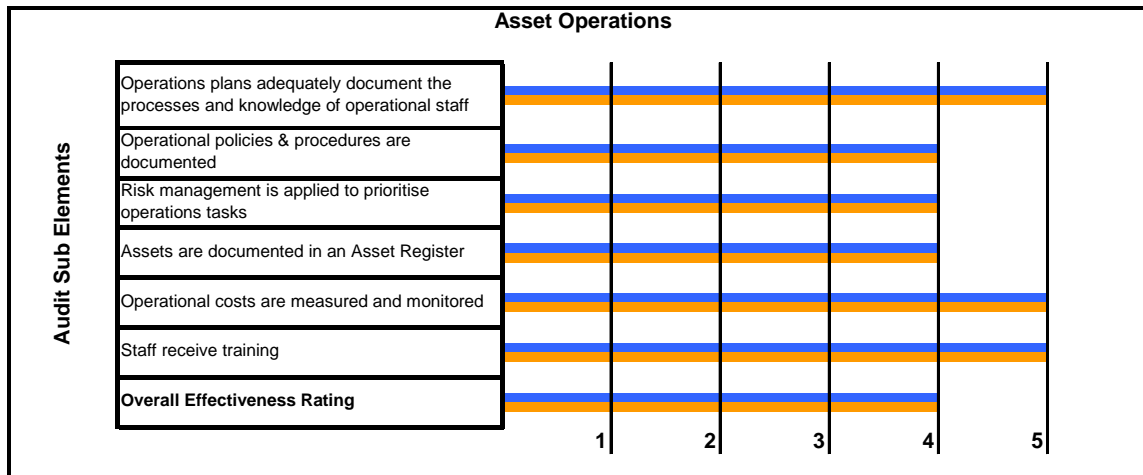
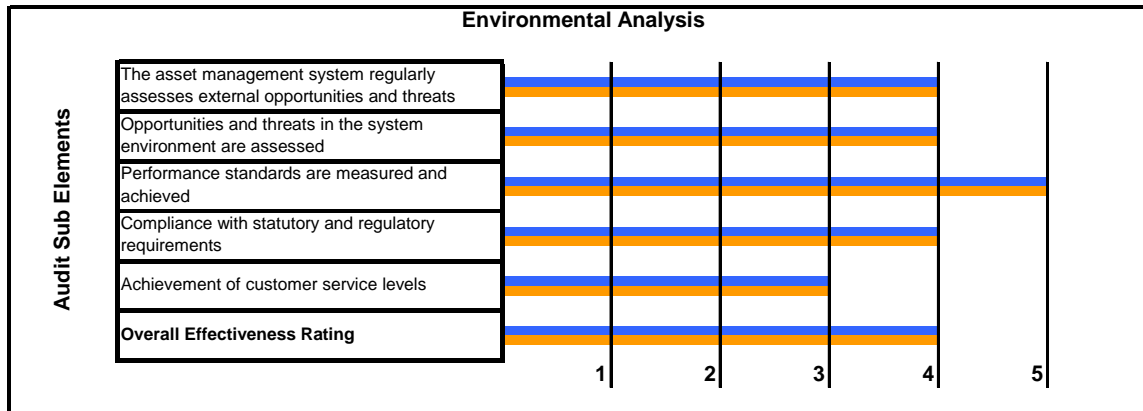
The overall effectiveness rating for each of the audit element is illustrated below:

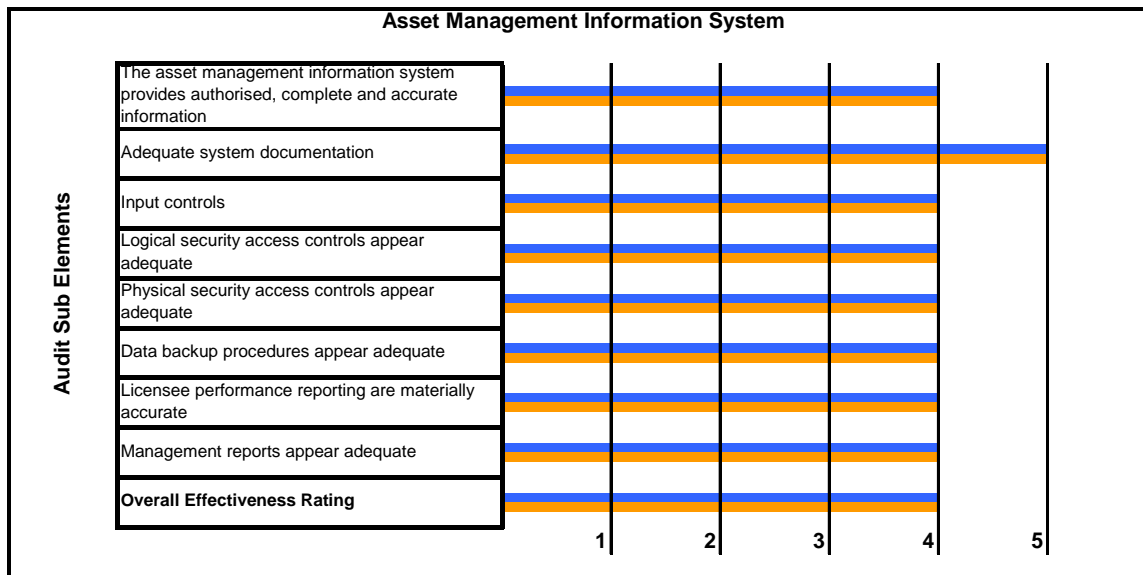
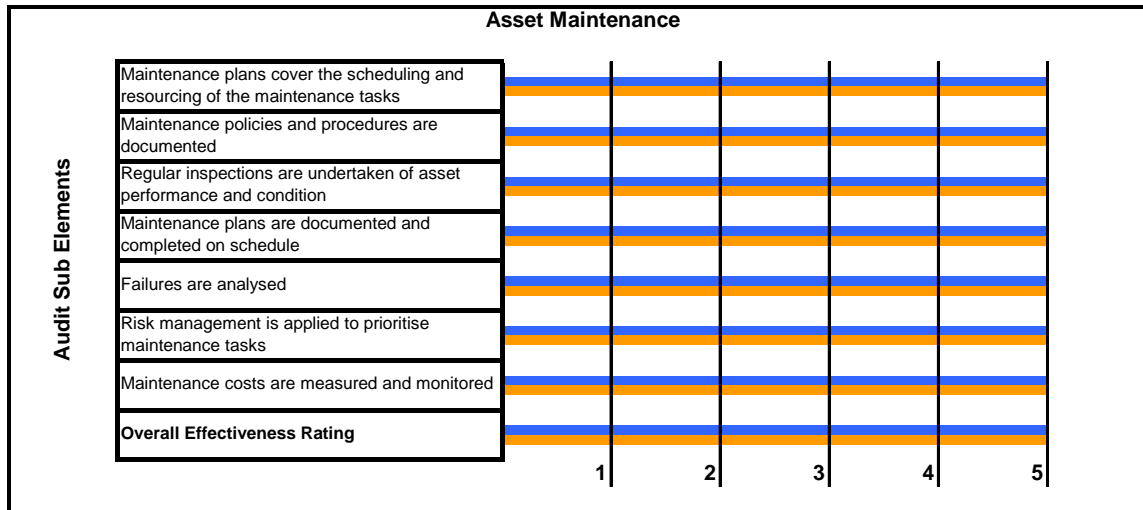
## Asset Management System Maturity Ratings

The Asset Management System Maturity Ratings have been summarised for each of the business areas that is, Chemicals North and Chemicals East followed by summary of Asset Management System Review Key Findings, Recommendations and Post Audit Plan.

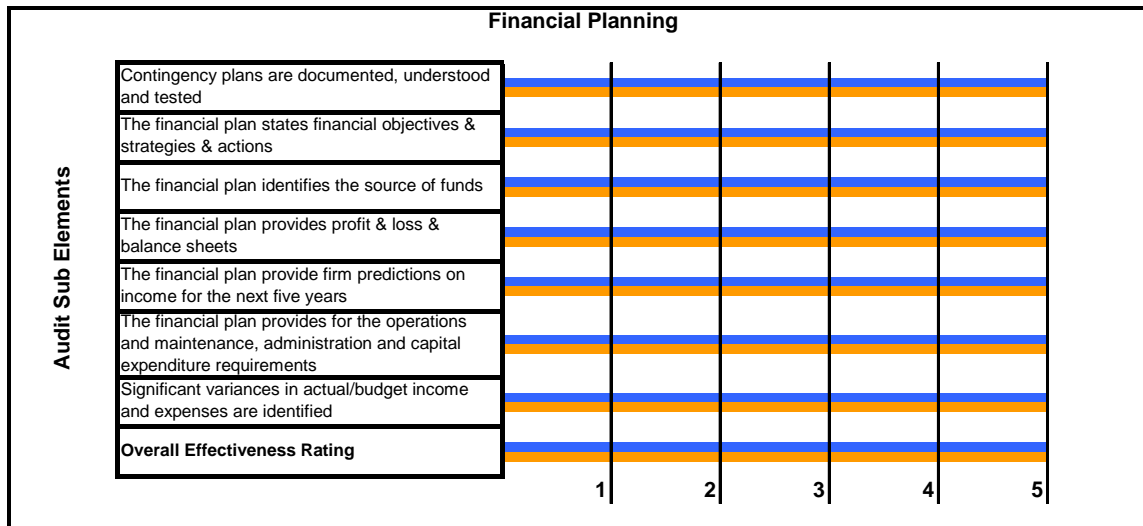
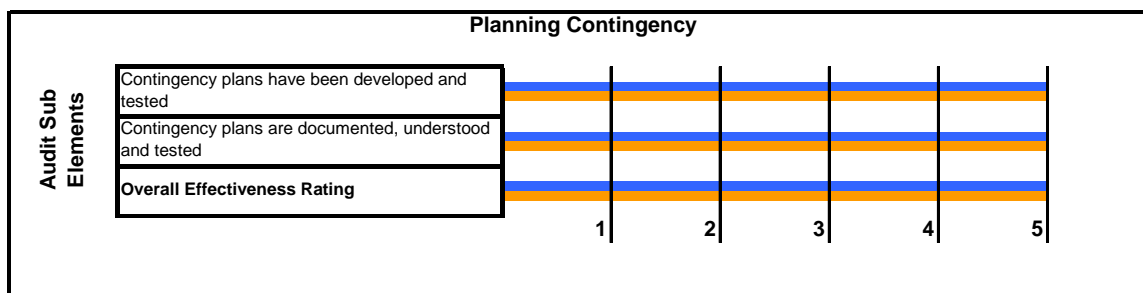
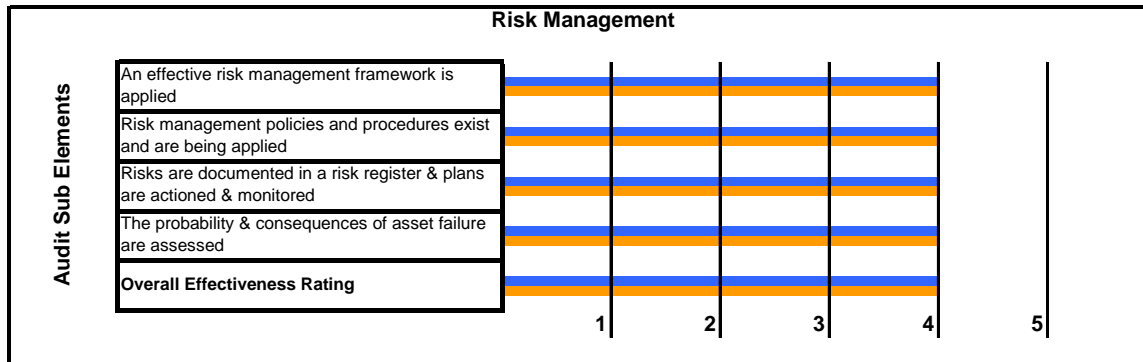


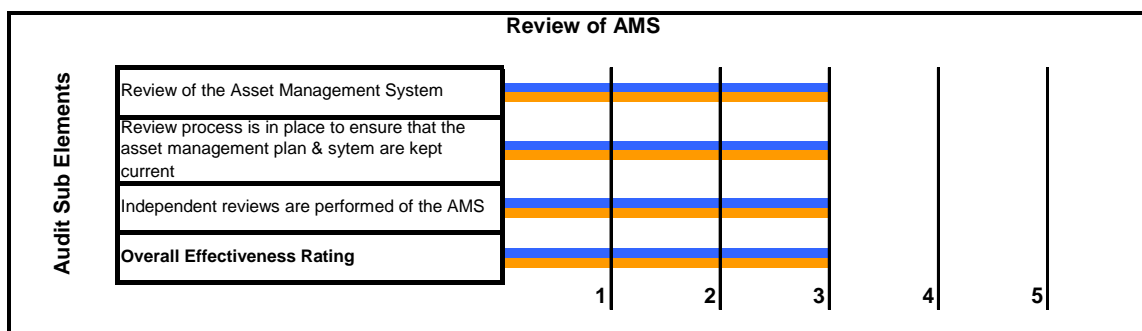
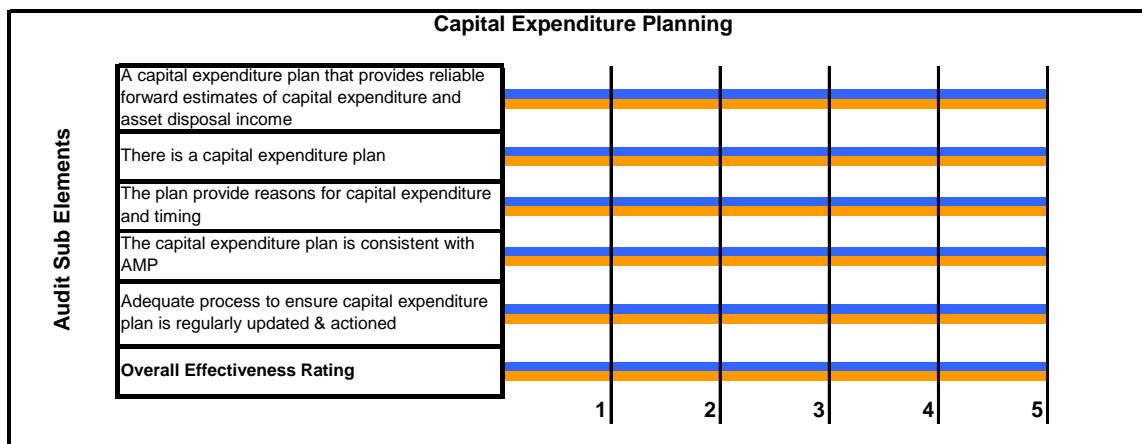












## Chemicals North: Asset Management System Review Key Findings, Recommendations and Post Audit Plan

Ref	Audit Requirement	Issue	Recommendation	Post-Audit Action Plan
1.4	<p>Asset Planning</p> <p>Non-asset options (eg demand management) are considered</p> <p>Effectiveness Rating - 3</p>	<p>The current agreement between CSBP and Synergy (previously Western Power Corporation), allows CSBP to purchase 11MW when it is not generating to maintain it's A and AN production process. Internal systems exist for the partial load shedding and/or islanding within the Power Management Program.</p> <p>At the time of the audit CSBP were seeking RFP's (Request for Proposal) from several organisations to supply electricity to CSBP.</p>	<p>CSBP negotiate a new agreement with Retailer, taking into consideration the ability of CSBP to export to the SWIS.</p>	<p>ACTION: Negotiate a new agreement with Retailer.</p> <p>RESPONSIBILITY:                      Michael Du Toit                      Peter Bastin</p> <p>DATE: 30<sup>th</sup> November 2008</p>
4.4	<p>Environmental analysis – Compliance with statutory and regulatory requirements</p> <p>Effectiveness rating – 4</p>	<p>At the time of the audit a central database of statutory and regulatory requirements did exist, it did not include the Generation Licence.</p>	<p>Include the Generation Licence on the Legal Compliance Register</p>	<p>ACTION: To include the Generation Licence on the Legal Compliance Register</p> <p>RESPONSIBILITY:                      Peter Bastin                      (Contracting Specialist)</p> <p>DATE: 31<sup>st</sup> March 2009</p>

Ref	Audit Requirement	Issue	Recommendation	Post-Audit Action Plan
4.5	Environmental analysis – Achievement of customer service levels  Effectiveness Rating – 3	The current agreement between CSBP and Synergy (previously Western Power Corporation), allows CSBP to purchase 11MW when it is not generating to maintain it's A and AN production process. Any excess generation is taken up by Synergy at minimal payment.  At the time of the audit CSBP were seeking RFP's from several organisations to supply electricity to CSBP.	CSBP negotiate a new agreement with Retailer, taking into consideration the ability of CSBP to export to the SWIS.	ACTION: Negotiate a new agreement with Retailer.  RESPONSIBILITY: Michael Du Toit Peter Bastin  DATE: 30 <sup>th</sup> November 2008
5.2	Asset Operations – Operational policies and procedures are documented and linked to service levels required  Effectiveness Rating - 4	In the Chemical North day to day operating regime it was observed and noted that shift handovers, operational instructions and logs were recorded manually in Yearly A4 Diary and there was no procedure evident for a shift handover	Full implementation of an electronic log system, similar to the system in place at Chemical East for shift handover and recording of operational instructions and daily logs.	ACTION: Full implementation of electronic log system for shift handover and recording of operational instructions and daily logs.  RESPONSIBILITY: Albert Romano ( Manager Ammonia / Ammonia Nitrate)  DATE: 30 <sup>th</sup> September 2009

Ref	Audit Requirement	Issue	Recommendation	Post-Audit Action Plan
12.1	<p>Review of AMP – Review of the Asset Management System to ensure the effectiveness of the integration of its components and their accuracy.</p> <p>Effectiveness Rating – 3</p>	<p>Within each functional area of the business unit there is a well defined review process in place and is effective in ensuring continuous improvement to the process. However there is no single document available such as an Asset Management Plan that captures and summarises these various asset management systems and their review processes.</p>	<p>CSBP to document various asset management systems and its review processes into an over arching asset management plan.</p>	<p>ACTION: Develop an overarching asset management plan.</p> <p>RESPONSIBILITY: Brian McCully (Electrical Project Officer )</p> <p>DATE: 30<sup>th</sup> September 2009</p>
12.2	<p>Review of AMP – A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current.</p> <p>Effectiveness Rating – 3</p>	As above	As above	As above
12.3	<p>Review of AMP – Independent reviews (eg internal audit) are performed of the asset management systems.</p> <p>Effectiveness Rating – 3</p>	<p>Internal and external audits of the various operational and financial systems are conducted however it is not captured and summarised in one document.</p>	As above	As above

The Post Audit Plan has been developed by the audit team in consultation with the

licensee. Approval of the report endorses the content of the post audit plan and implementation of the actions will be included in the next audit.

### Chemicals East: Asset Management System Review Key Findings, Recommendations and Post Audit Plan

Ref	Audit Requirement	Issue	Recommendation	Post-Audit Action Plan
1.4	<p>Asset Planning</p> <p>Non-asset options (eg demand management) are considered</p> <p>Effectiveness Rating - 3</p>	<p>The current agreement between CSBP and Synergy (previously Western Power Corporation), allows CSBP to purchase 11MW when it is not generating to maintain its Cyanide production process. Internal systems exist for the partial load shedding and/or islanding within the Power Management Program.</p> <p>At the time of the audit CSBP were seeking RFP's from several organisations to supply electricity to CSBP.</p>	<p>CSBP negotiate a new agreement with Retailer, taking into consideration the ability of CSBP to export to the SWIS.</p>	<p>ACTION: Negotiate a new agreement with Retailer.</p> <p>RESPONSIBILITY:                      Michael Du Toit                      Peter Bastin</p> <p>DATE: 30th November 2008</p>
4.4	<p>Environmental analysis – Compliance with statutory and regulatory requirements</p> <p>Effectiveness rating - 4</p>	<p>At the time of the audit a central database of statutory and regulatory requirements did exist, it did not include the Generation Licence.</p>	<p>Include the Generation Licence on the Legal Compliance Register</p>	<p>ACTION: To include the Generation Licence on the Legal Compliance Register</p> <p>RESPONSIBILITY:                      Peter Bastin                      (Contracting Specialist)</p> <p>DATE: 31<sup>st</sup> March 2009</p>

Ref	Audit Requirement	Issue	Recommendation	Post-Audit Action Plan
4.5	Environmental analysis – Achievement of customer service levels  Effectiveness Rating – 3	The current agreement between CSBP and Synergy (previously Western Power Corporation), allows CSBP to purchase 11MW when it is not generating to maintain its Cyanide production process. Any excess generation is taken up by Synergy at minimal payment.  At the time of the audit CSBP were seeking RFP's from several organisations to supply electricity to CSBP.	CSBP negotiate a new agreement with Retailer, taking into consideration the ability of CSBP to export to the SWIS.	ACTION: Negotiate a new agreement with Retailer.  RESPONSIBILITY: Michael Du Toit  Peter Bastin  DATE: 30 <sup>th</sup> November 2008
5.2	Asset Operations – Operational policies and procedures are documented and linked to service levels required  Effectiveness Rating - 4	While inspecting the Chemical East area It was noted that a spool had been removed from one of the turbines and this change was not reflected in the operational procedures and logs.	The electronic log system used in the Chemical East is an effective tool in recording changes to operational modes and making all staff fully aware of changes to the operating regime of the plant.	ACTION: Chemical East to implement operational procedure to ensure that engineering modifications to plant include updating of relevant plant operational procedures.  RESPONSIBILITY: Mark Tjerkstra ( Technical Superintendent Cyanide )  DATE: 30 <sup>th</sup> September 2009

Ref	Audit Requirement	Issue	Recommendation	Post-Audit Action Plan
12.1	Review of AMP – Review of the Asset Management System to ensure the effectiveness of the integration of its components and their accuracy.  Effectiveness Rating – 3	Within each functional area of the business unit there is a well defined review process in place and is effective in ensuring continuous improvement to the process. However there is no single document available such as an Asset Management Plan that captures and summarises these various asset management systems and their review processes.	CSBP to document various asset management systems and its review processes into an over arching asset management plan.	ACTION: Develop an overarching asset management plan.  RESPONSIBILITY: Brian McCully (Electrical Project Officer )  DATE: 30 <sup>th</sup> September 2009
12.2	Review of AMP – A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current.  Effectiveness Rating – 3	As above	As above	As above
12.3	Review of AMP – Independent reviews (eg internal audit) are performed of the asset management systems.  Effectiveness Rating – 3	Internal and external audits of the various operational and financial systems are conducted however it is not captured and summarised in one document.	As above	As above

The Post Audit Plan has been developed by the audit team in consultation with the licensee. Approval of the report endorses the content of the post audit plan and implementation of the actions will be included in the next audit.



## 4. Recommendations for Amendment to Audit Process

The purpose of the operational/performance audit is to assess the effectiveness of measures taken by the licensee to meet the obligations of the performance and quality standards referred to in the licence (Section 5.1 Audit Guideline – Electricity, Gas and Water Licences September 2006).

The Generation Licence EGL15 issued for CSBP does not contain any performance standards and varies significantly in content from that of a Water Utility. As such the methodology outlined in the Audit Guideline – Electricity, Gas and Water Licences September 2006 has limited applicability in some areas. For example, section 7.4.1 Operational/Performance Audit Compliance Summary. Several aspects of the Generation Licence do not apply on an ongoing basis and are not relevant to the scope of the audit which limit the value of the report, such as;

- Clause 1 – Definitions
- Clause 3 - Term
- Clause 7 – Cancellation of Licence
- Clauses 8 – Surrender of Licence
- Clause 9– Renewal Of Licence

The audit approach to the Performance Audit is subject to auditor interpretation, although reference to applicable legislation does provide a guide to audit criteria and a review of this process could facilitate more effective audit reports for Electricity Licences.

Consideration could be given to providing an alternative approach where there are a lack of specified performance standards for a licensee such as referencing of the Electricity Compliance Reporting Manual published by the Authority. This enables the auditor to follow specified audit criteria as defined by the classification of the licence.

## 4.1 Changes to Licence Conditions

Section 7.7 of the Audit Guidelines – Electricity Gas and Water Licences September 2006 provides scope for the audit report to recommend changes to the licence conditions where it is the auditors opinion that the existing licence conditions do not adequately address risks that are identified in the compliance summary.

As required by the Guidelines the table below identifies the licence condition(s) affected and nominates alternative wording for an existing condition.

Condition	Current Requirement	Proposed Requirement	Justification
15.1	The <i>licensee</i> must, unless otherwise notified in writing by the <i>Authority</i> , provide the <i>Authority</i> with a <i>performance audit</i> within 24 months after the <i>commencement date</i> and every 24 months thereafter.	The <i>licensee</i> must, unless otherwise notified in writing by the <i>Authority</i> , provide the <i>Authority</i> with a <i>performance audit</i> within 24 months after the <i>commencement date</i> and every 48 months thereafter.	The licensee is not a market participant and as such do not guarantee another entity any amount of electricity at any point in time. The prime focus of the business is to manufacture chemicals and convert the waste heat to electricity as a by-product to improve overall plant efficiency. In addition, the licensee's generators obtain their power from waste heat from the chemicals manufacturing plants and while asset
16.3	The <i>licensee</i> must, unless otherwise notified in writing by the <i>Authority</i> , provide the <i>Authority</i> with a report as to the effectiveness of the <i>asset management system</i> within 24 months after <i>commencement date</i> and every 24 months	The <i>licensee</i> must, unless otherwise notified in writing by the <i>Authority</i> , provide the <i>Authority</i> with a report as to the effectiveness of the <i>asset management system</i> within 24 months after <i>commencement date</i> and every 48 months thereafter.	

	thereafter.		maintenance programs are established, the source of the steam relies on chemical processes which incur many trips. Therefore these plants trip out unexpectedly resulting in a loss of steam and generated power. The intention of the audits to ensure well maintained assets for the supply of electricity is in the opinion of the audit team not applicable in this instance.
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## 5. Follow Up Audit Process

This is the first Performance Audit conducted since the issue of the licence and as such previous audit report findings are not relevant to the content of the report.

# APPENDIX 1

CSBP Ltd

## PERFORMANCE AUDIT

## APPENDIX 2

CSBP Ltd

### ASSET MANAGEMENT SYSTEM REVIEW

Chemicals North

## APPENDIX 3

CSBP Ltd

### ASSET MANAGEMENT SYSTEM REVIEW

Chemicals East