



South32 Worsley Alumina  
ERA Electricity Licence Performance Audit and AMS Review  
Audit Report

March 2018



# Executive summary

South32 Worsley Alumina Pty Ltd (WAPL) Facility 110 Powerhouse generates steam for the Worsley Alumina plant, with electricity produced as a by-product, which powers the Alumina refinery. The Powerhouse also has the ability to send surplus electricity generated to the SWIS. It generates electricity under licence EGL 12 granted by the Economic Regulation Authority (the Authority) on 30 June 2006 (Licence is at Version 6, 10 July 2015).

The License was amended to reflect that BHP Billiton Worsley Alumina Pty Ltd has changed its name to South32 Worsley Alumina Pty Ltd. In accordance with section 21 of the Electricity Industry Act 2004, the Economic Regulation Authority has amended EGL 12 to give effect to the licensee's name change to South32 Worsley Alumina Pty Ltd on the 10<sup>th</sup> July 2015.

Sections 13 and 14 of the Act require South32 WAPL to provide the Authority with a performance audit and an asset management system review (the review) conducted by an independent specialist acceptable to the Authority not less than once in every 24 month period (or such longer period that the Authority allows).

GHD was engaged by South32 to conduct the performance audit and the asset management system review (the audit and review) for the period 1 July 2013 to 30 June 2017.

The audit and review has been conducted and this report prepared in accordance with the "Authority's Audit and Review Guidelines: Electricity and Gas Licences (April 2014)" (the guidelines).

## ***Auditor's Opinion: Performance Audit***

On completion of the performance audit and assessment and testing of the licensee's control environment, risk assessment process, information system, control activities and monitoring, the auditor has formed the opinion that the Licensee has maintained and demonstrated a high level of compliance with the requirements of the Licence conditions of their Electricity Generation License (EGL 12) for the audit period.

The Licensee's consideration and full details are incorporated in this report

## ***Auditor's Opinion: Asset Management System Review***

On completion of the asset management system review and assessment and testing of the licensee's control environment the auditor has formed the opinion that the overall South32 WAPL Asset Management System is considered appropriate and the Licensee has demonstrated effective management of the relevant assets to meet the South32 WAPL's strategic objectives.

The review has identified two improvement opportunities, which need to be addressed. These are listed in the report tables and findings.

## ***Post Audit and Post Review Implementation Plan***

The audit and review has resulted, where applicable, in findings and recommendations that require corrective actions by the Licensee.

These recommendations are listed in the Post Audit and Review Implementation Plan 2017. The Licensee has completed responses including actions, responsibilities and dates for completion.

# Table of contents

|      |  |    |
|------|--|----|
| 1.   | Introduction.....  | 1  |
| 1.1  | Purpose of this report.....  | 1  |
| 1.2  | Limitations.....   | 1  |
| 1.3  | Assumptions .....  | 1  |
| 1.4  | Approval of the Report by the Auditor.....                                       | 2  |
| 2.   | Summary of Audit.....  | 2  |
| 2.1  | The Audit Period .....   | 2  |
| 2.2  | The Assets Identified .....  | 2  |
| 2.3  | This Report .....  | 3  |
| 2.4  | Licensee’s Response to previous Audit and Review Recommendations.....            | 3  |
| 2.5  | Summary of Issues and recommendations from the 2017 Performance Audit .....      | 3  |
| 2.6  | Summary of Issues and Recommendations, 2017 Asset Management System Review ..... | 7  |
| 2.7  | AMS Summary of Effectiveness .....   | 8  |
| 3.   | Objectives and Scope of Audit and Review .....                                   | 15 |
| 3.1  | Background.....  | 15 |
| 3.2  | Audit and Review Objectives .....  | 15 |
| 3.3  | Audit and Review Scope.....  | 16 |
| 3.4  | Audit and Review Period .....  | 17 |
| 3.5  | Audit and Review Methodology .....   | 17 |
| 3.6  | Licensee’s Representation .....  | 17 |
| 3.7  | Locations Visited.....   | 18 |
| 3.8  | GHD’s Audit and Review Team .....  | 18 |
| 3.9  | Key Documents and Information .....  | 18 |
| 3.10 | Abbreviations .....  | 18 |

# Table index

|   |   |
|---|---|
| Table 1-1 - Lead Auditor's Approval.....  | 2 |
| Table 2-1: Previous Non Compliances and Audit Recommendations .....                         | 1 |
| Table 2-2: Previous Asset System Improvements/Deficiencies and Review Recommendations ..... | 1 |
| Table 2-3: Current Audit Non-Compliances Recommendations .....                              | 4 |
| Table 2-4 - Summary of Audit Findings.....  | 5 |
| Table 2-5 - Table 5 from ERA Guidelines .....   | 7 |
| Table 2-6 - AMS Ratings - Table 7 ERA Guidelines .....                                      | 8 |
| Table 2-7 - AMS Performance Ratings from ERA Guidelines .....                               | 8 |

|   |    |
|---|----|
| Table 2-8: AMS Summary of Effectiveness .....                             | 8  |
| Table 2-9: Current Review Asset System Deficiencies/Recommendations ..... | 13 |
| Table 3-1 GHD Audit Team.....   | 18 |

## Appendices

Appendix A – Licence Performance Audit Checklist

Appendix B - Asset Management System Review Checklist

Appendix C – Key document list



# 1. Introduction

## 1.1 Purpose of this report

This Report covers the audit findings and recommendations of the operational audit and asset management system review of the South32 Worsley Alumina Pty Ltd (WAPL) electricity generation licence EGL 12, for the time period 1 July 2013 to 30 June 2017.

The License was amended to reflect that BHP Billiton Worsley Alumina Pty Ltd has changed its name to South32 Worsley Alumina Pty Ltd. In accordance with section 21 of the Electricity Industry Act 2004, the Economic Regulation Authority has amended EGL 12 to give effect to the licensee's name change to South32 Worsley Alumina Pty Ltd on the 10<sup>th</sup> July 2015.

The report has been prepared in accordance with the Authority's Audit and Review Guidelines: Electricity and Gas Licences (April 2014) and will be submitted to the Economic Regulation Authority (ERA) in accordance with the requirements of the ERA.

The scope of services and licence compliance requirements are detailed in the Electricity Generation Licence EGL 12, Version 6 Licence dated 10<sup>th</sup> July 2015.

## 1.2 Limitations

*This report: has been prepared by GHD for South32 Worsley Alumina and may only be used and relied on by South32 Worsley Alumina for the purpose agreed between GHD and the South32 Worsley Alumina as set out in this report.*

*GHD otherwise disclaims responsibility to any person other than South32 Worsley Alumina arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.*

*The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.*

*The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.*

*GHD has prepared this report on the basis of information provided by South32 Worsley Alumina and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.*

## 1.3 Assumptions

This Report is an accurate representation of the findings and opinions of the auditors following the audit and review of the client's conformance to nominated Licence conditions. The audit provides a reasonable level of assurance on the effectiveness of control procedures however there are limitations due to the nature of the evidence available to the auditor, the sampling and checking of evidence, the limitations of internal controls and the need to use judgement in the assessment of evidence. The auditors have relied on evidence coming to the reviewer's attention showing that the control procedures are not effective, when the initial process and procedures do not provide sufficient evidence to the level that would be required by a review.

The Post Audit and Review Implementation Plan (PAIP) is a document prepared by the Licensee in response to the recommendations provided by the audit and review. As it represents the Licensee's views and actions it does not form part of the audit and review and is provided separately in accordance with the guidelines.

## 1.4 Approval of the Report by the Auditor

I, Alan Meagher hereby state that this audit and review report is an accurate representation of the audit teams findings and opinions.

Contact details as below.

**Alan Meagher**  
Executive Advisor - Risk Management  
GHD Advisory

T: +61 8 6222 8283 | V: 618283 | E: [alan.meagher@ghd.com](mailto:alan.meagher@ghd.com) | M: 0419299382  
999 Hay Street Perth WA 6000 Australia | PO Box 3106 Perth Adelaide Terrace WA 6832 | [www.ghd.com](http://www.ghd.com)

Table 1-1 - Lead Auditor's Approval

| Representation | Name      | Signature   | Position                            | Date       |
|----------------|-----------|---|-------------------------------------|------------|
| Lead Auditor   | A Meagher |  | Executive Advisor – Risk Management | 03/11/2017 |

## 2. Summary of Audit

### 2.1 The Audit Period

The performance audit and asset management system review covered the period from 1 July 2013 to 30 June 2017.

### 2.2 The Assets Identified

The licence is granted for electricity generation at the Worsley Alumina Refinery which is located just off the Hamilton River in southwest Western Australia, 140km south of Perth.

The Facility 110 Powerhouse consists of: 3 Coal Fired and 2 Gas Fired boilers, 3 dual extraction condensing steam turbines, one pass through steam turbine and associated infrastructure to generate both steam and electrical power. Additional electricity for the refinery is drawn from a separate Multi-fuel Cogeneration facility (MFC) and electricity grid. Facility 110 Powerhouse also has the ability to send surplus electricity generated into the grid.

Section 3 of the Electricity Industry Act 2004 defines a distribution system as infrastructure associated with the transportation of electricity at nominal voltages less than 66kV. The Act goes further to define a transmission system as infrastructure associated with the transportation of electricity at nominal voltages of 66kV or higher. Electricity within Facility 110 Powerhouse is generated at 11.5kV and distributed to the refinery, and connected to the South West Interconnected System (SWIS) at 132kV.

The audit was conducted through meetings at the South32 office at the Worsley Alumina Refinery and through an extensive document review. A physical inspection of Facility 110 Powerhouse was also carried out.



Comprehensive email and telephone linkups were undertaken to resolve any unanswered questions.

The evaluation of the system effectiveness was carried out through an assessment of the control environment, information system, control procedures, supporting documentation and compliance attitude.

### 2.3 This Report

The report includes:

- (i) a summary of the objectives, the scope of the task and details of this audit and review,
- (ii) key findings and recommendations from this audit and review; and
- (iii) **separately**, a post audit and review implementation plan prepared by the Licensee listing the audit and review recommendations and the responses and actions proposed by South32 WAPL. The plan does not form part of the report and is provided separately to complete the documentation.

### 2.4 Licensee's Response to previous Audit and Review Recommendations

The audit and review considered the actions taken in response to the previous audit and review recommendations (for the period 1st July 2010 to 30th June 2013). The audit has confirmed that out of the 5 previous audit recommendations, all have been closed out.

Details of the recommendations from the previous audit are listed in Table 2-1 and previous review in Table 2-2.

.



Table 2-1: Previous Non Compliances and Audit Recommendations

| Table of Previous Non Compliances and Audit Recommendations (Performance Audit PAIP) |  |  |               |   |
|--|--|--|---------------|---|
| B. Resolved during current Audit period  |  |  |               |   |
| Reference (no./year)   | (Compliance rating/Legislative Obligation/details of the issue)  | Auditors' Recommendation   | Date Resolved | Further action required (Yes/No/Not applicable) & Details of further action required including current recommendation reference if applicable |
| 01/2013  | 4/105/A late payment of Licensing Fees was noted.  | Implement a flagging system WAPL accounts process to notify management that the payment is pending to allow for fee payment on time. | 30/6/2014     | No.   |
| 02/2013  | 3/124/Submitted annual compliance reports and associated advice of receipt from ERA not collated to provide clear closeout of requirement. | WAPL to create repository dedicated to storing collated ERA/EGL required annual compliance documentation                             | 16/7/2014     | No.   |
|  |  |  |               |   |



Table 2-2: Previous Asset System Improvements/Deficiencies and Review Recommendations

| Table of Previous Review Ineffective Components Recommendations |   |  |               |   |
|---|---|--|---------------|---|
| B. Resolved during current Audit period                         |   |  |               |   |
| Reference (no./year)  | (Asset management effectiveness rating/Asset Management System Component & Criteria/details of the issue)   | Auditors' Recommendation   | Date Resolved | Further action required (Yes/No/Not applicable) & Details of further action required including current recommendation reference if applicable   |
| R01/2013  | <p>A2/Asset Planning - Does the planning process and objectives reflect the need of all stakeholders and is it integrated with business planning?</p> <p>WAPL Power Plant does not have an isolated AMP. It presently works on the Alumina Refinery Plan.</p> | <p>WAPL to formalise an isolated consolidated asset plan for the power plant. A reporting system is to be established to measure and monitor actual against the plans.</p> | 30/6/2014.    | <p>No.</p> <p>Power station infrastructure is a subset of the South32 WAPL's Asset Management system, which itself is a subset of South32's business management plan architecture.</p> <p>During the 2017 Asset Management Review, the auditor was satisfied that South32 had a governance process in place that established periodic reviews and tracking against planned activities, and does not foresee any additional value a stand-alone WAPL Power Plant AMP will add.</p> |

|          |   |  |           |     |
|----------|---|--|-----------|-----|
| R02/2013 | <p>A2/Environmental Analysis - Is there compliance with statutory and regulatory requirements?</p> <p>WAPL Power Plant depends on the wider Alumina Refinery to meet some of the environmental/legal and safety obligations.</p>                      | <p>The Licensee is recommended for WAPL Power Plant to establish a consolidated compliance manual to track all these compliance.</p> | 30/6/2014 | No. |
| R03/2013 | <p>B2/Review of the AMS - Are independent reviews (e.g. internal audit) of the asset management system reviewed?</p> <p>There is no independent review of the Asset Management System which WAPL has incorporated into the Alumina Refinery Plan.</p> | <p>The Licensee is recommended to have an independent review/audit conducted on the Asset Management System.</p>                     | 30/6/2014 | No. |

## 2.5 Summary of Issues and recommendations from the 2017 Performance Audit

The auditor has formed the opinion that the Licensee has maintained and demonstrated a high level of compliance with the requirements of the Licence conditions of their Electricity Generation License (EGL 12) for the audit period.

No new recommendations have been made.

.

Table 2-1: Current Audit Non-Compliances Recommendations

| Table of Current Audit Non Compliances Recommendations |  |  |  |
|--|--|--|--|
| B. Unresolved actions at end of current Audit period   |  |  |  |
| Reference (no./year)                                   | Non Compliance/Controls improvement (Rating/Legislative Obligation/Details of Non Compliance or inadequacy of controls)  | Auditors' Recommendation   | Management action taken by end of Audit period   |
| A01/2017   | 103/Electricity Industry Act section 14(1)(b)<br><br>A licensee must notify details of the asset management system and any substantial changes to it to the ERA.   | It was noted that a failure to notify the Authority of change in nameplate capacity occurred during the audit period<br><br>It is the auditor's recommendation that although this was a one-off situation South 32 should review its procedures to ensure appropriate notifications to ERA is submitted as appropriate | This change was reported to ERA in the compliance report dated 14/09/2016 for the period 1 July to 20 June 2016<br><br>No further action required. |
| A02/2017   | 124/Electricity Industry Act section 11<br><br>A licensee must provide the ERA, in the manner prescribed, with any information that the ERA requires in connection with its functions under the Electricity Industry Act | 2016 compliance report was submitted to the ERA 2 weeks late .....<br><br>It is the auditor's recommendation that South 32 raise a recurring work order as a prompt in SAP to flag notification of pending incidents of prescribed information required by ERA   | No further action required.  |



Table 2-2 - Summary of Audit Findings

| No. 1  | Legislative Reference<br>(Cl.=clause, Sch.=schedule) | Audit Priority applied<br>(rated 1 = High to 5 = Low) | Adequacy of Controls Rating <sup>2</sup><br>(A=Adequate, B=Generally adequate, C=Inadequate, D=No controls, NP=Not performed) |   |   |   |    | Compliance Rating <sup>3</sup><br>(1=Compliant, 2=Non-compliant - minor impact, 3=Non-compliant - moderate impact, 4=Non-compliant - major impact, NR=Not rated) |   |   |   |    |
|--|--|---|---|---|---|---|----|--|---|---|---|----|
|  |  |   | A   | B | C | D | NP | 1  | 2 | 3 | 4 | NR |
| <b>Electricity Industry Act 2004</b>           |  |   |   |   |   |   |    |  |   |   |   |    |
| 105  | Electricity Industry Act section 17(1)               | 5   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 106  | Electricity Industry Act section 31(3)               | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 107  | Electricity Industry Act section 41(6)               | 4   |   |   |   | ✓ |    |  |   |   | ✓ |    |
| 119  | Electricity Industry Act section 11                  | 5   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 120  | Electricity Industry Act section 11                  | 5   |   |   |   | ✓ |    |  |   |   | ✓ |    |
| 101  | Electricity Industry Act section 13(1)               | 5   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 121  | Electricity Industry Act section 11                  | 5   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 123  | Electricity Industry Act section 11                  | 5   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 124  | Electricity Industry Act section 11                  | 4   | ✓   |   |   |   |    |  | ✓ |   |   |    |
| 125  | Electricity Industry Act section 11                  | 5   |   |   |   | ✓ |    |  |   |   | ✓ |    |
| 126  | Electricity Industry Act section 11                  | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 102  | Electricity Industry Act section 14(1)(a)            | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 103  | Electricity Industry Act section 14(1)(b)            | 4   | ✓   |   |   |   |    |  | ✓ |   |   |    |
| 104  | Electricity Industry Act section 14(1)(c)            | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| 122  | Electricity Industry Act section 11                  | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |
| <b>Electricity Industry Metering Code 2005</b> |  |   |   |   |   |   |    |  |   |   |   |    |
| 324  | Electricity Industry Metering Code clause 3.3B       | 4   |   |   |   | ✓ |    |  |   |   | ✓ |    |
| 325  | Electricity Industry Metering Code clause 3.3C       | 4   |   |   |   | ✓ |    |  |   |   | ✓ |    |
| 339  | Electricity Industry Metering Code clause 3.11(3)    | 4   |   |   |   | ✓ |    |  |   |   | ✓ |    |
| 364  | Electricity Industry Metering Code clause 3.27       | 4   |   |   |   | ✓ |    |  |   |   | ✓ |    |

<sup>1</sup> The number refers to the item reference in the Electricity Compliance Reporting Manual, ERA July 2017 (Note: Only obligations applicable to the Electricity Generation Licence are shown)

<sup>2</sup> Refer Controls and Compliance Rating Scales in Section 2.5.

<sup>3</sup> Refer Controls and Compliance Rating Scales in Section 2.5.

| No. <sup>1</sup> | Legislative Reference<br>(Cl.=clause, Sch.=schedule) | Audit Priority applied<br>(rated 1 = High to 5 = Low) | Adequacy of Controls Rating <sup>2</sup><br>(A=Adequate, B=Generally adequate, C=Inadequate, D=No controls, NP=Not performed) |   |   |   |    | Compliance Rating <sup>3</sup><br>(1=Compliant, 2=Non-compliant - minor impact, 3=Non-compliant - moderate impact, 4=Non-compliant - major impact, NR=Not rated) |   |   |   |    |   |
|------------------|--|---|---|---|---|---|----|--|---|---|---|----|---|
|                  |  |   | A   | B | C | D | NP | 1  | 2 | 3 | 4 | NR |   |
| 371              | Electricity Industry Metering Code clause 4.4(1)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 372              | Electricity Industry Metering Code clause 4.5(1)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 373              | Electricity Industry Metering Code clause 4.5(2)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 388              | Electricity Industry Metering Code clause 5.4(2)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 401              | Electricity Industry Metering Code clause 5.16       | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 402              | Electricity Industry Metering Code clause 5.17(1)    | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 405              | Electricity Industry Metering Code clause 5.18       | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 406              | Electricity Industry Metering Code clause 5.19(1)    | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 407              | Electricity Industry Metering Code clause 5.19(2)    | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |   |
| 408              | Electricity Industry Metering Code clause 5.19(3)    | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |   |
| 410              | Electricity Industry Metering Code clause 5.19(6)    | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 416              | Electricity Industry Metering Code clause 5.21(5)    | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 417              | Electricity Industry Metering Code clause 5.21(6)    | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 435              | Electricity Industry Metering Code clause 5.27       | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 448              | Electricity Industry Metering Code clause 6.1(2)     | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |   |
| 451              | Electricity Industry Metering Code clause 7.2(1)     | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |   |
| 453              | Electricity Industry Metering Code clause 7.2(4)     | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |   |
| 454              | Electricity Industry Metering Code clause 7.2(5)     | 4   | ✓   |   |   |   |    | ✓  |   |   |   |    |   |
| 455              | Electricity Industry Metering Code clause 7.5        | 4   | ✓   |   |   |   |    |  |   |   |   |    | ✓ |
| 456              | Electricity Industry Metering Code clause 7.6(1)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 457              | Electricity Industry Metering Code clause 8.1(1)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 458              | Electricity Industry Metering Code clause 8.1(2)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 459              | Electricity Industry Metering Code clause 8.1(3)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |
| 460              | Electricity Industry Metering Code clause 8.1(4)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |

| No. <sup>1</sup> | Legislative Reference<br>(Cl.=clause, Sch.=schedule) | Audit Priority applied<br>(rated 1 = High to 5 = Low) | Adequacy of Controls Rating <sup>2</sup><br>(A=Adequate, B=Generally adequate, C=Inadequate, D=No controls, NP=Not performed) |   |   |   |    | Compliance Rating <sup>3</sup><br>(1=Compliant, 2=Non-compliant - minor impact, 3=Non-compliant - moderate impact, 4=Non-compliant - major impact, NR=Not rated) |   |   |   |    |   |
|------------------|--|---|---|---|---|---|----|--|---|---|---|----|---|
|                  |  |   | A   | B | C | D | NP | 1  | 2 | 3 | 4 | NR |   |
| 461              | Electricity Industry Metering Code clause 8.3(2)     | 4   |   |   |   |   | ✓  |  |   |   |   |    | ✓ |

Table 2-3 - Table 5 from ERA Guidelines

**Table 6: Audit compliance and controls rating scales**

| Performance audit compliance and controls rating scales |                             |                                    |                   |   |  |
|---|-----------------------------|------------------------------------|-------------------|---|--|
| Adequacy of Controls Rating                             |                             |                                    | Compliance Rating |   |  |
| Rating  | Description                 |                                    | Rating            | Description   |  |
| A   | Adequate controls           | – no improvement needed            | 1                 | Compliant   |  |
| B   | Generally adequate controls | – improvement needed               | 2                 | Non-compliant – minor impact on customers or third parties    |  |
| C   | Inadequate controls         | – significant improvement required | 3                 | Non-compliant – moderate impact on customers or third parties |  |
| D   | No controls evident         |                                    | 4                 | Non-compliant – major impact on customers or third parties    |  |

## 2.6 Summary of Issues and Recommendations, 2017 Asset Management System Review

The overall South32 WAPL Asset Management System is considered appropriate and capable of effectively managing the relevant assets and meets South32 WAPL’s strategic objectives.

The review has identified two improvement opportunities, which need to be addressed. These are listed in Table 2-9 together with the review recommendations.

Table 2-4 - AMS Ratings - Table 7 ERA Guidelines

**Table 8: Asset management process and policy definition adequacy rating**

| Rating | Description                      | Criteria   |
|--------|----------------------------------|--|
| A      | Adequately defined               | <ul style="list-style-type: none"> <li>Processes and policies are documented.</li> <li>Processes and policies adequately document the required performance of the assets.</li> <li>Processes and policies are subject to regular reviews, and updated where necessary.</li> <li>The asset management information system(s) are adequate in relation to the assets that are being managed.</li> </ul>   |
| B      | Requires some improvement        | <ul style="list-style-type: none"> <li>Process and policy documentation requires improvement.</li> <li>Processes and policies do not adequately document the required performance of the assets.</li> <li>Reviews of processes and policies are not conducted regularly enough.</li> <li>The asset management information system(s) require minor improvements (taking into consideration the assets that are being managed).</li> </ul>         |
| C      | Requires significant improvement | <ul style="list-style-type: none"> <li>Process and policy documentation is incomplete or requires significant improvement.</li> <li>Processes and policies do not document the required performance of the assets.</li> <li>Processes and policies are significantly out of date.</li> <li>The asset management information system(s) require significant improvements (taking into consideration the assets that are being managed).</li> </ul> |
| D      | Inadequate                       | <ul style="list-style-type: none"> <li>Processes and policies are not documented.</li> <li>The asset management information system(s) is not fit for purpose (taking into consideration the assets that are being managed).</li> </ul>   |

Table 2-5 - AMS Performance Ratings from ERA Guidelines

**Table 9: Asset management performance ratings**

| Rating | Description                 | Criteria  |
|--------|-----------------------------|---|
| 1      | Performing effectively      | <ul style="list-style-type: none"> <li>The performance of the process meets or exceeds the required levels of performance.</li> <li>Process effectiveness is regularly assessed, and corrective action taken where necessary.</li> </ul>  |
| 2      | Opportunity for improvement | <ul style="list-style-type: none"> <li>The performance of the process requires some improvement to meet the required level.</li> <li>Process effectiveness reviews are not performed regularly enough.</li> <li>Process improvement opportunities are not actioned.</li> </ul>              |
| 3      | Corrective action required  | <ul style="list-style-type: none"> <li>The performance of the process requires significant improvement to meet the required level.</li> <li>Process effectiveness reviews are performed irregularly, or not at all.</li> <li>Process improvement opportunities are not actioned.</li> </ul> |
| 4      | Serious action required     | <ul style="list-style-type: none"> <li>Process is not performed, or the performance is so poor that the process is considered to be ineffective.</li> </ul>   |

## 2.7 AMS Summary of Effectiveness

Table 2-6: AMS Summary of Effectiveness

|          | Asset Management System Component & Criteria          | Asset management Process and policy definition adequacy rating | Asset management performance rating |
|----------|---|--|-------------------------------------|
| <b>1</b> | <b>Asset Planning</b>                                 | <b>A</b>   | <b>1</b>                            |
| 1.1      | Does the asset management plan cover key requirements | A  | 1                                   |

|          | Asset Management System Component & Criteria  | Asset management Process and policy definition adequacy rating | Asset management performance rating |
|----------|---|--|-------------------------------------|
| 1.2      | Does the planning process and objectives reflect the need of all stakeholders and is it integrated with business planning?  | A  | 1                                   |
| 1.3      | Have service levels been defined?   | A  | 1                                   |
| 1.4      | Have non-asset options (e.g. demand management) been considered.  | A  | 1                                   |
| 1.5      | Have the lifecycle costs of owning and operating assets been assessed?  | A  | 1                                   |
| 1.6      | Have funding options been evaluated?  | A  | 1                                   |
| 1.7      | Are the costings justified and have the cost drivers been identified?   | A  | 1                                   |
| 1.8      | Have the likelihood and consequences of asset failure been predicted?   | A  | 1                                   |
| 1.9      | Are the plans being regularly reviewed and updated?   | A  | 1                                   |
| <b>2</b> | <b>Asset Creation and Acquisition</b>   | <b>A</b>   | <b>1</b>                            |
| 2.1      | Are full project evaluations being undertaken for new assets, including comparative assessment of non-asset solutions?      | A  | 1                                   |
| 2.2      | Do evaluations include all life-cycle costs?  | A  | 1                                   |
| 2.3      | Do projects reflect sound engineering and business decisions?   | A  | 1                                   |
| 2.4      | Are the commissioning tests documented and completed?   | A  | 1                                   |
| 2.5      | Have the ongoing legal/environmental/safety obligations of the asset owner been assigned and understood?                    | A  | 1                                   |
| <b>3</b> | <b>Asset Disposal</b>   | <b>A</b>   | <b>1</b>                            |
| 3.1      | Are under-utilised and under-performing assets identified as part of a regular systematic review process?                   | A  | 1                                   |
| 3.2      | Are the reasons for under-utilisation or poor performance critically examined and corrective action or disposal undertaken? | A  | 1                                   |
| 3.3      | Are disposal alternatives evaluated?  | A  | 1                                   |
| 3.4      | Is there a replacement strategy for assets?   | A  | 1                                   |
| <b>4</b> | <b>Environmental Analysis</b>   | <b>A</b>   | <b>1</b>                            |
| 4.1      | Are opportunities and threats in the system environment assessed?   | A  | 1                                   |
| 4.2      | Are Performance Standards (availability of service, capacity, continuity, emergency response etc.) measured and achieved?   | A  | 1                                   |
| 4.3      | Is there compliance with statutory and regulatory requirements?   | A  | 1                                   |
| 4.4      | Have customer service levels been achieved?   | A  | 1                                   |
| <b>5</b> | <b>Asset Operations</b>   | <b>A</b>   | <b>1</b>                            |

|          | Asset Management System Component & Criteria   | Asset management Process and policy definition adequacy rating | Asset management performance rating |
|----------|--|--|-------------------------------------|
| 5.1      | Are the operational policies and procedures documented and do they link to the required service levels?  | A  | 1                                   |
| 5.2      | Is risk management applied to prioritise operations tasks?   | A  | 1                                   |
| 5.3      | Are assets documented in an Asset Register including asset type, location, material, plans of components, an assessment assets' physical/structural condition and accounting data? | A  | 1                                   |
| 5.4      | Are operational costs measured and monitored?  | A  | 1                                   |
| 5.5      | Are staff receiving training commensurate with their responsibilities?   | A  | 1                                   |
| <b>6</b> | <b>Asset Maintenance</b>   | <b>A</b>   | <b>1</b>                            |
| 6.1      | Have the maintenance policies and procedures been documented and linked to service levels required.  | A  | 1                                   |
| 6.2      | Are regular inspections undertaken of asset performance and condition?   | A  | 1                                   |
| 6.3      | Have the maintenance plans (emergency, corrective and preventative) been documented and completed on schedule.   | A  | 1                                   |
| 6.4      | Are the failures analysed and operational/maintenance plans adjusted where necessary?  | A  | 1                                   |
| 6.5      | Has risk management been applied to prioritise maintenance tasks?  | A  | 1                                   |
| 6.6      | Are the maintenance costs measured and monitored?  | A  | 1                                   |
| <b>7</b> | <b>Asset Management Information System</b>   | <b>A</b>   | <b>1</b>                            |
| 7.1      | Is there adequate system documentation for users and IT operators?   | A  | 1                                   |
| 7.2      | Do the input controls include appropriate verification and validation of data entered into the system?   | A  | 1                                   |
| 7.3      | Is there a logical security access control which is adequate, such as passwords?   | A  | 1                                   |
| 7.4      | Does the physical security access control appear adequate?   | A  | 1                                   |
| 7.5      | Does the data backup procedure appear adequate and are the backups tested?   | A  | 1                                   |
| 7.6      | Are the key computations related to Licensee performance reporting materially accurate?  | A  | 1                                   |
| 7.7      | Do the management reports appear adequate for the Licensee to monitor Licensee obligations?  | A  | 1                                   |
| <b>8</b> | <b>Risk Management</b>   | <b>A</b>   | <b>1</b>                            |

|           | Asset Management System Component & Criteria   | Asset management Process and policy definition adequacy rating | Asset management performance rating |
|-----------|--|--|-------------------------------------|
| 8.1       | Do risk management policies and procedures exist and are they being applied to minimise internal and external risks associated with the asset management system? | B  | 1                                   |
| 8.2       | Are risks documented in a risk register and are treatment plans actioned and monitored?  | A  | 1                                   |
| 8.3       | Is the probability and consequences of asset failure being regularly assessed?   | A  | 1                                   |
| <b>9</b>  | <b>Contingency Planning</b>  | <b>B</b>   | <b>1</b>                            |
| 9.1       | Are contingency plans documented, understood and tested to confirm their operability and to cover higher risks?  | B  | 1                                   |
| <b>10</b> | <b>Financial Planning</b>  | <b>A</b>   | <b>1</b>                            |
| 10.1      | Does the financial plan state the financial objectives and strategies and actions to achieve the objectives?   | A  | 1                                   |
| 10.2      | Does the financial plan identify the source of funds for capital expenditure and recurrent costs?  | A  | 1                                   |
| 10.3      | Does the financial plan provide projections of operating statements (profit and loss) and statement of financial position (balance sheets)?                      | A  | 1                                   |
| 10.4      | Does the financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period?                     | A  | 1                                   |
| 10.5      | Does the financial plan provide for the operations and maintenance, administration and capital expenditure requirements of the services?                         | A  | 1                                   |
| 10.6      | Are significant variances in actual/budget income and expenses identified and corrective action taken where necessary?   | A  | 1                                   |
| <b>11</b> | <b>Capital Expenditure Planning</b>  | <b>A</b>   | <b>1</b>                            |
| 11.1      | Is there a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates?  | A  | 1                                   |
| 11.2      | Does the plan provide reasons for capital expenditure and timing of expenditure?   | A  | 1                                   |
| 11.3      | Is the capital expenditure plan consistent with the asset life and condition identified in the asset management plan?  | A  | 1                                   |
| 11.4      | Is there adequate process to ensure that the capital expenditure plan is regularly updated and actioned?   | A  | 1                                   |
| <b>12</b> | <b>Review of AMS</b>   | <b>A</b>   | <b>1</b>                            |
| 12.1      | Is there a review process in place to ensure that the asset management plan and the asset  | A  | 1                                   |

|      | <b>Asset Management System Component &amp; Criteria</b>                                 | <b>Asset management Process and policy definition adequacy rating</b> | <b>Asset management performance rating</b> |
|------|---|---|--|
|      | management system described therein are kept current?                                   |   |  |
| 12.2 | Are independent reviews (e.g. internal audit) of the asset management system performed? | A   | 1  |



Table 2-7: Current Review Asset System Deficiencies/Recommendations

| Table of Current Review Asset System Deficiencies/Recommendations |  |   |  |
|---|--|---|--|
| B. Unresolved actions at end of current Audit period              |  |   |  |
| Reference (no./year)  | Asset System Deficiency<br><br>(Rating/Asset Management system Component & Effectiveness Criteria/Details of Asset System Deficiency)  | Auditors' Recommendation  | Management action taken by end of Audit period |
| R01/2017  | <p>B1</p> <p>Risk Management - Do risk management policies and procedures exist and are they being applied to minimise internal and external risks associated with the asset management system?</p> <p>The management of hazards noted in the current risk assessment tend to relate to the current asset condition. The predicted future life of the asset was not included in the risk register over the life of the asset. It could be considered that the asset will degrade over time to the point that the safety hazard becomes unacceptable.</p> | <p><b>Opportunity for improvement</b></p> <p>Asset life extension decisions should be coupled together with risk based inspection and maintenance to ensure that appropriate safety criteria is applied for the full extended life prediction (e.g. 30 year manufacturer's stated life being extended by 10 years), therefore testing and maintenance regime should be set-up with specific process safety criteria (e.g. minimum acceptable vessel shell thickness for remaining life) so as to enable safe operation.</p> |  |
| R02/2017  | <p>B1</p> <p>Contingency Planning – Are contingency plans documented, understood and tested to confirm their operability and to cover higher risks?</p>  | <p><b>Opportunity for improvement:</b></p> <p>Develop a test plan and schedule drills to verify the robustness, effectiveness and completeness of individual business continuity plans to cover scenarios such as: Boiler explosion, loss of cooling tower etc.</p>   |  |

|  |   |  |  |
|--|---|--|--|
|  | From the evidence viewed, it could not be confirmed what business contingency plans have been developed, documented and tested. |  |  |
|--|---|--|--|

## 3. Objectives and Scope of Audit and Review

### 3.1 Background

South32 Worsley Alumina Pty Ltd. Facility 110 Powerhouse generates steam for the Worsley Alumina plant, with electricity produced as a by-product, which powers the Alumina refinery. The Powerhouse also has the ability to send surplus electricity generated to the SWIS. It generates electricity under licence EGL 12 granted by the Economic Regulation Authority (the Authority) on 30 June 2006 (Licence is at Version 6, 10 July 2015).

The licence has been issued under Sections 7 and 15 of the Electricity Industry Act 2004 (WA) (the Act) and enables the licensee to construct and operate the power generating and distribution facilities and to retail electricity sales in accordance with the licence conditions.

The License was amended to reflect that BHP Billiton Worsley Alumina Pty Ltd has changed its name to South32 Worsley Alumina Pty Ltd. In accordance with section 21 of the Electricity Industry Act 2004, the Economic Regulation Authority has amended EGL 12 to give effect to the licensee's name change to South32 Worsley Alumina Pty Ltd on the 10<sup>th</sup> July 2015.

Facility 110 Powerhouse which is part of South32 WAPL, is located within the Worsley Alumina Refinery facility which is located 140km south of Perth. For the audit period assessed, the facility was known as BHP Billiton WAPL till 6<sup>th</sup> May 2015, subsequently it is now known as South32 WAPL.

The Facility 110 Powerhouse consists of: 3 Coal Fired and 2 Gas Fired boilers, 3 dual extraction condensing steam turbines, one pass through steam turbine and associated infrastructure to generate both steam and electrical power.

Sections 13 and 14 of the Act require South32 WAPL to provide the Authority with a performance audit and an asset management system review (the **review**) conducted by an independent specialist acceptable to the Authority not less than once in every 24 month period (or such longer period that the Authority allows).

GHD was engaged by South32 WAPL to conduct the performance audit and the asset management system review (the audit and review) for the period 1 July 2013 to 30 June 2017.

The audit and review has been conducted and this report prepared in accordance with the "Authority's Audit and Review Guidelines: Electricity and Gas Licences (April 2014)" (the guidelines).

### 3.2 Audit and Review Objectives

The purpose of the 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.

The purpose of the asset management system (AMS) review is to:

- Assess the effectiveness of the measures taken by the licensee for the proper management of assets used in the provision and operation of services and, where appropriate, for the construction or alteration of relevant assets.

### 3.3 Audit and Review Scope

#### 3.3.1 Scope of Performance Audit

The scope of the performance audit is to audit the systems and the processes to assess their effectiveness in ensuring compliance with the standards, outputs and outcomes required by the licence, in detail:

- Assess the effectiveness of systems and procedures and the adequacy of internal controls;
- Consider performance against standards prescribed in the licence;
- Provide assurance of compliance to systems and procedures, existence of control and system output/records;
- Verify completeness and accuracy of performance reporting to the Authority;
- Verify compliance with any individual licence conditions.

#### 3.3.2 Scope of Asset Management System Review

The scope of the AMS review includes the assessment of the adequacy and effectiveness of the licensee's asset management system by evaluating the key processes of:

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

Each of the system processes were evaluated against effectiveness criteria defined in the guidelines. The review priority focussed on the higher inherent risks as set out in the approved audit plan with respect to risk assessment. Asset Operations and Asset Maintenance having top priority. Other areas of strong focus were Asset Planning and Risk Management. Capital Expenditure Planning and Asset Planning also drew higher priority as a result of aging infrastructure identified during the review.

#### 3.3.3 Key documentation

Key documentation examined by the auditors is listed in Appendix C.

### 3.4 Audit and Review Period

The audit and review covers the period 1st July 2013 to 30 June 2017. The audit and review was undertaken in October 2017. The audit follows the previous audit carried out for the period 1<sup>st</sup> July 2010 to 30<sup>th</sup> June 2013.

### 3.5 Audit and Review Methodology

The audit and review followed the methodology defined in the Authority's guidelines including:

- Examination of documentation;
- Preparation of the audit and review plan, risk assessment and system analysis;
- Fieldwork including the site document examination and meetings
- Reporting.

These activities were supported by additional investigations to further clarify aspects of the procedures and processes.

The audit and review plan was prepared which outlined the objectives, scope, risk assessment, system analysis, fieldwork plan, the report structure, key contacts and auditing staff.

The audit and review adopted a risk-based approach where a preliminary risk and materiality assessment assigned risk ratings. The risks resulting from lack of controls (inherent risks) and the strength of existing controls to mitigate the inherent risks were rated and audit and review priority assigned based on the above. Tests were defined for each licence condition to assess the compliance and effectiveness of the current process.

The Asset Management Review followed the methodology outlined above and defined in the guidelines. The risk assessment was carried out on each asset management system (AMS) element to assess the effectiveness of the current asset management processes.

### 3.6 Licensee's Representation

Licensee representatives that participated in the audit and review meetings or were requested to clarify aspects of the Licensee's operation were:

- James Gibb, Operations Manager;
- Andrew Hickey, Superintendent Execution – Energy Production;
- Terry Willetts, Coordinator Production;
- Mitch Bluett, Superintendent Execution Energy Maintenance;
- Donalie Haynes, Superintendent Technical Support – Energy Technical Support;
- Mark Graham, Manager Shutdowns and Capital Works;
- Angelo D'Agostino, Lead Asset Management HV – Prime contact for ERA;
- Kerry Gathercole, Lead Finance
- Kenneth Chang, Business Partner Finance
- Amanda Pacecca, Process Engineer – Technical Support, Energy
- Brad Rochester, Reliability Specialist - Technical Support, Energy
- Ray Ward, Powerhouse Operator
- Shaun Kennedy – Acting Superintendent, Major Shutdowns

### 3.7 Locations Visited

The following facilities were visited during the audit and review:

- the Worsley Alumina Powerhouse office;
- Facility 110 Powerhouse including the control room.

### 3.8 GHD's Audit and Review Team

A summary of the auditing resources utilised in the performance of the audit and review is listed below.

Table 3-1 GHD Audit Team

| Resource       | Description                                       | Hours |
|----------------|---|-------|
| Robert Ceic    | Project Manager, Report Reviewer                  | 5     |
| Alan Meagher   | Executive Advisor – Risk Management, Lead Auditor | 70    |
| Willem Putters | Principal Mechanical Engineer, Auditor            | 48    |
| Alvin Saldanha | Advisor, Risk Group                               | 70    |
| Total Hours    |   | 193   |

Alvin Saldanha replaced Callum Wilson in the audit team. Alvin's CV has been provided to the ERA through South32.

### 3.9 Key Documents and Information

Main documents accessed by the auditors are listed in Appendix C.

#### 3.10 Abbreviations

|       |   |
|-------|---|
| Act   | Electricity Industry Act 2004 (WA)          |
| AEMO  | Australian Energy Market Operator           |
| AMP   | Asset Management Plan                       |
| AMS   | Asset Management System                     |
| CAPEX | Capital Expenditure                         |
| CMP   | Capital Management Plan                     |
| EGL   | Electricity Generation Licence              |
| ERA   | Economic Regulation Authority               |
| ERP   | Enterprise Resource Planning                |
| FY    | Financial Year                              |
| IAR   | Investment Asset Requisition                |
| IFRS  | International Financial Reporting Standards |
| IMO   | Independent Market Operator                 |
| IT    | Information Technology                      |

|      |                                       |
|------|---------------------------------------|
| KPI  | Key Performance Indicator             |
| MEC  | Major Events Calendar                 |
| MFC  | Multi-fuel Cogeneration facility      |
| MOM  | Minutes of Meeting                    |
| NDT  | Non-Destructive Testing               |
| NP   | Not Performed                         |
| OPEX | Operating Expenditure                 |
| PAIP | Post Audit Implementation Plan        |
| PM   | Planned Maintenance                   |
| QAP  | Quality Assurance Plan                |
| SWIS | South West Interconnected System      |
| T&S  | South32 WAPL Technical Services Group |
| WAPL | Worsley Alumina Pty Ltd               |

# Appendices



# Appendix A – Licence Performance Audit Checklist

## Licence Performance Audit Checklist

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
|                                |   | <i>Is it in the correct operating area</i>  | 5              | A        | 1          | ERA-EL-108 Rev B was sighted by the auditor and appears consistent with the location of the generation facility; (the copy provided was not sign for approval by the Chief Executive Officer, Economic Regulation Authority)   |
|                                |   | <p><i>This licence commences on the commencement date and continues until the earlier of:</i></p> <p><i>a) the cancellation of the licence pursuant to clause 7 of the licence</i></p> <p><i>b) the surrender of the licence pursuant to clause 8 of the licence; or</i></p> <p><i>c) the expiry date</i></p> | 5              | NP       | NR         | <p>a.) There no grounds identified for the cancellation of the Licence during the audit period.</p> <p>b.) There no grounds identified for the surrender of the Licence during the audit period.</p> <p>c.) The expiry date is 29 June 2036 (this licence is Version 6 dated 10 July 2015)</p> |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 105.                           | Electricity Industry Act section 17(1)                                      | <i>The licensee must pay the applicable fees in accordance with the Regulations</i>   | 5              | A        | 1          | <p>FY13-14 license payment was paid on time.</p> <p>The EGL payment, the 2014-15 license payment was late due to internal processing delays.</p> <p>The FYs 15-16 and 16-17 license payments were completed on time</p>  |
| 106.                           | Electricity Industry Act section 31(3)                                      | <i>A licensee must take reasonable steps to minimise the extent or duration of any interruption, suspension or restriction of the supply of electricity due to an accident, emergency, potential danger or other unavoidable cause.</i> | 4              | A        | 1          | <p>This facility primarily generates steam for the Worsley process plant with electricity as a by-product which is used to power the process plant. There is a “Grandfather” agreement with Western Power to “spill over” excess electricity generated to electricity wholesaler, Perth Energy.</p> <p>Therefore the auditor has concluded that there is no requirement to generate electricity to the grid and has no customers and supplies for self-electricity provision.</p> <p>The generation facility is critical to the operation of the process plant (for steam)</p> |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|--|----------------|----------|------------|---|
|                                |   |  |                |          |            | and the auditor is of the opinion that the licensee has taken all reasonable steps to maintain the supply of electricity to their process plant and when in “overflow” supply mode to the grid.   |
| 107.                           | Electricity Industry Act section 41(6)                                      | <i>A licensee must pay the costs of taking an interest in land or an easement over land.</i> | 4              | NP       | NR         | The power generation plant and associated connections are all within the property boundary and any cost associated with the land is incorporated in costs associated with the process plant.<br><br>Therefore this clause was not rated |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|--|----------------|----------|------------|--|
| 324.                           | Electricity Industry Metering Code clause 3.3B                              | <i>A user who is aware of bi-directional flows at a metering point which was not previously subject to a bi-directional electricity flows or any changes in a customer's or user's circumstances in a metering point which will result in bi-directional electricity flows must notify the network operator within 2 business days.</i>  | 4              | NP       | NR         | <p>The South32 WAPL and Western Power (SWIS) ETAC agreement specifies the connection as a Non-Reference Bi-directional Service.</p> <p>There are no bi-directional flow meters. There are three connection points which have 2 separate meters, one meter measures inflow and one measures outflow at each connection point.</p> |
| 325                            | Electricity Industry Metering Code clause 3.3C                              | <p><i>An accumulation meter or an interval meter that separately measures and records bi-directional electricity flows at metering point must record:</i></p> <ul style="list-style-type: none"> <li><i>The net electricity production transferred into the network that exceeds electricity consumption; and</i></li> <li><i>The net electricity consumption transferred out of the network that exceeds electricity production.</i></li> </ul> | 4              | NP       | NR         | Refer to obligation 324.   |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|--|----------------|----------|------------|---|
| 339.                           | Electricity Industry Metering Code clause 3.11(3)                           | <i>A Code participant who becomes aware of an outage or malfunction of a metering installation must advise the network operator as soon as practicable.</i>  | 4              | NP       | NR         | <p>The licensee monitors the meters for commercial comparison of usage/supply accounts with Perth Energy and would become aware of an outage or malfunction of a metering installation.</p> <p>Perth Energy provides the values that are measured by Western Power.</p> <p>There were no such outage or malfunction of a metering installation recorded during the audit period</p> |
| 364.                           | Electricity Industry Metering Code clause 3.27                              | <i>A person must not install a metering installation on a network unless the person is the network operator or a registered metering installation provider for the network operator doing the type of work authorised by its registration.</i> | 4              | NP       | NR         | <p>The meters are owned by Western Power and the licensee stated that they were aware of one instance during the audit period where a recall of the model of meter used occurred and the replacement was undertaken by the accredited installer, Hueppauff Electrical.</p>  |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|---|----------------|----------|------------|---|
| 371.                           | Electricity Industry Metering Code clause 4.4(1)                            | <i>If there is a discrepancy between energy data held in a metering installation and data held in the metering database, the affected Code participants and the network operator must liaise together to determine the most appropriate way to resolve a discrepancy.</i> | 4              | NP       | NR         | The auditor was informed that no instances of energy data discrepancies occurred during the audit period. |
| 372.                           | Electricity Industry Metering Code clause 4.5(1)                            | <i>A Code participant must not knowingly permit the registry to be materially inaccurate.</i>   | 4              | NP       | NR         | Western Power the Network operator owns the meters.   |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|--|----------------|----------|------------|---|
| 373.                           | Electricity Industry Metering Code clause 4.5(2)                            | <i>Subject to subclause 5.19(6), 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.</i> | 4              | NP       | NR         | No inaccuracy or errors in the registry occurred during the audit period  |
| 388.                           | Electricity Industry Metering Code clause 5.4(2)                            | <i>A user must, when reasonably requested by a network operator, assist the network operator to comply with the network operator's obligation under subclause 5.4(1).</i>  | 4              | NP       | NR         | The network operator (Western Power) has the obligation to validate a meter at least once per year, the user (WAPL) has an obligation to assist the network operator with its obligation. |



| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 401.                           | Electricity Industry Metering Code clause 5.16                              | <i>If a user collects or receives energy data from a metering installation then the user must provide the network operator with the energy data (in accordance with the communication rules) within the timeframes prescribed</i>   | 4              | NP       | NR         | As per 388 above.<br><br>The user does not collect metering data for the network operator. |
| 402.                           | Electricity Industry Metering Code clause 5.17(1)                           | <i>A user must provide standing data and validated, and where necessary substituted or estimated, energy data to the user's customer to which that information relates where the user is required by an enactment or an agreement to do so for billing purposes or for the purpose of providing metering services to the customer</i> | 4              | NP       | NR         | The Licensee has no customers, other than itself.  |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 405.                           | Electricity Industry Metering Code clause 5.18                              | <i>If a user collects or receives information regarding a change in the energisation status of a metering point then the user must provide the network operator with the prescribed information, including the stated attributes, within the timeframes prescribed.</i>   | 4              | NP       | NR         | <p>The Agreement with Western Power is applied to allow the ebb and flow of electricity within the limits set out in the Agreement.</p> <p>The Licensee has no obligation to collect or receive energisation data from the metering installation, as it does not have ownership of the meters.</p> <p>There have been no changes in the energisation status of the meters during the audit period.</p> |
| 406.                           | Electricity Industry Metering Code clause 5.19(1)                           | <i>A user must, when requested by the network operator acting in accordance with good electricity industry practice, use reasonable endeavours to collect information from customers, if any, that assists the network operator in meeting its obligations described in the Code and elsewhere, and provide that information to the network operator.</i> | 4              | NP       | NR         | <p>The Licensee collects ongoing meter readings data for their commercial purposes and has no customers other than itself.</p>   |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|---|----------------|----------|------------|---|
| 407.                           | Electricity Industry Metering Code clause 5.19(2)                           | <i>A user must, to the extent that it is able, collect and maintain a record of the prescribed information in relation to the site of each connection point with which the user is associated.</i>                    | 4              | A        | 1          | <p>Auditor sighted address and NMI details contained in Western Power ETAC Schedule 3 - Details of Connection Points, and in the Perth Energy Contract.</p> <p>AEMO standing data relates to SWIS System Operations and Worsley Operation in the market.</p> <p>Auditor sighted e-mail correspondence showing the standing data Perth Energy (market participant) sent to the AEMO on South32's behalf.</p> |
| 408.                           | Electricity Industry Metering Code clause 5.19(3)                           | <i>Subject to subclauses 5.19(3A) and 5.19(6), the user must, within 1 business day after becoming aware of any change in an attribute described in subclause 5.19(2), notify the network operator of the change.</i> | 4              | A        | 1          | <p>Auditor sighted letter sent by South32 to ERA informing them of name change, and was informed by South32 WAPL that other key details such as NMI, address details, contact details, and focal point updates were communicated.</p> <p>Auditor was unable to confirm the communication was within the 1 business day period.</p>  |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|--|----------------|----------|------------|--|
|                                |   |  |                |          |            |  |
| 410.                           | Electricity Industry Metering Code clause 5.19(6)                           | <i>The user must use reasonable endeavours to ensure that it does not notify the network operator of a change in an attribute described in subclause 5.19(2) that results from the provision of standing data by the network operator to the user.</i> | 4              | NP       | NR         | Not applicable as no change has occurred to attributes described in 5.19 (2) |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 416.                           | Electricity Industry Metering Code clause 5.21(5)                           | <i>A Code participant must not request a test or audit under subclause 5.21(1) unless the Code participant is a user and the test or audit relates to a time or times at which the user was the current user or the Code participant is the AEMO.</i> | 4              | NP       | NR         | No action during the relevant time of the audit period when AEMO was applicable  |
| 417.                           | Electricity Industry Metering Code clause 5.21(6)                           | <i>A Code participant must not make a request under subclause 5.21(1) that is inconsistent with any access arrangement or agreement.</i>  | 4              | NP       | NR         | Neither a test or an audit was requested by the Licensee during the audit period |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 435.                           | Electricity Industry Metering Code clause 5.27                              | <i>Upon request from a network operator, the current user for a connection point must provide the network operator with customer attribute information that it reasonably believes are missing or incorrect within the timeframes prescribed.</i> | 4              | NP       | NR         | South32 confirmed that no requests were received from Western Power (network operator) for relevant information during the audit period. |
| 448.                           | Electricity Industry Metering Code clause 6.1(2)                            | <i>A user must, in relation to a network on which it has an access contract, comply with the rules, procedures, agreements and criteria prescribed.</i>   | 4              | A        | 1          | No evidence of contravention of rules, procedures, agreements or prescribed criteria was sighted.  |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|--|----------------|----------|------------|--|
| 451.                           | Electricity Industry Metering Code clause 7.2(1)                            | <i>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</i> | 4              | A        | 1          | The site has telephone, fax, internet/email access and post office box address.<br><br>The network operator is able to contact powerhouse and obtain a number to contact by phone the manager of production – Power or delegate.   |
| 453.                           | Electricity Industry Metering Code clause 7.2(4)                            | <i>If requested by a network operator with whom it has entered into an access contract, the Code participant must notify its contact details to a network operator within 3 business days after the request.</i>   | 4              | A        | 1          | A long standing agreement is in force between Western Power and South32.<br><br>The auditor was informed that Western Power contacted South 32's Energy Desk during the audit period to confirm new South 32 contact details. No specific date was provided by South 32. |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 454.                           | Electricity Industry Metering Code clause 7.2(5)                            | <i>A Code participant must notify any affected network operator of any change to the contact details it notified to the network operator under subclause 7.2(4) at least 3 business days before the change takes effect.</i>  | 4              | A        | 1          | The Licensee notified Western Power that BHP Billiton Worsley Alumina Pty Ltd has changed its name to South32 Worsley Alumina Pty Ltd in 2015. |
| 455.                           | Electricity Industry Metering Code clause 7.5                               | <i>A Code participant must subject to subclauses 5.17A and 7.6 not disclose, or permit the disclosure of, confidential information provided to it under or in connection with the Code and may only use or reproduce confidential information for the purpose for which it was disclosed or another purpose contemplated by the Code.</i> | 4              | A        | NR         | Licensee has confidentiality protocols in place and has not disclosed  |



| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)                                |
|--------------------------------|---|---|----------------|----------|------------|---|
| 456.                           | Electricity Industry Metering Code clause 7.6(1)                            | <i>A Code participant must disclose or permit the disclosure of confidential information that is required to be disclosed by the Code.</i>  | 4              | NP       | NR         |   |
| 457.                           | Electricity Industry Metering Code clause 8.1(1)                            | <i>If any dispute arises between any Code participants then (subject to subclause 8.2(3)) representatives of disputing parties must meet within 5 business days after a notice given by a disputing part to the other disputing parties and attempt to resolve the dispute by negotiations in good faith.</i> | 4              | NP       | NR         | No disputes identified during the audit period. |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)                                |
|--------------------------------|---|---|----------------|----------|------------|---|
| 458.                           | Electricity Industry Metering Code clause 8.1(2)                            | <i>If a dispute is not resolved within 10 business days after the dispute is referred to representative negotiations, the disputing parties must refer the dispute to a senior management officer of each disputing party who must meet and attempt to resolve the dispute by negotiations in good faith.</i>       | 4              | NP       | NR         | No disputes identified during the audit period. |
| 459.                           | Electricity Industry Metering Code clause 8.1(3)                            | <i>If the dispute is not resolved within 10 business days after the dispute is referred to senior management negotiations, the disputing parties must refer the dispute to the senior executive officer of each disputing party who must meet and attempt to resolve the dispute by negotiations in good faith.</i> | 4              | NP       | NR         | No disputes identified during the audit period. |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|--|----------------|----------|------------|---|
| 460.                           | Electricity Industry Metering Code clause 8.1(4)                            | <i>If the dispute is resolved by representative negotiations, senior management negotiations or CEO negotiations, the disputing parties must prepare a written and signed record of the resolution and adhere to the resolution.</i> | 4              | NP       | NR         | No disputes identified during the audit period.   |
| 461.                           | Electricity Industry Metering Code clause 8.3(2)                            | <i>The disputing parties must at all times conduct themselves in a manner which is directed towards achieving the objective in subclause 8.3(1).</i>   | 4              | NP       | NR         | No disputes identified during the audit period.   |
|                                |   | <i>This licence may be transferred only in accordance with the Act.</i>  | 4              | A        | 1          | Auditor sighted letter sent to the ERA in June 2015 requesting the Amendment of Electricity Licence 12 to reflect that BHP Billiton WAPL changed its name to South32 WAPL.<br><br>In accordance with section 21 of the Electricity Industry Act 2004, the Economic Regulation Authority has amended EGL12 to give effect to the |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|---|----------------|----------|------------|---|
|                                |   |   |                |          |            | Licensee's name change to South 32 WAPL.                    |
|                                |   | <i>This licence may be cancelled only in accordance with the Act.</i> | N/A            | N/A      | N/A        | Not Applicable for the audit period: The License is current |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description                                    | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|---|----------------|----------|------------|---|
|                                |   | <i>This licence may be surrendered pursuant to this clause 8.</i> | N/A            | N/A      | N/A        | Not Applicable for the audit period: The Licence is current |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|--|----------------|----------|------------|---|
|                                |   | <p><i>If the licensee intends to surrender the licence the licensee must, by notice in writing to the Authority:</i></p> <p><i>(a) set out the date that the licensee wishes the surrender of the licence to be effective; and</i></p> <p><i>(b) set out the reasons why the licensee wishes to surrender the licence, including the reasons why it would not be contrary to the public interest for the surrender of the licence to be effective on the date set out in the notice.</i></p> | N/A            | N/A      | N/A        | No Applicable; The Licensee has no intention to surrender the Licence and has not done so during the audit period   |
| 119.                           | Electricity Industry Act section 11   | <i>The licensee and any related body corporate must maintain accounting records that comply with standards issued by the Australian Accounting Standards Board or equivalent International Accounting Standards.</i>   | 5              | A        | 1          | <p>Auditor sighted multiple FY account record samples which detailed the following.</p> <p>The Worsley Joint Venture(JV) is not a reporting entity in its own right; it only puts together special purpose annual accounts. These accounts are prepared to comply with the Corporations Act 2001 and use relevant AASB standards that have been agreed by Joint Venture partners as part of the Joint Venture Management Agreement.</p> |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|--|----------------|----------|------------|---|
| 120.                           | Electricity Industry Act section 11   | <i>Once approved by the Authority, the individual performance standards are included as additional terms and conditions to this licence. A licensee must comply with any individual performance standards prescribed by the Authority.</i> | 5              | NP       | NR         | Not Rated as no Authority approved Individual Performance Standards are included as additional terms and conditions to this licence   |
| 101.                           | Electricity Industry Act section 13(1)                                      | <i>The licensee must, unless otherwise notified in writing by the Authority, provide the Authority with a performance audit within 24 months after the commencement date, and every 24 months thereafter.</i>                              | 5              | A        | 1          | The Authority has granted an extension of audit period to a term of 4 years. Letter from the Authority dated 25/11/2013 and signed by Chairman Lyndon Rowe was sighted. See extract below.<br><br><i>“The Authority has decided to increase the period of time until the next Audit and Review interval from 36 months to 48 months. The next Audit and Review will cover the period 1 July 2013 to 30 June 2017, with the reports on the Audit and Review to be provided to the Authority by 30 September 2017.” This has been adjusted subsequently to 30<sup>th</sup> November</i> |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
|                                |   |   |                |          |            | 2017, in an ERA letter which was observed by the auditor.          |
| 121.                           | Electricity Industry Act section 11   | <i>The licensee must comply, and must require the licensee's auditor to comply, with the Authority's standard audit guidelines.</i> | 5              | A        | 1          | Auditors were approved by the ERA to conduct the audit and review. |



| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|---|----------------|----------|------------|---|
|                                |   | <p><i>The performance audit must be conducted by an independent auditor approved by the Authority. If the licensee fails to nominate an auditor within one month of the date that the performance audit was due, or the auditor nominated by the licensee is rejected on two successive occasions by the Authority, the Authority may choose an independent auditor to conduct the performance audit.</i></p> | 5              | A        | 1          | <p>Auditors were approved by the ERA to conduct the audit and review.</p> |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description   | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|--|----------------|----------|------------|--|
| 123.                           | Electricity Industry Act section 11   | <p><i>The licensee must report to the Authority:</i></p> <p><i>(a) if the licensee is under external administration as defined by the Corporations Act 2001 (Cwlth), within 2 business days of such external administration occurring; or</i></p> <p><i>(b) if the licensee:</i></p> <p><i>(i) experiences a change in the licensee's corporate, financial or technical circumstances upon which this licence was granted; and</i></p> <p><i>(ii) the change may materially affect the licensee's ability to perform its obligations under this licence, within 10 business days of the change occurring; or</i></p> <p><i>(c) if the:</i></p> <p><i>(i) licensee's name;</i></p> <p><i>(ii) licensee's ABN;</i></p> <p><i>(iii) licensee's address;</i></p> <p><i>'change, within 10 business days of the change occurring.</i></p> | 5              | A        | 1          | <p>a) Licensee was not under external administration during audit period.</p> <p>b) No changes observed.</p> <p>c) Auditor sighted letter sent to the ERA in June 2015 requesting the Amendment of Electricity Licence 12 to reflect that BHP Billiton WAPL changed its name to South32 WAPL. Licensee's physical address has not changed.</p> |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 124.                           | Electricity Industry Act section 11   | <i>The licensee must provide to the Authority in the manner and form described by the Authority, specified information on any matter relevant to the operation or enforcement of the licence, the operation of the licensing scheme provided for in Part 2 of the Act, or the performance of the Authority's functions under that Part.</i> | 4              | A        | 2          | <p>Auditor sighted compliance reports submitted to ERA for FYs covered within audit period.</p> <p>Also sighted letter to ERA requesting licence amendment due to company name change.</p> <p>ERA website shows South32 licence, map, 2013 audit review and report and 2013 PAIP.</p> <p>It is noted that the 2016 compliance was 2 weeks late, but the auditor considered this as a clerical oversight, and applied A2 compliance. All other compliance reports were on time.</p> |
| 125.                           | Electricity Industry Act section 11   | <i>The Authority may direct the licensee to publish any information within a specified timeframe it considers relevant in connection with the licensee or the performance by the licensee of its obligations under this licence.</i>  | 5              | NP       | NR         | <p>Auditors were informed that Licensee has not been requested to publish on their website.</p>  |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 126.                           | Electricity Industry Act section 11   | <i>Unless otherwise specified, all notices must be in writing.</i>                                    | 4              | A        | 1          | Auditor sighted relevant notices received and sent, were in writing.                               |
| 102.                           | Electricity Industry Act section 14(1)(a)                                   | <i>The licensee must provide for, an asset management system in respect of the licensee's assets.</i> | 4              | A        | 1          | BHP Billiton AMS was in use until name change occurred.<br>Post name change South32 AMS is in use. |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|---|----------------|----------|------------|---|
| 103.                           | Electricity Industry Act section 14(1)(b)                                   | <p><i>The licensee must notify the Authority of the details of the asset management system within 5 business days from the later of:</i></p> <p><i>(a) The commencement date; and</i></p> <p><i>(b) The completion of construction of the generating works.</i></p> | 4              | A        | 2          | <p>A minor non-compliance was reported to ERA in the compliance report dated 14/09/2016 for the period 1 July to 20 June 2016</p> <p>The SWJC Co-Generation Facility was shutdown in March 2016. This facility was providing high-pressure steam to Facility 110 (EGL 12) for power production. As the steam is no longer available, only 3 of the available 4 generators can be run at nameplate capacity at any time. ERA was not notified of the change in a timely manner</p> |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)   |
|--------------------------------|---|---|----------------|----------|------------|--|
| 104.                           | Electricity Industry Act section 14(1)(c)                                   | <i>The licensee must provide the Authority with a report by an Independent expert, acceptable to the Authority, as to the effectiveness of the asset management system not less than once in every period of 24 months calculated from the commencement date (or any longer period that the Authority allows by notice in writing).</i> | 4              | A        | 1          | Previous audit and review report was submitted and published on ERA webpage in 2013.   |
| 122.                           | Electricity Industry Act section 11   | <i>The licensee must comply, and must require the licensee's expert to comply, with the Authority's standard audit guidelines.</i>  | 4              | A        | 1          | The report stated that it was undertaken using ERA's Audit Guidelines (2010) – Electricity, Gas and Water.<br><br>The 2013 report was accepted and published on ERA website. |

| From Electricity Compliance No | Obligations under Condition (Metering code refers to 2012 unless specified) | Licence Obligation/Description  | Audit Priority | Adequacy | Compliance | Audit Finding(s)  |
|--------------------------------|---|---|----------------|----------|------------|---|
|                                |   | <p><i>The review of the asset management system must be conducted by an independent expert approved by the Authority. If the licensee fails to nominate an independent expert within one month of the date that the review of the asset management system was due, or the independent expert nominated by the licensee is rejected on two successive occasions by the Authority, the Authority may choose an independent expert to conduct the review of the asset management system.</i></p> | 4              | A        | 1          | AMS review was undertaken by an independent specialist approved by the ERA. |

# Appendix B - Asset Management System Review Checklist



## Asset Management System Review Checklist

| <b>1. Asset Planning</b>  |   |   |
|---|---|---|
| <p><b>Key process:</b> Asset planning strategies are focussed on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).</p> <p><b>Outcome:</b> Integration of asset strategies into operational or business plans will establish a framework for existing and new assets to be effectively utilised and their service potential optimised</p>   |   |   |
| <p><b>Review approach</b></p> <ul style="list-style-type: none"> <li>Assess the adequacy of the asset planning process.</li> <li>Assess the adequacy of the asset management plan.</li> <li>Assess whether the asset management plan is up to date and implemented in practice.</li> <li>Assess whether the plan clearly assigns responsibilities and whether these have been applied in practice.</li> </ul> |   |   |
| Effectiveness Criteria  | Effectiveness                               | Comments  |
| 1.1 Does the asset management plan cover key requirements   | Adequacy Rating: A<br>Performance Rating: 1 | A copy of the 2015 "Port and Energy Life of Asset Replacement Capital Annual Report" was examined. This report provides a progress update, estimated costs and justification for the replacement and refurbishment of key assets, including those at the power plant (facility 110). The report utilises and integrates with other key plant management plans, including Port and Energy Capital plan, Life of Asset Capital Management Plan (CMP) and Worsley Life of Asset Annual Plan. The document contains the information associated with the WAPL Asset Management Plan (AMP). |
| 1.2 Does the planning process and objectives reflect the need of all stakeholders and is it integrated with business planning?  | Adequacy Rating: A<br>Performance Rating: 1 | The power generation facility is an integral part of and serves the alumina process plant to primarily produce steam for the process and secondly provide electrical power. The power plant operation is dictated by the daily steam demand of the process plant. The Major Events Calendar (MEC) integrates the alumina plant outage schedule and the power plant outage schedule, including statutory inspections in order to meet the overall business objectives.   |

|  |   |   |
|--|---|---|
| 1.3 Have service levels been defined?                                      | Adequacy Rating: A<br>Performance Rating: 1 | The power generation plant's primary objective is to supply steam for the Alumina plant operation. Monthly forecast of Alumina plant production is developed for the next 20 months. Service levels for steam requirements for these production levels are defined and indicated on energy forecasts.   |
| 1.4 Have non-asset options (e.g. demand management) been considered?       | Adequacy Rating: A<br>Performance Rating: 1 | South32 has a Powerhouse energy group monitoring the demand management. The alumina plant control room notify the powerhouse control room as to the steam production requirements. Power generated is considered a by-product of the steam demand with shortfalls or excess electricity managed by grid demand or feed-in.  |
| 1.5 Have the lifecycle costs of owning and operating assets been assessed? | Adequacy Rating: A<br>Performance Rating: 1 | <p>Auditor sighted South 32's Investment Acquisition Requisition (IAR) process for a completed asset improvement project, this is the process to request capital funding to improve an asset. The IAR process includes a breakdown of the lifecycle costs of owning and operating the proposed asset as well as an analysis of the payback period.</p> <p>For existing Powerhouse equipment, evidence was sighted of the Asset Production Loss and Utilisation System that provides reports which can provide monthly comparisons between forecasted and actual operating and maintenance costs incurred. Any discrepancies form the basis of investigation, and if required a business case can be raised for increasing frequency of equipment inspections or equipment replacement.</p> <p>South32 has a strict asset acquiring/replacement process which utilises business case considerations prior to any asset acquisitions.</p> |
| 1.6 Have funding options been evaluated?                                   | Adequacy Rating: A<br>Performance Rating: 1 | Funding of Capex and Opex is considered as part of WAPL's business plan development. Low cost (<\$1,000) equipment replacements can be funded from approved maintenance budgets, whilst higher cost replacements require an Investment Application Request (IAR) to be completed and approved.  |

|   |   |  |
|---|---|--|
| 1.7 Are the costings justified and have the cost drivers been identified? | Adequacy Rating: A<br>Performance Rating: 1 | Operating and maintenance costs are justified through the annual budgeting process and business plans. For capital projects, the IAR process includes cost estimation which identifies cost drivers. Costs are monitored and actual versus budget costs examined and compared.   |
| 1.8 Have the likelihood and consequences of asset failure been predicted? | Adequacy Rating: A<br>Performance Rating: 1 | <p>For new plant, the Investment Acquisition Requisition (IAR) process contained a reference to undertaking a risk assessment which considers Risk Rating before and Residual risk after project completion.</p> <p>This document also contained a section which provided commentary on the financial consequences of not implementing the change.</p> <p>For existing powerhouse equipment, an Energy Risk Register captures the risks related to production, maintenance and improvement, the existing controls in place, the residual likelihood and consequences as well as residual risk ranking.</p> |
| 1.9 Are the plans being regularly reviewed and updated?                   | Adequacy Rating: A<br>Performance Rating: 1 | The performance of the plant is being monitored and reviewed through weekly (e.g. Energy Weekly Flash report) and monthly reports (e.g. reports from Asset Production Loss and Utilisation System). The Port and Energy Life of Asset Replacement Capital Annual Report indicates an annual review frequency.  |

## 2. Asset creation and acquisition

**Key process:** Asset creation/acquisition means the provision or improvement of an asset where the outlay can be expected to provide benefits beyond the year of outlay.

**Outcome:** A more economic, efficient and cost effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery.

### Review approach

- Assess the adequacy of policies and procedures covering the creation and acquisition of assets.
- Select a sample of creations/acquisitions over the review period and confirm that adequate procedures have been followed and actual costs are as predicted.

| Effectiveness Criteria   | Effectiveness                               | Comments  |
|--|---|---|
| 2.1 Are full project evaluations being undertaken for new assets, including comparative assessment of non-asset solutions? | Adequacy Rating: A<br>Performance Rating: 1 | Auditor sighted an Investment Acquisition Requisition (IAR) process for a completed asset improvement project. This is a request for capital funding which describes the problem which needs to be addressed, consequences of doing nothing and list of proposed solutions including the preferred solution, project stakeholders, business case (including risk assessment) and post investment review key measures of success.  |
| 2.2 Do evaluations include all life-cycle costs?   | Adequacy Rating: A<br>Performance Rating: 1 | The Investment Acquisition Requisition (IAR) process documents a breakdown of the lifecycle costs of owning and operating the proposed asset as well as an analysis of the payback period.  |
| 2.3 Do projects reflect sound engineering and business decisions?  | Adequacy Rating: A<br>Performance Rating: 1 | The Technical Services Group (T&S) undertake engineering investigations of identified plant issues and problem areas. Investigation outcomes feed into O&M change processes or IAR processes for capital investment which include economic assessments.   |
| 2.4 Are the commissioning tests documented and completed?  | Adequacy Rating: A<br>Performance Rating: 1 | Auditor witness example project (turbine supervisory system upgrade). Records showed detailed commissioning plans, reports and commissioning sign-off sheets.   |
| 2.5 Have the ongoing legal/environmental/safety obligations of the asset owner been assigned and understood?               | Adequacy Rating: A<br>Performance Rating: 1 | Change control notification document is attached to Investment Acquisition Requisition (IAR) submission. This is reviewed by members of the technical services and planning group who will review and provide relevant feedback. The close-out of capital projects require signed-off by the relevant T&S (capital) team who also initiates relevant changes to or raise new PM notifications to incorporate statutory requirements. In particular, change with respect to legal/environmental/safety obligations are usually captured within the IAR if they form part of the justification for the required change. Completion to ensure the project has been able to deliver the required change is captured on project handover or delivery to the operation. An example that is underway is installation of CEMS (Continuous Emissions Monitoring System) in |

|  |   |   |
|--|---|---|
|  |   | Facility 110 as part of the South32 participation in the Collie Air Shed Study being coordinated via the environmental department in conjunction with energy operations and capital projects engineering.   |
| <b>3. Asset disposal</b>   |   |   |
| <p><b>Key process:</b> Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, underperforming or unserviceable assets. Alternatives are evaluated in cost benefit terms.</p> <p><b>Outcome:</b> Effective management of the disposal process will minimise holdings of surplus and underperforming assets and will lower service costs.</p>  |   |   |
| <p><b>Review approach</b></p> <ul style="list-style-type: none"> <li>• Assess the adequacy of policies and procedures covering the identification of underperforming assets, disposal of assets and replacement strategy.</li> <li>• Determine whether a regular review of the usefulness of assets is performed.</li> <li>• Select a sample of disposals over the review period and confirm that adequate procedures have been followed.</li> </ul> |   |   |
| <b>Effectiveness Criteria</b>  | <b>Effectiveness</b>                        | <b>Comments</b>   |
| 3.1 Are under-utilised and under-performing assets identified as part of a regular systematic review process?  | Adequacy Rating: A<br>Performance Rating: 1 | WAPL has a Technical Services and Planning group made-up of Engineering and Planning professionals who monitor and trend the performance of the assets. Any underperforming assets identified are assessed to determine whether they should be retained or decommissioned and/or replaced.  |
| 3.2 Are the reasons for under-utilisation or poor performance critically examined and corrective action or disposal undertaken?  | Adequacy Rating: A<br>Performance Rating: 1 | The Technical Services and Planning group monitor and trend asset performance and undertake technical investigations on identified problem areas. The reasons for under-utilisation or poor performance assets are examined and subject to scrutiny against failure risk and business financial risk. The investigation outcomes can include corrective maintenance or replacement. |

|  |   |  |
|--|---|--|
| 3.3 Are disposal alternatives evaluated?   | Adequacy Rating: A<br>Performance Rating: 1 | No equipment disposal has occurred during the audit period. Auditor was made aware of WAPL's desire to decommissioning 2 package boilers and replace them with new ones. The existing boilers will be decommissioned, made safe and left as is where is under care and maintenance. This approach has been taken due to economic reasons.      |
| 3.4 Is there a replacement strategy for assets?  | Adequacy Rating: A<br>Performance Rating: 1 | Asset replacement strategies for major assets are developed and reported on in the Life of Asset Capital Management Plan. This is supported by the Facility 110 System Breakdown Criticality Assessment which uses a risk based approach to focus replacement strategy development on high risk areas.   |
| <b>4. Environmental Analysis</b>   |   |  |
| <b>Key process:</b> Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.   |   |  |
| <b>Outcome:</b> The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.  |   |  |
| <b>Review approach</b>   |   |  |
| <ul style="list-style-type: none"> <li>• Review achievement of performance and service standards over the audit period.</li> <li>• Investigate any breaches and assess corrective action taken.</li> <li>• Review the adequacy of reporting and monitoring tools.</li> </ul> |   |  |
| <b>Effectiveness Criteria</b>  | <b>Effectiveness</b>                        | <b>Comments</b>  |
| 4.1 Are opportunities and threats in the system environment assessed?  | Adequacy Rating: A<br>Performance Rating: 1 | WAPL considers environmental risks as part of standard business plans and processes. Safety Management plans and Change Control Risk Assessments include assessments of the environmental hazards, impacts and controls required to manage risks. An improvement identification recording process is in place and accessible to all personnel. |
| 4.2 Are Performance Standards (availability of service, capacity,  | Adequacy Rating: A<br>Performance Rating: 1 | Performance standards are set, tested against and actual performance reported on in annual environmental reports.  |

|   |   |   |
|---|---|---|
| continuity, emergency response etc.) measured and achieved?   |   |   |
| 4.3 Is there compliance with statutory and regulatory requirements?   | Adequacy Rating: A<br>Performance Rating: 1 | Annual environmental compliance audits are undertaken. The 2016-2017 compliance audit indicate achievement of compliance with statutory regulatory requirements.  |
| 4.4 Have customer service levels been achieved?   | Adequacy Rating: A<br>Performance Rating: 1 | For the 2017 annual reporting period, service levels were achieved with no quarterly stack emissions exceedance reported.   |
| <b>5. Asset operations</b>  |   |   |
| <b>Key process:</b> Operations functions relate to the day-to-day running of assets and directly affect service levels and costs.   |   |   |
| <b>Outcome:</b> Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.   |   |   |
| <b>Review approach</b>  |   |   |
| <ul style="list-style-type: none"> <li>• Assess the adequacy of policies and procedures covering operations functions</li> <li>• Assess the adequacy of staff resourcing and training</li> <li>• Confirm the policies and procedures have been followed during the review period by testing of asset register, observation of operational procedures, analysis of costs, etc.</li> <li>• Assess the significance of exceptions identified and whether adequate corrective action has been taken.</li> </ul> |   |   |
| <b>Effectiveness Criteria</b>   | <b>Effectiveness</b>                        | <b>Comments</b>   |
| 5.1 Are the operational policies and procedures documented and do they link to the required service levels?   | Adequacy Rating: A<br>Performance Rating: 1 | A selection of Operational Standards (record management, ERP Governance, 1SAP work management, 1SAP architecture design) were examined. These and other similar Operation Standards specify the minimum requirements for business support systems and collectively support the achievement of service levels. |
| 5.2 Is risk management applied to prioritise operations tasks?  | Adequacy Rating: A<br>Performance Rating: 1 | The asset operation and maintenance is through predominantly risk based assessment. An example is that new maintenance  |

|  |   |   |
|--|---|---|
|  |   | requests are prioritised by Power House Energy maintenance superintendent to be undertaken based on their risk and criticality.   |
| 5.3 Are assets documented in an Asset Register including asset type, location, material, plans of components, an assessment assets' physical/structural condition and accounting data? | Adequacy Rating: A<br>Performance Rating: 1 | Auditor viewed that the plant assets are registered within company SAP system. The system records asset identification, technical details, maintenance history details as well as any outstanding work-orders associated with the equipment.  |
| 5.4 Are operational costs measured and monitored?  | Adequacy Rating: A<br>Performance Rating: 1 | Monthly reports are produced from the Asset Production Loss and Utilisation System which show monthly comparisons between forecasted and actual operating and maintenance costs incurred. Any discrepancies are investigated. If required, a business case can be raised for increasing frequency of equipment inspections or equipment replacement. These reports are provided to the Powerhouse employees monthly. A sample report was sighted by the auditor.  |
| 5.5 Are staff resources adequate, and are they receiving training commensurate with their responsibilities?  | Adequacy Rating: A<br>Performance Rating: 1 | The current staffing appears to be adequate and no indications of shortages was identified.<br><br>WAPL staff come under South 32's learning management system which maintains records of staff operational and statutory training. All training undertaken is commensurate with the responsibilities of the staff. When refresher training is required, auditor sighted that staff get e-mail reminders letting them know the requirement. The Clearance Program monitors staff training compliance with minimum requirements stipulated by the permitting system. |
| <b>6. Asset Maintenance</b>  |   |   |
| <b>Key process:</b> Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.   |   |   |
| <b>Outcome:</b> Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.   |   |   |
| <b>Review approach</b>   |   |   |
| <ul style="list-style-type: none"> <li>Assess the adequacy of policies and procedures covering maintenance functions</li> </ul>  |   |   |



- Confirm the policies and procedures have been followed during the review period by testing of maintenance schedules, analyses of cost etc.
- Assess the significance of exceptions identified and whether adequate corrective action has been taken.

| Effectiveness Criteria   | Effectiveness                               | Comments   |
|--|---|--|
| 6.1 Have the maintenance policies and procedures been documented and linked to service levels required.            | Adequacy Rating: A<br>Performance Rating: 1 | Maintenance procedures and plans were viewed and are defined within company SAP system. Work management processes are stipulated in South 32 Work Management Standards   |
| 6.2 Are regular inspections undertaken of asset performance and condition?   | Adequacy Rating: A<br>Performance Rating: 1 | The assets are inspected as per manufacturer's recommendation, regulatory requirements and in accordance with proven industry practice. The auditor viewed a selection of completed periodic maintenance worksheets as well as completed major maintenance report (outage reports).  |
| 6.3 Have the maintenance plans (emergency, corrective and preventative) been documented and completed on schedule. | Adequacy Rating: A<br>Performance Rating: 1 | Maintenance work orders are categorised in accordance with the type of activity required (general, preventive, emergency, repair or capital). Maintenance plans are documented and completed as scheduled through prioritisation registered in the company SAP system. A selection of completed preventative work orders were observed in the SAP system, showing labour costs and cost for spare parts. |
| 6.4 Are the failures analysed and operational/maintenance plans adjusted where necessary?                          | Adequacy Rating: A<br>Performance Rating: 1 | WAPL has a Technical Services and Planning group made-up of Engineering and Planning professionals who monitor the performance of the asset. Recurring failures or issues are identified and investigated. If considered necessary, a business case can be raised to increase the frequency of equipment inspections or initiate equipment replacement.  |
| 6.5 Has risk management been applied to prioritise maintenance tasks?  | Adequacy Rating: A<br>Performance Rating: 1 | The asset operation and maintenance is through predominantly risk based assessment. An example is that new maintenance requests are prioritised by Power House Energy maintenance superintendent to be undertaken based on their risk and criticality. Notifications are reviewed by the Maintenance Superintendent and  |

|   |   |   |
|---|---|---|
|   |   | work orders raised, prioritised as PM01 for general priority work orders and PM03 for emergency work orders.  |
| 6.6 Are the maintenance costs measured and monitored?   | Adequacy Rating: A<br>Performance Rating: 1 | All maintenance cost are monitored through the SAP system and Asset Production Loss and Utilisation System monthly reports.   |
| <b>7. Asset Management Information System</b>   |   |   |
| <b>Key process:</b> An asset management information system is a combination of processes, data and software that support the asset management functions.  |   |   |
| <b>Outcome:</b> The asset management information system provides authorised, complete and accurate information for the day to date running of the asset management system. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards.  |   |   |
| <b>Review approach</b>  |   |   |
| <ul style="list-style-type: none"> <li>Assess the adequacy of policies and procedures covering the general control and security of the computer systems used to provide management information on service standards/licence obligations.</li> <li>Confirm that management reports on service standards/licence obligations are being reviewed and significant exceptions to service standards are promptly followed-up and actioned.</li> </ul> |   |   |
| <b>Effectiveness Criteria</b>   | <b>Effectiveness</b>                        | <b>Comments</b>   |
| 7.1 Is there adequate system documentation for users and IT operators?  | Adequacy Rating: A<br>Performance Rating: 1 | WAPL uses several software packages including SAP, KaiNexus, Isometrix and Microsoft Office to facilitate business processes. The auditor observed several on-line reference guides, work instructions and user manuals that are available and easily accessible to users and IT operators.   |
| 7.2 Do the input controls include appropriate verification and validation of data entered into the system?  | Adequacy Rating: A<br>Performance Rating: 1 | Data entry on the plant SAP system is only undertaken by trained and authorised team members that have been provided access via individual passwords.<br><br>Auditor worked through electronic records for a selection of maintenance jobs as well as completed and ongoing hardcopy work-packs to verify that checks and sign-offs were undertaken, and that the relevant South32 WAPL personnel were involved, and was satisfied that appropriate information was captured. |

|  |   |   |
|--|---|---|
|  |   | Example of work-packs reviewed was completed pump replacement, and an ongoing steam boiler refurbishment.   |
| 7.3 Is there a logical security access control which is adequate, such as passwords?           | Adequacy Rating: A<br>Performance Rating: 1 | WAPL has a very strict enforcement of passwords as a control for access. Each user has a unique password, which allows access control to be customised by IT operators.   |
| 7.4 Does the physical security access controls appear adequate?                                | Adequacy Rating: A<br>Performance Rating: 1 | Powerhouse facility and associated office block is a controlled and secure site with sign-in access control and security scan cards required to gain access into relevant buildings. Personnel also need to notify relevant area coordinators of their presence.  |
| 7.5 Does the data backup procedure appear adequate and are the backups tested?                 | Adequacy Rating: A<br>Performance Rating: 1 | Several data backup processes are utilised, these include snap (4 hourly data roll-back) and daily data backup. Data is moved across data-centres via storage devices. A selection of the data restore capabilities are tested on a monthly basis. Refreshing data between production and non-production system takes place continuously, thereby also testing this backup feature.   |
| 7.6 Are the key computations related to licensee performance reporting materially accurate?    | Adequacy Rating: A<br>Performance Rating: 1 | The key computation related to licensee performance reporting are materially accurate from the audit evidence reviewed.   |
| 7.7 Do the management reports appear adequate for the licensee to monitor licence obligations? | Adequacy Rating: A<br>Performance Rating: 1 | The management reports appear adequate for the licensee to monitor licensee obligation. Financial budgets are forecast in advance to identify the operation efficiency on cost to product produced. Production reports and Major Maintenance Events Register are reviewed for weekly and monthly compliance with non-compliance events investigated for changes to strategy and rescheduling. Site planning has a production planning meeting with maintenance, operations and improvement teams on a weekly basis. |

## 8. Risk Management

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

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

**Review approach**

- Assess whether significant risks have been identified
- Assess the adequacy of policies and procedures covering risk management and contingency planning.
- Assess whether the risk management policies and procedures have been applied in practice
- Assess the adequacy of staff understanding and training on risk management.

| Effectiveness Criteria  | Effectiveness  | Comments   |
|---|--|--|
| <p>8.1 Do risk management policies and procedures exist and are they being applied to minimise internal and external risks associated with the asset management system?</p> | <p>Adequacy Rating: B<br/>Performance Rating: 1</p> <p><b>Opportunity for improvement:</b></p> <p>1. Consider inclusion of ongoing predictive assessment of asset condition within risk register over time to ensure that the safety hazard component is clearly documented as the asset degrades over time. This especially applies to equipment with high safety consequences (e.g. loss of containment from pressurised equipment).</p> | <p>WAPL has documented risk management policies, procedures and plans that are adhered to. Risks are assessed and managed and applied to maintenance, operation and improvement activities.</p> <p>The management of hazards noted in the current risk assessment tend to relate to the current asset condition. The predicted future life of the asset was not included in the risk register over the life of the asset. It could be considered that the asset will degrade over time to the point that the safety hazard becomes unacceptable.</p> |

|  |   |  |
|--|---|--|
| 8.2 Are risks documented in a risk register and are treatment plans actioned and monitored?  | Adequacy Rating: A<br>Performance Rating: 1 | <p>The Energy Risk Register is regularly monitored for treatment actions. The lists are reviewed annually. The life of asset replacement capital program is based on the system breakdown criticality risk assessment process.</p> <p>The current elevated NDT and future replacement program for the deaerator was examined as an example of the risk based approach. Each work pack that is developed for either maintenance work or capital works has a section dedicated to identifying and managing risks/hazards associated with the particular work that the pack covers.</p>                             |
| 8.3 Is the probability and consequences of asset failure being regularly assessed?   | Adequacy Rating: A<br>Performance Rating: 1 | WAPL operators are monitoring the day to day performance of the asset and issues are raised via the maintenance notification system for review and prioritisation by the Power House Energy maintenance superintendent. WAPL also has a Technical Services and Planning group made-up of Engineering and Planning professionals who monitor the performance of the asset. High consequence and recurring failures identified are investigated and if required risks re-evaluated. This can result in business cases being raised for increasing the frequency of equipment inspections or equipment replacement. |
| <b>9. Contingency Planning</b>   |   |  |
| <b>Key process:</b> Contingency plans document the steps to deal with unexpected failure of an asset.  |   |  |
| <b>Outcome:</b> Contingency plans have been developed and tested to minimise any significant disruption to service standards.  |   |  |
| <p><b>Review approach</b></p> <ul style="list-style-type: none"> <li>• Determine whether contingency plans have been developed and are current</li> <li>• Determine whether contingency plans have been tested. If so, review the results to confirm that any improvements identified have been actioned.</li> </ul> |   |  |
| <b>Effectiveness Criteria</b>  | <b>Effectiveness</b>                        | <b>Comments</b>  |
| 9.1 Are contingency plans documented, understood and tested  | Adequacy Rating: B                          | Powerhouse Emergency Evacuation contingency drill is covered via a periodic work-order in SAP. Records of completed past   |

|   |  |  |
|---|--|--|
| to confirm their operability and to cover higher risks? | <p>Performance Rating: 1</p> <p><b>Opportunity for improvement:</b></p> <p>Develop a test plan, and schedule drills to verify the robustness of individual business continuity plans to cover scenarios such as: Boiler explosion loss of cooling tower etc.</p> | <p>evacuation drills (2013) and post drill findings are archived and viewed during the audit.</p> <p>Business continuity and contingency planning is contained within the WAPL Risk Management architecture which includes: Asset Protection, Crisis Emergency Management and Disaster Recovery.</p> <p>Power station specific critical infrastructure has their own individual business continuity plans to cover scenarios such as: Boiler explosion, loss of cooling tower.</p> |
|---|--|--|

## 10. Financial Planning

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

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

### Review approach

- Obtain an understanding of the financial planning, budgeting and reporting process and assess its effectiveness.
- Obtain a copy of the current financial plan (including budget/actual) and assess whether the process is being followed.

| Effectiveness Criteria  | Effectiveness  | Comments   |
|---|--|--|
| 10.1 Does the financial plan state the financial objectives and strategies and actions to achieve the objectives? | <p>Adequacy Rating: A</p> <p>Performance Rating: 1</p> | The financial plan for the powerhouse is a subset of the overall alumina process plant's financial plan and is consistent in outlining financial objectives, strategies and actions in achieving the financial objectives of the business                              |
| 10.2 Does the financial plan identify the source of funds for capital expenditure and recurrent costs?            | <p>Adequacy Rating: A</p> <p>Performance Rating: 1</p> | Yes, the production of steam is critical to the operation and viability of the alumina process plant. Capital funding is applied for and provided for in the alumina process plant financial plan. Each year an annual operating and capital budget is approved by the |

|  |   |  |
|--|---|--|
|  |   | Joint Venture Participants, this approval supports the funding for the Operation. Sources of funding are identified.   |
| 10.3 Does the financial plan provide projections of operating statements (profit and loss) and statement of financial position (balance sheets)?   | Adequacy Rating: A<br>Performance Rating: 1 | The capital and operating costs of the power generation plant (in line with the overall alumina process plant) are fed into the overall operating statements for the alumina process plant and is managed by balance sheets.   |
| 10.4 Does the financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period?  | Adequacy Rating: A<br>Performance Rating: 1 | The budget is planned for a rolling 2 year period for the power generation plan with predictions of "life of operation" of up to 30 years  |
| 10.5 Does the financial plan provide for the operations and maintenance, administration and capital expenditure requirements of the services?  | Adequacy Rating: A<br>Performance Rating: 1 | The financial plan provides for operations, maintenance, administration and capital expenditure.   |
| 10.6 Are significant variances in actual/budget income and expenses identified and corrective action taken where necessary?  | Adequacy Rating: A<br>Performance Rating: 1 | <p>Monthly review meetings are held to monitor the progress of actual expenditure against budget forecast. The system allows for a balancing of project expenditure should there be overruns or underruns. A re-forecast is established each month.</p> <p>The auditor followed through the "wet coal" example of a remediation process that originally was not budgeted for but became a significant entry on the system which triggered several upgrades and changes.</p> <p>Wet coal example -The coal moisture content was too high and impacted on its combustion properties and negatively impacted on the operating budget.</p> |
| <b>11. Capital Expenditure Planning</b>  |   |  |
| <b>Key process:</b> The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years. Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least 10 years, preferably longer. Projections over the next five years would usually be based on firm estimates. |   |  |

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

**Review approach**

- Obtain an understanding of the capital expenditure planning process and assess its effectiveness.
- Obtain a copy of the capital expenditure plan for the current year and assess whether the process is being followed.

| Effectiveness Criteria   | Effectiveness                               | Comments   |
|--|---|--|
| 11.1 Is there a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates? | Adequacy Rating: A<br>Performance Rating: 1 | The site has a Capital Expenditure Plan that extends for 5 years into the future. For some items of plant (in the power plant only, as the auditor did not inspect the overall site capital expenditure plan as it was considered outside the scope of the review), the plan flags up probable dates beyond the 5 years for replacement. The plan is monitored on a monthly basis and reported upwards to be included in the overall process plant capital expenditure plan<br><br>The overall data management system was updated in 2016 to the Portfolio Capital Projects System which had delivered greater flexibility and improved reporting capabilities for management.   |
| 11.2 Does the plan provide reasons for capital expenditure and timing of expenditure?                                      | Adequacy Rating: A<br>Performance Rating: 1 | This new system also flags “end of life of operation” Asset Indicators which enable management to be warned of the approaching end of life of assets to trigger financial planning for future events. The capital expenditure plan overall aims to manage assets based on a number of criteria including but not limited to life of that component of the assets, capacity requirements, changes to regulatory requirements (eg: environmental), safety and changing operating strategies. Business cases for each project on the capital list is captured in its own IAR. Priority for completion is collectively set by the engineering and operations departments. The aim is usually to complete ongoing upgrades of components of the asset to ensure long term sustainability of the asset as a whole. |
| 11.3 Is the capital expenditure plan consistent with the asset life and  | Adequacy Rating: A<br>Performance Rating: 1 | The auditor reviewed the ongoing boiler package replacement project data which was consistent with the asset management  |



|   |   |  |
|---|---|--|
| condition identified in the asset management plan?  |   | plan. The system clearly showed the asset life prediction and actual progress of the program over two and half years.  |
| 11.4 Is there adequate process to ensure that the capital expenditure plan is regularly updated and actioned?   | Adequacy Rating: A<br>Performance Rating: 1 | The Portfolio Capital Projects System is a “live” system with a robust records collection to enable review of capital projects during and after delivery. A project is not shown as completed in the system until its individual business case is closed. A monthly update meeting is convened and a subsequent report is produced outlining the status of the various projects and as a result the capital expenditure plan shows regular updates and defines actions either to be taken or taken and closed. |
| <b>12. Review of AMS</b>  |   |  |
| <b>Key process:</b> The asset management system is regularly reviewed and updated.  |   |  |
| <b>Outcome:</b> Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.  |   |  |
| <b>Review approach</b>  |   |  |
| <ul style="list-style-type: none"> <li>• Determine when the asset management plan was last updated and assess whether any significant changes have occurred.</li> <li>• Determine whether any independent reviews have been performed. If so, review results and actions taken.</li> <li>• Consider the need to update the asset management plan based on the results of this review.</li> <li>• Determine when the AMS has last reviewed.</li> </ul> |   |  |
| <b>Effectiveness Criteria</b>   | <b>Effectiveness</b>                        | <b>Comments</b>  |
| 12.1 Is there a review process in place to ensure that the asset management plan and the asset management system described therein are kept current?  | Adequacy Rating: A<br>Performance Rating: 1 | South32 have a governance process in place that requires periodic review of all operational processes and supporting documents.<br><br>Auditor sighted the South32 business management plan architecture of which the governance process is part of.   |

|   |   |   |
|---|---|---|
|   |   |   |
| <p>12.2 Are independent reviews (e.g. internal audit) of the asset management system performed?</p> | <p>Adequacy Rating: A<br/>Performance Rating: 1</p> | <p>Independent reviews of asset management system components are being undertaken to assess and verify that compliance with requirements is maintained.</p> <p>Power station infrastructure is a subset of the South32 WAPL's Asset Management system, which itself is a subset of South32's business management plan architecture. The individual components of this plan are reviewed and audited internally.</p> <p>During the time on-site, the auditor noted that an external auditor was reviewing parts of South32's management system.</p> <p>2013 and 2017 EGL 12 audit and AMS reviews.</p> |

# Appendix C – Key document list



| Category          | Document Title   |
|-------------------|--|
| Performance Audit | Letter – ERA to South32 Amendment of Electricity Generation Licence 12 (Name Change)   |
| Performance Audit | Worsley Alumina Refinery Map, Worsley Electricity Licence Area Generation  |
| Performance Audit | South32 E-mail correspondence – Bills South 32 receive for 2-way electricity flow  |
| Performance Audit | South 32 E-mail correspondence – Letter to ERA Performance Licence audit action close-out.   |
| Performance Audit | South 32 E-mail correspondence - Annual Licence Charge Invoices - EGL12 - South32 Worsley Alumina Pty Ltd : proof of payment for Year 14/15, 15/16 and 16/17 |
| Performance Audit | Letter from ERA to BHP Billiton WAPL granting License Audit and Review period extension from 3 to 4 years.   |
| Performance Audit | South32 excerpts - from account records showing the accounting standards used by South32 for FYs covered within audit period.                                |
| Performance Audit | South 32 – Screenshot of payment of licence fee for FY 2013/14.  |
| Performance Audit | Letter to licensee – Approval of Audit Plan – 2017 Audit and Review – EGL012   |
| Performance Audit | AEMO Standing Data Sheet   |
| Performance Audit | ETAC Schedule 3 – Details of Connection Points   |
| Performance Audit | ETAC Schedule 9 Bidirectional Service and Schedule 10 Plan   |
| AMS               | South32 - 1SAP Governance Standard   |
| AMS               | South32 - 1SAP Master Data Object Ownership Standard   |
| AMS               | South32 - 1SAP Production Integration Standard   |
| AMS               | South32 - 1SAP Work Management Standard  |
| AMS               | South32 – Screenshots of Asset Management Information System   |
| AMS               | South32 – Enterprise Resource Planning Governance Standard   |
| AMS               | South32 - IT End User Standard   |
| AMS               | South32 - IT Security Standard   |
| AMS               | South32 - IT Systems and Services Standard   |

|     |   |
|-----|---|
| AMS | South32 - Records Management Standard   |
| AMS | South32 – 1SAP Screen shot - Display Maintenance Plan: Maintenance Plans Selected   |
| AMS | South 32 Email correspondence (Internal) – Major Events Calendar (MEC) Meeting  |
| AMS | South32 Our Care Strategy   |
| AMS | South 32 – 1SAP Screen shot – Functional location of equipment in 1SAP used to raise notifications, work orders and track maintenance history and costs per item of equipment   |
| AMS | South 32 –Screen shot - Example showing the different systems used for different elements of the business   |
| AMS | South 32 – Screen shot - Examples of the Capital Projects for the Powerhouse, one example of a sub directory and an example of a close out on a small document.<br>FYs 2013-18. |
| AMS | South 32 – Screen shot - Example of Maintenance Project Sub Directory   |
| AMS | South 32 (Internal) – Energy Weekly Flash report (Wk 40, 2017)  |
| AMS | BHP Billiton – Production Power Operations Strategy FY 2016   |
| AMS | South32 – Project Presentation showing equipment replacement justification.   |
| AMS | South32 – Change control risk assessment for a completed project.   |
| AMS | IAR Business submission for a Asset Improvement Project   |
| AMS | BHP Billiton Regulatory Compliance Letter to ERA – Dated: 8 <sup>th</sup> October 2014.   |
| AMS | South32 Regulatory Compliance Letters to ERA – 2015 and 2016  |
| AMS | BHP Billiton Powerhouse Risk Register (April 2015)  |
| AMS | South32 Energy Risk Register (3 <sup>rd</sup> November 2016)  |
| AMS | South32 Material Risk Management Standard   |
| AMS | BHP Billiton Powerhouse Safety Management Plan (Dated: 28/11/2014)  |
| AMS | Letter HRL Technology to Worsley Alumina Laboratory report release  |
| AMS | Internal E-mail: Data back-up info.   |
| AMS | Screen shots – Evidence of document control management system   |
| AMS | Screen shot – Equipment regulatory compliance internal report   |
| AMS | South 32 Port and energy Life of Asset Replacement Capital Annual Report  |
| AMS | Screenshot - Evidence of LoA Document and Folders   |
| AMS | Screenshot – Powerhouse Five Year capital plan  |
| AMS | Internal MOM Facility 110 Clearance Office Request  |
| AMS | Screenshot – Files held in Capital Projects Directory for this project (Parts 1 and 2)  |
| AMS | Annual Audit Compliance Report Form   |
| AMS | E-mail: Emissions – Facility 110 fortnightly meeting  |
| AMS | E-mail: Recorded emissions event on a boiler.   |
| AMS | South32 – Worsley Alumina Annual Environmental Report FY17.   |
| AMS | South32 – Worsley Alumina Internal Emissions reporting September 2017   |
| AMS | Vendor pressure vessel inspection report results.   |
| AMS | South32 – Worsley Alumina Equipment Major Shutdown reports  |

|     |   |
|-----|---|
| AMS | South32 – Worsley Alumina Environmental Quality Assurance Plan                  |
| AMS | Vendor Safety/Relief Valve Test Certificates                                    |
| AMS | South32 – Worsley Alumina Pressure Vessel Inspection Report                     |
| AMS | South32 – Worsley Alumina breakdown criticality assessment                      |
| AMS | Project Equipment Commissioning Report  |
| AMS | BHP Billiton – Report and additional notes on Evacuation Drill November 2013.   |
| AMS | South32 – 2017 production forecasts   |
| AMS | South32 – SAP design and work management standards                              |
| AMS | South32 – ERP Governance Standard   |
| AMS | South32 – Records Management and Back-up and Restoration services documentation |
| AMS | South32 – Screenshot of AEMO standing data.                                     |

GHD


GHD, 999 Hay Street, Perth, WA 6000  
P.O. Box 3106, Perth WA 6832  
T: 61 8 6222 8222 F: 61 8 6222 8555 E: permail@ghd.com.au

© GHD 2017

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

\\ghdnet\ghd\AU\perth\Projects\61\36384\WP\162182.docx

Document Status

| Revision | Author     | Reviewer  |               | Approved for Issue |   |            |
|----------|------------|-----------|---------------|--------------------|---|------------|
|          |            | Name      | Signature     | Name               | Signature   | Date       |
| Draft A  | A Meagher  | W Putters |               | R Ceic             |   |            |
| Draft B  | A Saldanha | A Meagher | Minor Updates | A Meagher          |   | 14/11/2017 |
| Rev 0    | A Saldanha | A Meagher |               | R Ceic             |   | 10/01/17   |
| Rev 1    |            | A Meagher |               | R Ceic             |   | 29/01/2018 |
| Rev 2    |            | A Meagher | Minor Updates | A Meagher          |  | 7/03/2018  |





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