



**ROBINSON BOWMAKER PAUL**



# AUSTRALIAN ENERGY MARKET OPERATOR

INDEPENDENT ASSURANCE REPORT ON AEMO'S COMPLIANCE WITH  
THE GSI RULES AND GSI PROCEDURES

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# EXECUTIVE SUMMARY

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This independent assurance report sets out the results of the market audit by Robinson Bowmaker Paul (RBP) assessing AEMO’s compliance with the Gas Services Information (GSI) Rules and GSI Procedures.

## AUDITED ENTITY

The audited entity for this report is AEMO.

## AUDIT PERIOD

The Audit Period is 1 July 2017 to 30 June 2018, both dates inclusive.

## REGULATORY CONTEXT AND SCOPE

### Regulatory context

The regulatory context for the audit is summarised in the table below.

Table 1: Regulatory context for the market audit

Rule reference	Comment
174 (1)	Requirement for AEMO to appoint market auditor at least annually
174(2)	Defines the scope of the Audit to include, at minimum: <ul style="list-style-type: none"><li>• the compliance of AEMO’s Internal Procedures and business processes with the GSI Rules</li><li>• AEMO’s compliance with the GSI Rules and Procedures</li></ul> AEMO’s software systems for the Gas Bulletin Board (GGB) and the calculation of GSI Fees and processes for software management

### Scope

Given the regulatory context above, the purpose of the GSI Compliance Audit is to assess:

- How AEMO implements its obligations under the GSI Rules
- How AEMO manages non-compliance risk with respect to the obligations above

- Instances of non-compliance by AEMO during the Audit period.
- AEMO’s market software systems and its processes for software management. It includes an assessment of whether:
  - AEMO maintains appropriate records
  - The software used by AEMO to implement its obligations under the GSI Rules is compliant with the underlying mathematical formulations and the GSI Rules themselves.
  - AEMO has been compliant with its market systems certification obligations

The GSI Compliance Audit includes the following work streams:

- Compliance Assessment of AEMO’s operational compliance and application of controls to mitigate compliance risk
- Procedures Assessment of GSI Procedures and Internal Procedures that have changed during the Audit Period
- Software Compliance Assessment

This scope differs from the previous audit in that it does not include audit of general IT controls.

## AUDIT CRITERIA

### Criteria for determining operational and procedural compliance

The criterion we have used for determining the compliance of AEMO’s GSI Procedures (referred to as the *GSI Procedures*) is the Gas Services Information Rules dated 28 April 2018 (referred to as the *GSI Rules*).

The criteria we have used for determining AEMO’s operational compliance and the compliance of AEMO’s Internal Procedures are the GSI Rules and the GSI Procedures.

### Criteria for determining control application

When assessing whether AEMO has applied effective controls during the Audit Period we have used relevant Internal Procedure and Confluence Work Instruction documentation as our audit criteria.

This includes the following:

Table 2: Procedures reviewed to assess control application

AEMO functional area	Procedures against which control application have has been assessed
Market Operations	Daily Operations Procedure Rerunning GBB Reports GSI Budget Work Instructions
Reserve Capacity	Preparation of GS00 Procedure
IT	IT Change Management Policy, Software Configuration Management Plan

Where AEMO does not have documented controls or procedures relating to a business process under review we have used best practice criteria for a prudent market operator. This includes:

- The use of automated/semi-automated tools to reduce risk of errors
- Use of automated alerts or calendar reminders
- Approval and authorisation processes
- Issue escalation processes
- Validation and review processes
- Exception reporting
- Practices at other market operators with which we are familiar

## APPROACH

### Assurance

Our audit has been conducted in accordance with Australian Auditing and Assurance Standards Board's '*Framework for Assurance Engagements*', ASAE 3000 '*Assurance Engagements Other than Audits and Reviews of Financial Information*'.

- We provide reasonable assurance under this standard with respect to our review of AEMO's software changes and the compliance of AEMO's market software with the GSI Rules and GSI Procedures
- We provide limited assurance under this standard with respect to our review of:
  - AEMO's compliance with the GSI Rules and GSI Procedures
  - AEMO's software management processes and controls

## Risk ratings and materiality

### *Compliance and risk ratings*

Table 3: Compliance and risk rating definitions

Compliance rating	Risk Rating
<b>1:</b> Instances of non-compliance with the GSI Rules	<b>Critical:</b> Potential for catastrophic impact on market or system operations or other market outcomes if not addressed immediately. Requires executive actions and monitoring at board level.
<b>2:</b> Findings that are not an instance of non-compliance, but pose compliance risk	<b>Significant:</b> Potential for major impact on market or system operations or other market outcomes if not addressed as a matter of priority. Requires senior management attention with regular monitoring at executive meetings.
<b>3:</b> Findings related to minor housekeeping issues that do not affect compliance risk	<b>Medium:</b> Potential for moderate impact on market or system operations or other market outcomes if not addressed within a reasonable timeframe. Requires management attention with regular monitoring.
	<b>Low:</b> Potential for minor impact on market or system operations or other market outcomes if not addressed in the future. Requires team level attention with regular monitoring.

### *Materiality (qualification of audit opinion)*

In determining whether to qualify our opinion on whether AEMO has complied “in all material respects”, we have taken the following factors into account:

- Purpose and objectives of the market audit
- AEMO’s overall objectives
- AEMO’s risk matrix definitions of impact
- Financial impacts on Gas Market Participants
- The number of Gas Market Participants or other stakeholders affected
- The impact of an issue on market objectives such as transparency, equity and efficiency
- Whether an issue is systemic
- Whether an issue is recurring (from previous audits)

### **Audit activities**

We have undertaken a combination of:

- Reviewing self-reported incidents of AEMO non-compliance with the GSI Rules and GSI Procedures
- Business process walkthroughs and interviews with staff
- Reviewing AEMO’s GSI Procedures and Internal Procedures to ensure GSI Rules changes and other changes (e.g. processes, systems, etc.) have been reflected in the procedures.
- Compliance testing to audit AEMO’s operational compliance with the GSI Rules and GSI Procedures and to determine the effectiveness of operating controls<sup>1</sup>.

The first two activities were conducted as part of our field-visit in May 2018. Remaining activities (including review of self-reported incidents arising since our field visit) have been undertaken remotely.

Compliance testing and business process walkthroughs were focussed on subset of functional areas based on residual compliance risk, materiality, and rule changes occurring in the Audit Period. These areas included:

Table 4: Audit focus areas

AEMO functional area	Focus area
Market Operations	Information publication Invoicing
System Capacity	Preparation and publication of the GS00 report

## AUDIT FINDINGS

### Comment

#### Extensive automation means GSI obligations are well-controlled

AEMO uses automated software to implement most of its GSI obligations. The non-compliance issues we have found (and AEMO has self-reported) relate to the remaining manual activities.

Publication of financial information is one such area. Last year we noted a compliance issue around the publication of budget information (in that required information was published late). This year, we

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<sup>1</sup> In doing so, we have sourced information from all AEMO (WA) teams, with a particular emphasis on the market operations team.

noted that required information itemising the split of GSI fees collected on behalf of the regulator was not published (either in the 2017/18 WA Budget and Fees, or on GSI invoices).

Invoicing is another area, where AEMO has now automated additional manual tasks.

Generally:

- Audit findings from previous years have been consistently addressed and closed. All but one finding from the current Audit Period have been addressed and closed promptly.
- There have only been four instances of minor non-compliance (i.e. compliance rating 1 findings, all of which have a low risk rating) with the GSI Rules and GSI Procedures.
- Our site visits have indicated that AEMO teams maintain and apply effective controls to manage compliance risk.

## Summary

Table 5 below summarises the total number of audit issues (broken down by risk rating) reported during the 2016/17 and 2017/18 Audit Periods.

Each issue corresponds to one or more non-compliance. Where there is more than one non-compliance of the same nature, we report it as a single issue.

Note that 6 of the 13 reported issues for 2016/17 related to the review of AEMO’s general IT controls, which was not carried out in 2017/18.

Table 5: Audit issue summary by risk rating and open/closed status, 2016/17 and 2017/18.

	2016/17 Issues	2017/18 Issues				
Risk Rating	Total	Total	Closed		Open	
			AEMO	RBP	AEMO	RBP
Significant	0	0	0	0	0	0
Medium	1	0	0	0	0	0
Low	12	5	2	2	0	1
Totals	13	5	2	2	0	1
			4		1	



Table 6: Summary of audit issues

Ref	Issue type & process	Risk & Compliance Rating	Finding	Recommendation
17GSI 2.04	<b>Issue Type</b> RBP reported compliance risk <b>Process</b> Invoicing	<b>Risk Rating</b> Low <b>Compliance Rating</b> 2	GSI invoicing process is manual with some risk of error	No further action. AEMO has now addressed the remaining issues.
18GSI 1.01	<b>Issue Type</b> RBP reported non-compliance <b>Process</b> Budgeting and fees	<b>Risk Rating</b> Low <b>Compliance Rating</b> 1	Not publishing GSI Regulator Fee Amounts	1. Include budget and fees preparation and publication process in an internal procedure or work instruction 2. Create template for budget and fee publications, with reference to rule requirements
18GSI 1.02	<b>Issue Type</b> RBP reported non-compliance <b>Process</b> Invoicing	<b>Risk Rating</b> Low <b>Compliance Rating</b> 1	Not itemising GSI Invoices	No further action. AEMO has addressed the issue.
18 GSI 1.03	<b>Issue Type</b> AEMO reported non-compliance	<b>Risk Rating</b> Low <b>Compliance</b>	Early publication of GBB reports due to error during manual report rerun.	No further action. AEMO has addressed the issue.

Ref	Issue type & process	Risk & Compliance Rating	Finding	Recommendation
	Process Market Operations	Rating 1		
18GSI 1.04	Issue Type AEMO reported non-compliance Process Market operations	Risk Rating Low Compliance Rating 1	Failure to accept submissions from existing connection point	No further action. AEMO has addressed the issue.

## OPINION

### Qualifications

We have no qualifications to note with respect to the opinions provided below.

### Conclusion

#### *Opinion on AEMO's operational compliance with the GSI Rules and GSI Procedures*

Subject to the inherent limitations set out in Section 1.5.4, based on the audit procedures we have performed and the evidence we have examined, nothing has come to our attention that causes us to believe AEMO has not been compliant with the GSI Rules and GSI Procedures during the Audit Period, in all material respects

#### *Opinion on the compliance of AEMO's Market Software Systems with the GSI Rules*

Based on the audit procedures we have performed and the evidence we have examined, AEMO's Market Software Systems are compliant with the GSI Rules in all material respects.

#### *Opinion with respect to the compliance of AEMO's software management processes with the GSI Rules*

Subject to the inherent limitations set out in Section 1.5.4, based on the audit procedures we have performed and the evidence we have examined, nothing has come to our attention that causes us to believe that AEMO's processes for software management have not been compliant with the GSI Rules and GSI Procedures during the Audit Period in all material respects.

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# 1 INTRODUCTION

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This chapter sets out the regulatory context for the GSI Compliance Audit and our approach to performing the audit.

## 1.1 AUDITED ENTITY

The audited entity for this report is AEMO.

## 1.2 AUDIT PERIOD

The Audit Period is 1 July 2017 to 30 June 2018, both dates inclusive.

## 1.3 REGULATORY CONTEXT AND SCOPE

### 1.3.1 Regulatory context

The regulatory context for the audit is summarised in the table below.

Table 7: Regulatory context for the market audit<sup>2</sup>

Rule reference	Comment
174 (1)	Requirement for AEMO to appoint market auditor at least annually
174(2)	Defines the scope of the Audit to include, at minimum: <ul style="list-style-type: none"><li>• the compliance of AEMO's Internal Procedures and business processes with the GSI Rules</li><li>• AEMO's compliance with the GSI Rules and Procedures</li><li>• AEMO's software systems for the Gas Bulletin Board (GGB) and the calculation of GSI Fees and processes for software management</li></ul>

### 1.3.2 Scope

Given the regulatory context above, the purpose of the GSI Compliance Audit is to assess:

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<sup>2</sup> Rules references are as at 31 May 2017 unless otherwise indicated



- How AEMO implements its obligations under the GSI Rules
- How AEMO manages non-compliance risk with respect to the obligations above
- Instances of non-compliance by AEMO during the Audit Period.
- AEMO’s market software systems, its processes for software management, and its general IT controls. It includes an assessment of whether:
  - AEMO maintains appropriate records
  - The software used by AEMO to implement its obligations under GSI Rules is compliant with the underlying mathematical formulations and the GSI Rules themselves.
  - AEMO has been compliant with its market systems certification obligations

The GSI Compliance Audit includes the following work streams:

- Compliance Assessment of:
  - Areas where we have noted breaches or non-compliance risk during past audits.
  - Areas that have changed or been introduced in the past Audit Period (e.g. in terms of rule changes, system changes, operational practice changes
  - AEMO’s self-reported instances of non-compliance with the GSI Rules
- Procedures Assessment of GSI Procedures and Internal Procedures that have changed during the Audit Period.
- Software Compliance Assessment. We reviewed the software used to meet obligations under the GSI Rules. In particular, we:
  - Reviewed AEMO’s Market Systems (used to implement GSI obligations), and in particular the nature of changes to the Gas Bulletin Board (GGB) software and GSI Fees tool to assess compliance with Part 1 Rule 19(1) of the GSI Rules
  - Reviewed AEMO’s software management processes.

## 1.4 AUDIT CRITERIA

### 1.4.1 Criteria for determining operational and procedural compliance

The criterion we have used for determining the compliance of AEMO’s GSI Procedures (referred to as the *GSI Procedures*) is the Gas Services Information Rules dated 28 April 2018 (referred to as the *GSI Rules*).

The criteria we have used for determining AEMO’s operational compliance and the compliance of AEMO’s Internal Procedures are the GSI Rules and the GSI Procedures.

### 1.4.2 Criteria for determining control application

When assessing whether AEMO has applied effective controls during the Audit Period we have used relevant Internal Procedure and Confluence Work Instruction documentation as our audit criteria. This includes the following:

Table 8: Procedures reviewed to assess control application

AEMO functional area	Procedures against which control application have has been assessed
Market Operations	Daily Operations Procedure Rerunning GBB Reports GSI Budget Work instructions
Reserve Capacity	Preparation of GSOO Procedure
IT	IT Change Management Policy, Software Configuration Management Plan

Where AEMO does not have documented controls or procedures relating to a business process under review we have used best practice criteria for a prudent market operator. This includes:

- The use of automated/semi-automated tools to reduce risk of errors
- Use of automated alerts or calendar reminders
- Approval and authorisation processes
- Issue escalation processes
- Validation and review processes
- Exception reporting
- Practices at other market operators with which we are familiar.

## 1.5 APPROACH

### 1.5.1 Assurance

Our audit has been conducted in accordance with Australian Auditing and Assurance Standards Board’s ‘*Framework for Assurance Engagements*’, ASAE 3000 ‘*Assurance Engagements Other than Audits and Reviews of Financial Information*’.

- We provide reasonable assurance under this standard with respect to our review of AEMO’s software changes and the compliance of AEMO’s market software systems with the GSI Rules and GSI Procedures
- We provide limited assurance under this standard with respect to our review of:
  - AEMO’s compliance with the GSI Rules and GSI Procedures
  - AEMO’s software management processes and controls.

## 1.5.2 Risk ratings and materiality

### Compliance and risk ratings

Audit findings are categorised as follows:

Table 9: Compliance and risk rating definitions

Compliance rating	Risk Rating
<b>1:</b> Instances of non-compliance with the GSI Rules	<b>Critical:</b> Potential for catastrophic impact on market or system operations or other market outcomes if not addressed immediately. Requires executive actions and monitoring at board level.
<b>2:</b> Findings that are not an instance of non-compliance, but pose compliance risk	<b>Significant:</b> Potential for major impact on market or system operations or other market outcomes if not addressed as a matter of priority. Requires senior management attention with regular monitoring at executive meetings.
<b>3:</b> Findings related to minor housekeeping issues that do not affect compliance risk	<b>Medium:</b> Potential for moderate impact on market or system operations or other market outcomes if not addressed within a reasonable timeframe. Requires management attention with regular monitoring.
	<b>Low:</b> Potential for minor impact on market or system operations or other market outcomes if not addressed in the future. Requires team level attention with regular monitoring.

Further information on risk and compliance ratings is provided in Appendix A.

### Materiality (qualification of audit opinion)

In determining whether to qualify our opinion on whether AEMO has complied “in all material respects”, we have taken the following factors into account:

- Purpose and objectives of the market audit
- AEMO’s overall objectives
- AEMO’s risk matrix definitions of impact

- Financial impacts on Gas Market Participants
- The number of Gas Market Participants or other stakeholders affected
- The impact of an issue on market objectives such as transparency, equity and efficiency
- Whether or not an issue is systemic
- Whether or not an issue is recurring (from previous audits)

### 1.5.3 Audit activities

We have undertaken a combination of:

- Reviewing self-reported incidents of AEMO non-compliance with the GSI Rules and GSI Procedures
- Business process walkthroughs and interviews with staff to audit the application of operating controls and to determine the level of compliance risk associated with selected business processes.
- Reviewing AEMO’s GSI Procedures, Internal Procedures and IT Procedures to ensure GSI Rules changes and other changes (e.g. processes, systems, etc.) have been reflected in the procedures.
- Compliance testing to audit AEMO’s operational compliance with the GSI Rules and GSI Procedures and to determine the effectiveness of operating controls. In doing so, we have sourced information from all AEMO (WA) teams, with a particular emphasis on the market operations team.

The first two activities were conducted as part of our field visit in May 2018. Remaining activities (including review of self-reported incidents arising after our field visit) have been undertaken remotely.

Compliance testing and business process walkthroughs were focussed on a subset of functional areas based on residual compliance risk, materiality, and rule changes occurring in the Audit Period. These areas include:

Table 10: Audit focus areas

AEMO functional area	Focus area
Market Operations	Information publication Invoicing
Reserve Capacity	Preparation and publication of the GSOO report

#### **1.5.4 Inherent limitations**

As in previous years, we note that there are limitations to any external audit. Audits are not an absolute guarantee of the truth or reliability of agency information or the effectiveness of internal controls. They may not identify all matters of significance. This is because external audit techniques involve:

- Professional judgement as to “good industry and market operational practice”
- The use of sample testing
- An assessment of the effectiveness of internal control structures and
- An assessment of risk.

A market audit does not guarantee every procedure and action carried out in the operation of the market in the audit report, nor does it examine all evidence and every transaction. However, our audit procedures should identify errors or omissions significant enough to adversely affect market outcomes.

Our opinion with respect to AEMO’s compliance with the GSI Rules and GSI Procedures is therefore subject to the following caveats:

- Our audit procedures did not include assessing irregularities such as fraudulent or illegal activities. As such, our audit should not be relied upon to disclose such irregularities. However, if we were to detect any fraudulent or illegal activity, we would report this to AEMO. No such findings have been made during this audit.
- Our audit is not designed to detect all weaknesses in control procedures as it is not performed continuously throughout the Audit Period and is performed on a sample basis.

## **1.6 STRUCTURE OF THIS REPORT**

The remainder of this report is structured as follows:

- Chapters 2 to 11 present our audit findings relating to the Compliance Assessment and Procedures Assessment work streams on an GSI Rule Chapter by Chapter basis.
- Chapter 12 presents findings relating to AEMO’s GBB and GSI Fees software

## 1.7 ACKNOWLEDGMENTS

RBP would like to thank AEMO managers and staff who willingly provided information and shared in discussions with us while we carried out this audit.

## **2 PART 1 – INTRODUCTORY & ADMINISTRATIVE MATTERS**

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Part 1 of the GSI Rules sets out the Introduction to the GSI Rules and covers areas such as the objectives of the market, conventions and transitional arrangements.

### **2.1 RULE AMENDMENTS**

There have been changes to Part 1 to remove references to the Independent Market Operator (IMO).

### **2.2 AEMO PROCEDURES**

AEMO's GSI Procedures and Internal Procedures are compliant with Part 1 of the GSI Rules in all material respects.

### **2.3 OPERATIONAL COMPLIANCE WITH PART 1**

We have not conducted any audit procedures to assess AEMO's compliance with Part 1 of the GSI Rules.

There have been no self-reported instances of non-compliance with Part 1.

## **3 PART 2 - REGISTRATION**

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Part 2 of the GSI Rules covers the registration of Gas Market Participants and facilities, including registration, deregistration, transfers, and exemptions.

### **3.1 RULE AMENDMENTS**

There have been no changes to Part 2.

### **3.2 AEMO PROCEDURES**

AEMO's GSI Procedures and Internal Procedures are compliant with Part 2 of the GSI Rules in all material respects.

### **3.3 OPERATIONAL COMPLIANCE WITH PART 2**

We have not conducted any audit procedures to assess AEMO's compliance with Part 2 of the GSI Rules.

There have been no self-reported instances of non-compliance with Part 2.



## **4 PART 3 – PROVISION OF INFORMATION FOR GBB**

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Part 3 of the GSI Rules deals with the GBB information requirements pertaining to Gas Market Participants and the various classes of Facilities.

### **4.1 RULE AMENDMENTS**

There have been no amendments to Part 3.

### **4.2 AEMO PROCEDURES**

AEMO's GSI Procedures and Internal Procedures are compliant with Part 3 of the GSI Rules in all material respects.

### **4.3 OPERATIONAL COMPLIANCE WITH PART 3**

AEMO has limited obligations under Part 3; the obligations are all automated via the GBB which is independently tested and certified. Therefore, we have not conducted any audit procedures to assess AEMO's compliance with Part 3 of the GSI Rules.

There have been no self-reported instances of non-compliance with Part 3.

## 5 PART 4 – THE GAS BULLETIN BOARD

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Part 4 of the GSI Rules describes the information that is required to be published on the Gas Bulletin Board.

### 5.1 RULE AMENDMENTS

There have been no amendments to Part 4.

### 5.2 AEMO PROCEDURES

AEMO's GSI Procedures and Internal Procedures are compliant with Part 4 of the GSI Rules in all material respects.

### 5.3 OPERATIONAL COMPLIANCE WITH PART 4

#### 5.3.1 Audit activities

- We reviewed AEMO's procedures for rerunning GBB reports when there are errors/omissions in data submission and reports must be recreated manually.

### 5.3.2 Audit findings

Instances of non-compliance and areas of compliance risk associated with Part 4 are summarised in the table below.

Table 11: Operational compliance findings associated with Part 4 of the GSI Rules

Ref	Issue Type & Obligation	Risk & Compliance Rating	Finding	Recommendation
18 GSI 1.03	<p><b>Issue Type</b> AEMO reported non-compliance</p> <p><b>Obligation</b> Section 4.3.5 of GSI Procedure Operation of the Gas Bulletin Board (WA) and the Emergency Management Facility</p>	<p><b>Risk Rating</b> Low</p> <p><b>Compliance Rating</b> Level 1</p>	<p><b>Early publication of GBB reports due to error during manual report rerun.</b></p> <p>Step 4.3.5 of the GSI Procedure: Operation of the Gas Bulletin Board (WA) and the Emergency Management Facility requires AEMO to publish reports according to a particular timetable.</p> <p>AEMO released the Large User Consumption Report for Gas Day 6 Oct on 9 Oct (D+3) instead of 13 Oct (D+7). The publication was a human error in rerunning GBB reports to incorporate data that had been submitted late. AEMO unpublished the report on the morning of 10 Oct.</p> <p>AEMO's procedures state explicitly (and in bold text) the process that must be followed in such instances but due to human error this process was not followed. This issue occurred twice in the 2016/17 audit period, under similar circumstances.</p> <p>AEMO has now amended the software so that it warns users when they attempt to publish a report early.</p>	No further action.
18GSI1.04	<p><b>Issue Type</b></p>	<p><b>Risk Rating</b> Low</p>	<p><b>Failure to accept submissions from existing connection point</b></p> <p>Rule 79 requires AEMO to operate the GBB in accordance with the Rules.</p>	No further action.

Ref	Issue Type & Obligation	Risk & Compliance Rating	Finding	Recommendation
	<p>AEMO reported non-compliance</p> <p><b>Obligation</b></p> <p>79</p>	<p><b>Compliance Rating</b></p> <p>Level 1</p>	<p>Rule 60 requires Registered Pipeline Operators to provide AEMO with Daily Actual Flow Data for each Gas Day.</p> <p>In January 2018, AEMO's systems refused submissions for one connection point because it was not effective for the whole submission period.</p> <p>The flow data was manually entered by the AEMO support team, and AEMO released a fix for the issue in GBB 1.10 in May 2018.</p>	

## **6 PART 5 – EMERGENCY MANAGEMENT FACILITY**

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Part 5 of the GSI Rules describes the operation of the Emergency Management Facility (EMF), the information that is to be published on the EMF, and the access requirements and limitations.

### **6.1 RULE AMENDMENTS**

There have been no amendments to Part 5 of the GSI Rules.

### **6.2 AEMO PROCEDURES**

AEMO's GSI Procedures and Internal Procedures are compliant with Part 5 of the GSI Rules in all material respects.

### **6.3 OPERATIONAL COMPLIANCE WITH PART 5**

We have not conducted any audit procedures to assess AEMO's compliance with Part 5 of the GSI Rules.

There have been no self-reported instances of non-compliance with Part 5.

## 7 PART 6 – THE GAS STATEMENT OF OPPORTUNITIES

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Part 6 of the GSI Rules describes the high-level requirements for the publication and content of the Gas Statement of Opportunities (GSOO).

### 7.1 RULE AMENDMENTS

There have been no amendments to Part 6 of the GSI Rules.

### 7.2 AEMO PROCEDURES

AEMO's GSI Procedures and Internal Procedures are compliant with Part 6 of the GSI Rules in all material respects.

### 7.3 OPERATIONAL COMPLIANCE WITH PART 6

#### 7.3.1 Audit activities

- We conducted a (retrospective) business process walkthrough to determine whether AEMO has complied with the GSI Rules and its Internal Procedures and whether AEMO has applied appropriate controls when preparing the 2018 GSOO report.
- We reviewed a draft of the 2018 GSOO report to ensure its contents were consistent with the requirements of Part 6 of the GSI Rules.

There have been no self-reported instances of non-compliance with Part 6.

## 8 PART 7 – BUDGET AND FEES

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Part 7 of the GSI Rules covers AEMO's allowable revenue, budget and fees.

### 8.1 RULE AMENDMENTS

Amendments to Part 7 include only transitional changes to remove references to the IMO.

### 8.2 AEMO PROCEDURES

AEMO's GSI Procedures and Internal Procedures are compliant with Part 7 of the GSI Rules in all material respects.

### 8.3 OPERATIONAL COMPLIANCE WITH PART 7

#### 8.3.1 Audit activities

- We conducted (retrospective) business process walkthroughs to determine whether AEMO has complied with the GSI Rules and its Internal Procedures and whether AEMO has applied appropriate controls in its preparation and sending of GSI fees invoices (Part 7, Division 4 of the GSI Rules)

We reviewed GSI initial and adjustment invoices for one quarter to check whether Gas Market Participants were invoiced for the correct amounts.

### 8.3.2 Audit findings

Instances of non-compliance and areas of compliance risk associated with Part 7 are summarised in the table below.

Table 12: Operational compliance findings associated with Part 7 of the GSI Rules

Ref	Issue Type & Obligation	Risk & Compliance Ratings	Finding	Recommendation
18GSI1.01	Issue Type RBP reported non-compliance Obligation Rule 110A(4)	Risk Rating Low Compliance Rating 1	<p><b>Not publishing GSI Regulator Fee Amounts</b></p> <p>GSI Rule 110A(4) requires AEMO to publish the amount of Regulator Fees for the financial year (the amount recovered as GSI Fees on behalf of ERA).</p> <p>GSI Rule 111A(1)(a) requires AEMO to publish the AEMO budget for GSI Services. AEMO published this in May 2017 as part of its '2017–18 Consolidated Final Budget and Fees' document and updated the figures in June 2017 in its 'Western Australian Functions Budget and Fees 2017-18' document. This document included a single updated amount for GSI fees and did not separately identify the Regulator Fees component.</p> <p>We also note that AEMO's request to ERA for the Regulator Fee information incorrectly stated the rule requirements, and ERA did not split out their costs as required by 110A(3).</p> <p>Correct and timely publication of market budget and fee information was also an issue last audit.</p>	<ol style="list-style-type: none"> <li>1. Include budget and fees preparation and publication process in an internal procedure or work instruction</li> <li>2. Create template for budget and fee publications, with reference to rule requirements</li> </ol>
18GSI1.02	Issue Type RBP reported	Risk Rating Low Compliance	<b>Not itemising GSI Invoices</b>	No further action. AEMO has addressed the issue.



Ref	Issue Type & Obligation	Risk & Compliance Ratings	Finding	Recommendation
	non-compliance <b>Obligation</b> Rule 117(1)	<b>Rating</b> 1	<p>GSI rule 117(1) requires AEMO to issue GSI invoices which itemise GSI Fees to show the proportions of the Fees attributable to IMO, AEMO, and Regulator Fees.</p> <p>This obligation was held in abeyance by Schedule 3, Part 2, 3(2)(b)(i), until AEMO published the AEMO Budget under 111A(1). AEMO published the Budget in May 2017 and updated it in June 2017 but did not amend the format of its GSI invoices, which do not provide this breakdown.</p> <p>AEMO has now updated the GSI invoice format to provide this breakdown.</p>	
17GSI2.04	<b>Issue Type</b> RBP reported compliance risk <b>Obligation</b> Rule 117	<b>Risk Rating</b> Low <b>Compliance Rating</b> 2	<p><b>GSI invoicing process is manual with some risk of error</b></p> <p>The Market Operations team use a certified semi-automated tool to calculate GSI fees payable and to generate invoice summaries, and another semi-automated tool to create invoices based on these outputs. Further manual editing is required in some cases.</p> <p>Since the previous audit, AEMO has documented the invoice generation and issuance process, and introduced some more automation.</p> <p>While AEMO does conduct validation and error checking by comparing final invoice amounts to the invoiced summaries produced by the GSI fees tool, given the volume of data such validation may miss errors. For instance:</p> <ul style="list-style-type: none"> <li>On one occasion, AEMO sent out GSI invoices with the wrong dates because hardcoded dates in the template were not updated.</li> </ul>	No further action. AEMO has now addressed the remaining issues.

Ref	Issue Type & Obligation	Risk & Compliance Ratings	Finding	Recommendation
			<ul style="list-style-type: none"> <li>On another occasion, a zero was accidentally removed from a manually edited invoice.</li> </ul> <p>In neither case was there any financial impact, and AEMO has since updated the GSI Fees tool to automate these activities</p>	

## **9 PART 8 – RULE CHANGES**

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Part 8 of the GSI Rules details the process for making changes to the GSI Rules.

### **9.1 RULE AMENDMENTS**

There have been no amendments to Part 8.

### **9.2 AEMO PROCEDURES**

AEMO has no obligations under Part 8 of the GSI Rules. Therefore, AEMO has no procedures relating to Part 8.

### **9.3 OPERATIONAL COMPLIANCE WITH PART 8**

As noted above, AEMO has no obligations under Part 8 of the GSI Rules. Therefore, we have conducted no audit activities in relation to Part 8.

## **10 PART 9 – GSI PROCEDURES**

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Part 9 of the GSI Rules details the process for developing and changing GSI Procedures.

### **10.1 RULE AMENDMENTS**

Amendments to Part 9 include only changes to remove references to the IMO.

### **10.2 AEMO PROCEDURES**

AEMO's GSI Procedures and Internal Procedures are compliant with Part 9 of the GSI Rules in all material respects.

### **10.3 OPERATIONAL COMPLIANCE WITH PART 9**

No procedure changes have been progressed or implemented during the Audit Period. Therefore, we have conducted no audit activities relating to Part 9.

There have been no self-reported instances of non-compliance with Part 9.

## **11 PART 10 – COMPLIANCE AND ENFORCEMENT**

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Part 10 of the GSI Rules describes the monitoring, investigating and enforcing compliance of Gas Market Participants with the GSI Rules and GSI Procedures. It also covers auditing of AEMO's own compliance.

### **11.1 RULE AMENDMENTS**

Amendments to Part 10 include only changes to remove references to the IMO.

### **11.2 AEMO PROCEDURES**

AEMO's GSI Procedures and Internal Procedures are compliant with Part 10 of the GSI Rules in all material respects.

### **11.3 OPERATIONAL COMPLIANCE WITH PART 10.**

We have conducted no audit activities relating to Part 10.

There have been no self-reported instances of non-compliance with Part 10.

## 12 GSI SYSTEMS AND IT CONTROLS

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This chapter covers the compliance of AEMO's software systems for the GBB and GSI Fees calculations and software management processes with the GSI Rules and GSI Procedures, in accordance with rule 174(2)(c) of the GSI Rules.

- Section 12.1 sets out our review of AEMO's software systems for the GBB and the calculation of GSI Fees
- Section 12.2 sets out our review of AEMO's general IT controls, including processes for software management.

### 12.1 COMPLIANCE OF AEMO SOFTWARE

The software testing and certification process assesses whether the mathematical formulations specified in the GSI Rules and GSI Procedures have been correctly implemented by the software.

The software systems covered by this section of the review are:

- The Gas Bulletin Board (GBB)
- The GSI Fee Calculation Tool.

#### 12.1.1 Certification of the GBB

The initial version of the GBB was certified in June 2013, prior to the official start of GBB operations on 1 August 2013. Since that time, a number of minor changes have been made to the GBB systems, none of which, in the IMO's or AEMO's opinion, required certifying under rule 19.

19 Certifying GBB software

(1) Subject to this rule, AEMO must ensure that any version of the GBB software used by AEMO has been certified as compliant with the Rules and Procedures by an independent auditor.

(2) AEMO may implement changes to the current version of the GBB software without obtaining certification under subrule (1) where AEMO considers that the change will not have a material impact on any one or more of the following:

(a) the provision of information to AEMO by Gas Market Participants under the Rules;

(b) the processing and publication of information on the GBB or the EMF; or

(c) the calculation and processing of GSI Invoices.

(3) Where AEMO considers that changes to the current version of the GBB software are urgently required and essential for the efficient operation of the GBB, AEMO may implement the changes to the current version of the GBB software prior to certification under subrule (1), and must obtain that certification as soon as practicable.

Details of production software changes made prior to this Audit Period are shown in Table 13. Releases with certification status of 'maintained' did not require additional testing, as they did not involve changes that would be expected to have material impact on prices or quantities.

Table 13: Previous production software changes

System	Version number	Release date	Material impact under 19(2)?	Certification status
GBB	1.0	01/08/2013	Yes	Certified
GBB	1.0.9	20/08/2013	No	Maintained
GBB	1.1.3	11/12/2013	No	Maintained
GBB	1.1.4	19/12/2013	No	Maintained
GBB	1.2.0	23/01/2014	No	Maintained
GBB	1.2.38	30/01/2014	No	Maintained
GBB	1.2-57.7	25/06/2014	No	Maintained
GBB	1.3-145	27/08/2014	No	Maintained
GBB	1.3-145-3	8/01/2015	No	Maintained
GBB	1.4-193	18/03/2015	No	Maintained
GBB	1.4-201	20/05/2015	No	Maintained
GBB	1.4-209-7	9/09/2015	No	Maintained
GBB	1.5-255-3	3/11/2015	No	Maintained

System	Version number	Release date	Material impact under 19(2)?	Certification status
GBB	1.6-289-4	29/11/2015	No	Maintained
GBB	1.6-289-7	30/03/2016	No	Maintained
GBB	1.7-303-6	21/06/2016	No	Maintained
GBB	1.8-316-4	7/11/2016	No	Maintained

For this audit, we reviewed the release notes for all changes made to the GBB during the Audit Period and assessed the changes in relation to rule 19(2) of the GSI Rules. In each case, we agreed with AEMO that certification was not required. The details of these changes are shown in Table 14.

Table 14: Changes to GBB systems in the Audit Period

System	Version number	Release date	Material impact under 19(2)?	Certification status	Comment
GBB	1.9-329	15/11/2017	No	Maintained	Additional publication time validation; Renaming and relocation of Notice Board; fix to submission validation
GBB	1.9-331	12/01/2018	No	Maintained	Map change
GBB	1.9-333	13/02/2018	No	Maintained	Map change
GBB	1.10-340	14/05/2018	No	Maintained	Increased submission limits; caching fix; submission validation fix; display fix



### **12.1.2 Certification of the GSI Fee Calculation Tool**

While the GSI Fee Calculation Tool is not specifically required to be certified under the GSI Rules, the calculation of GSI Fees is a part of this compliance audit.

There have been no changes to the GSI Fee Calculation Tool in the Audit Period, and none since the tool was certified in June 2016. Therefore we did not review the GSI Fee Calculation Tool.

### **12.1.3 Compliance of GSI software with the GSI Rules**

We have no audit findings to report with respect to the compliance of the GSI software with the GSI Rules.

## **12.2 SOFTWARE MANAGEMENT PROCESSES**

Software management processes are also reviewed in the Electricity Compliance Audit. We carried out a single review covering both audits.

### **12.2.1 Audit activities**

We reviewed AEMO's policies and procedures for:

- Business continuity
- Service management

We carried out compliance testing on:

- Release notes
- Service management records (including AEMO Jira and ServiceNow incident, problem, change and release records)

### **12.2.2 Management of the GBB software**

AEMO's obligations in this regard are specified in rule 18(1) of the GSI Rules.

18(1) Where AEMO uses software (GBB software) and IT systems (GBB systems) to receive, store, collate and publish information for the operation of the GBB, AEMO must:

- (a) maintain a record of which version of GBB software was used at each point in time;
- (b) where changes are made to GBB software, maintain records of the differences between each version and the reasons for the changes between versions;
- (c) ensure that appropriate testing of new GBB software versions is conducted; and
- (d) ensure that any version of the GBB software used by AEMO has been certified in accordance with rule 19.

The changes made to the GBB during the Audit Period are listed in the Table 14 in the previous section.

### 12.3 AUDIT FINDINGS

There have been no self-reported or other instances of non-compliance with rule 18(1) of the GSI Rules.

#### 12.3.1 Compliance of software management processes with the GSI Rules

AEMO's software management processes for the GBB remain sufficient to comply with the GSI Rules.

Table 15: Comment on AEMO’s compliance with rule 18(1) of the GSI Rules during the Audit Period

Clause	Comment on compliance
18(1)(a)	AEMO has maintained a record of all versions of market software used together with their dates in service, in the form of JIRA and ServiceNow records.
18(1) (b)	AEMO has maintained records of the differences between each version and the reasons for the differences, in the form of release notes and JIRA records.
18(1) (c)	AEMO has conducted appropriate testing of all new releases of the market software prior to their being placed in service.
18(1) (d)	AEMO has ensured that all software versions are covered by an independent certification prior to implementation where required.

## 13 APPENDIX – COMPLIANCE AND RISK RATINGS

This appendix contains information on the compliance and risk ratings used to classify audit findings. The only difference from AEMO’s internal ratings is that we assess the financial impact to market participants in addition to AEMO.

### 13.1 COMPLIANCE AND RISK RATINGS

Audit findings are categorised as follows:

Table 16: Compliance ratings

Compliance rating	Description
1	Instances of non-compliance with the GSI Rules
2	Findings that are not an instance of non-compliance, but pose compliance risk
3	Findings related to minor housekeeping issues that do not affect compliance risk

Table 17: Risk ratings

Risk rating	Description
Critical	Potential for catastrophic impact on market or system operations or other market outcomes if not addressed immediately. Requires executive actions and monitoring at board level.
Significant	Potential for major impact on market or system operations or other market outcomes if not addressed as a matter of priority. Requires senior management attention with regular monitoring at executive meetings.
Medium	Potential for moderate impact on market or system operations or other market outcomes if not addressed within a reasonable timeframe. Requires management attention with regular monitoring.
Low	Potential for minor impact on market or system operations or other market outcomes if not addressed in the future. Requires team level attention with regular monitoring.

Table 18: Risk rating matrix

		Consequence of risks associated with finding				
		Immaterial	Minor	Moderate	Major	Extreme
Likelihood of risk manifesting if finding not addressed	Almost Certain	Medium	Medium	Significant	Critical	Critical
	Likely	Low	Medium	Significant	Critical	Critical
	Possible	Low	Medium	Significant	Significant	Critical
	Unlikely	Low	Low	Medium	Medium	Significant
	Rare	Low	Low	Medium	Medium	Significant

AEMO’s definitions of likelihood and consequence are provided in the sections below.

## 13.2 AEMO LIKELIHOOD RATINGS

Likelihood	Annual Probability	Qualitative Description
Almost Certain	>90%	Will occur in most circumstances; statistical record of several occurrences
Likely	51% - 90%	Can be expected to occur in most circumstances; statistical record of some occurrence
Possible	11% - 50%	May occur, but not expected in most circumstances; statistical record of at least one occurrence
Unlikely	1% - 10%	Conceivable but unlikely to occur in any given year; no history of occurrence
Rare	<1%	Will only occur in exceptional circumstances; no history of occurrence

### 13.3 AEMO IMPACT RATINGS

Type of impact	EXTREME	MAJOR	MODERATE	MINOR	IMMATERIAL
Reputation & Stakeholders	Significant long-term damage to stakeholder confidence and relationships; total loss of public confidence; intensive adverse media exposure	Significant short-term damage to stakeholder confidence and relationships; some loss of public confidence; adverse media exposure	Some damage to stakeholder confidence and relationships	Manageable reduction in stakeholder confidence	No lasting effects
Financial Impact (on AEMO or market participants)	>\$25M	>\$5M-25M	>\$500K-\$5M	>\$100K-\$500K	<\$100K
Safety	Single fatality or permanent injury or widespread impact on public safety	Serious injury requiring hospitalisation >5 days or localised impact on public safety	Injury requiring <5 days hospitalisation or medical treatment	Medical treatment only	First aid
Infrastructure, Assets & Environment	Permanent long-term effect and or rectification not possible	Significant effect, difficult rectification	Measurable effect, easy rectification	Measurable effect, no rectification required	No measurable damage or effect
Market	Loss of supply to >50% of customer demand in any one jurisdiction or >25% across multiple jurisdictions Market suspension in one jurisdiction or market	Loss of supply to >25% of customer demand in any one jurisdiction or >10% across multiple jurisdictions Market suspension in one jurisdiction or market	Loss of supply to >10% of customer demand in any one jurisdiction or >5% across multiple jurisdictions Market operating in an administered state for > 5	Loss of supply to >5% of customer demand in any one jurisdiction or >2% across multiple jurisdictions	No restriction of supply No disruption to markets

Type of impact	EXTREME	MAJOR	MODERATE	MINOR	IMMATERIAL
			days for gas market or >1 day for electricity market	Market operating in an administered state for <5 days for gas market or <1 day for electricity market	
Legal & Regulatory	Imprisonment or fine >\$100 personal liability to officer or director of company Disqualification as officer/director Regulator or parliamentary inquiry with loss of market participants and public confidence	>\$100K personal liability to officer or director Disqualification as officer/director Regulator or parliamentary inquiry with substantial loss of reputation, financial cost, loss of stakeholder confidence, political impact	Fine of less than \$100K and no personal liability Regulator or government inquiry with loss of reputation or adverse government impact	Nominal fine Regulator or government inquiry resolved by routine management procedures	No fine No government or regulator inquiry