



# AUSTRALIAN ENERGY MARKET OPERATOR

Independent Assurance Report: AEMO's  
compliance with the Gas Services  
Information Rules

## FINAL REPORT

9 December 2016

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# FOREWORD

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PA Consulting Group undertakes the Western Australian (WA) operational market audits which include:

- An Electricity Compliance Audit of the market operator<sup>1</sup> (*Audit 1*)
- An Electricity Software Compliance Audit of the market operator (*Audit 2*)
- A Gas Compliance Audit of the market operator<sup>2</sup> (*Audit 3*)
- An Electricity Compliance Audit of the system operator<sup>3</sup> (*Audit 4*).

This independent assurance report pertains to Audit 3 above and is part of a series of four audit reports. The reports in this series are:

- *Audit 1: Independent Assurance Report: Compliance of AEMO's internal procedures and business processes with the Wholesale Electricity Market Rules and AEMO's compliance with the Wholesale Electricity Market Rules and Market Procedures*
- *Audit 2: Independent Assurance Report: Compliance of AEMO's software systems and processes for software management*
- *Audit 3: Independent Assurance Report: AEMO's compliance with the Gas Services Information Rules*
- *Audit 4: Independent Assurance Report: System Management's compliance with the Wholesale Electricity Market Rules and Market Procedures*

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<sup>1</sup> Australian Energy Market Operator (AEMO) from the AEMO Transition Date as defined in the Electricity Rules (8AM, November 30th 2015); Independent Market Operator (IMO) prior to the AEMO Transition Date.

<sup>2</sup> Australian Energy Market Operator (AEMO) from the AEMO Transition Date as defined in the GSI Rules (8AM, November 30th 2015); Independent Market Operator (IMO) prior to the AEMO Transition Date.

<sup>3</sup> Australian Energy Market Operator (AEMO) from the System Management Transition Date as defined in the Electricity Rules (8AM, 1 July 2016); Western Power (System Management) (SM), prior to the System Management Transition Date.

# EXECUTIVE SUMMARY

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This independent assurance report sets out the results of the market audit conducted by PA Consulting Group (PA) of:

- The compliance of AEMO's internal procedures and business processes with the GSI Rules
- AEMO's compliance with the GSI Rules and GSI Procedures
- 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

## Regulatory context and scope

The audit of AEMO's gas compliance (referred to as Audit 3) is conducted under GSI Rule 174(1) and 174(2), supplemented by the transitional rule in Schedule 3, Part 2, Rule 4, which requires AEMO to ensure that for the first audit following the AEMO Transition Date<sup>4</sup>, the auditor audits both AEMO (for activities on and from the transition date) and the IMO (in respect of its activities before the transition date).

## Audit Period

The Audit Year is 1 August 2015 to 30 June 2016, both dates inclusive.

## Audited Entity

For avoidance of doubt, the Audited Entity for this audit is:

- The Independent Market Operator (IMO) prior to the AEMO Transition Date
- The Australian Energy Market Operator (AEMO) on and from the AEMO Transition Date.

## 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 the compliance of:

- The Audited Entity's internal procedures with the GSI Rules, and
- Software systems for the GBB and GSI Fees calculations

We provide limited assurance under this standard with respect to our review of:

- The Audited Entity's compliance with the GSI Rules and GSI Procedures, and
- The Audited Entity's software management processes.

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<sup>4</sup> 30 November 2015

## Risk ratings and materiality

### Risk ratings

Audit findings are categorised as follows:

**Table 1: Compliance Ratings for Audit Findings**

Compliance rating	Description
1	Instances of non-compliance with GSI Rules and GSI Procedures noted in audit
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

Risk rating descriptors for audit findings were set in consultation with AEMO and are based on AEMO's corporate risk matrix (including definitions of impact).

**Table 2: Risk Ratings for Audit Findings**

Risk rating	Description
Critical 	Potential for catastrophic impact on dispatch, settlement or other market outcomes if not addressed immediately. Requires executive actions and monitoring at board level.
Significant 	Potential for major impact on dispatch, settlement 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 dispatch, settlement or other market outcomes if not addressed within a reasonable timeframe. Requires management attention with regular monitoring.
Low 	Potential for minor impact on dispatch, settlement or other market outcomes if not addressed in the future. Requires team level attention with regular monitoring.

**Table 3: 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

**Qualification of audit opinion**

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

- Purpose and objectives of the audit
- AEMO’s overall objectives
- AEMO’s risk matrix definitions of impact
- Financial impacts on participants
- The number of participants or other stakeholders affected
- The impact of an issue on the GSI objectives
- Whether or not an issue is systemic
- Whether or not an issue is recurring (from previous audits).

**Audit activities**

**Review of Audited Entity’s processes and procedures**

We have undertaken a combination of reviews of self-reported incidents of non-compliance, compliance auditing and business process walkthroughs.

Our audit activities were focused on subset of functional areas based on residual compliance risk, materiality and rule changes occurring in the Audit Period. These areas include:

- Provision of information to the IMO
- Budgeting and division of fees
- Separation of procedures (removal of IMO and ERA obligations from AEMO procedures)
- EMF activation.

While the transition of functions to AEMO affected a large number of obligations, and gave the AEMO a somewhat reduced set of functions (as compared to the IMO prior to transition date), there were no substantive changes affecting the performance of GSI functions.

AEMO staff have provided all information, documentation and data required for our audit procedures.

We conducted one field-visit in September 2016 to interview AEMO staff and to conduct the business process walkthroughs.

**Review of Audited Entity’s GSI software and software management processes**

AEMO’s software management processes were reviewed as part of Audit 2. The results of this review can be viewed in Chapter 2 of the report entitled “*Audit 2: Compliance of AEMO’s market software systems and processes for software management*”. While the focus of that report is on AEMO’s processes in regards to management of WEM software, the same processes are used in the management of software used in GSI systems.

We approached the audit in two components, respectively examining:

1. AEMO’s software management processes and controls and
2. Changes to the software itself.

With respect to the software management processes and controls we have:

- Examined the documented processes for software management
- Compared them to actual operational practices through interviews with AEMO staff and inspections of process records
- Reviewed the compliance of operational practices with the GSI Rules and GSI Procedures.

With respect to the software changes, we have:

- Reviewed all system changes implemented since the last audit
- Reviewed whether or not those changes have been certified as required under the GSI Rules
- Reviewed all rule changes commencing since the last audit
- Assessed whether a rule change requires a change to the systems
- Identified where those changes have not been implemented.

We conducted one field-visit in September 2016 to interview AEMO staff and to walk through the software management processes.

All audit information (documentation, logs and system outputs) has been provided to us by AEMO’s Operations and IT team.

## Findings and recommendations

### Summary of audit findings

Table 4 summarises audit findings by compliance and risk rating. Subsequent sections of this report provide a detailed explanation of each finding on a rule part by rule part basis.

**Table 4: Summary of audit findings classified by compliance and risk ratings**

Risk rating	Compliance rating		
	1	2	3
	No findings	No findings	No findings
	No findings	No findings	No findings
	No findings	1	No findings
	1	2	No findings

Table 5 breaks down the audit findings further by part of the GSI Rules. Subsequent sections of this report provide a detailed explanation of each finding on rule part by part basis.

**Table 5: Summary of audit findings broken by part of GSI Rules**

Part	Compliance rating		
	1	2	3
2: Registration	No findings	 1	No findings
4: Gas Bulletin Board	 1	No findings	No findings
7: Budget and Fees	No findings	 1  1	No findings

**Key findings**

AEMO (and the IMO before it) continues to take rule compliance seriously, and has a robust suite of controls in place to manage compliance risk. The organisation is proactive in reporting and addressing compliance issues.

We have found some issues relating to the currency of AEMO’s internal procedures, including internal procedures for market fees, AEMO budget, and GBB registration. In particular, internal procedures 5.2 *Determination of AEMO Budget*, and 5.3 *Fees*, still reflect the processes required by the rules prior to the AEMO Transition Date. The full set of new obligations has not yet been triggered, and we have not observed anything that suggests there has actually been an issue in these areas, but correct procedure documentation is an important control for compliance risk.

**Opinion**

**Qualifications**

The following qualifications apply to our opinion with respect to whether AEMO’s internal procedures and business processes comply with the GSI Rules in all material respects:

- AEMO’s internal procedures 5.2 *Determination of AEMO Budget* and 5.3 *Fees* have not been updated to reflect the 30 November transfer of IMO functions to AEMO, and if followed as written, would lead to non-compliance with part 7 of the GSI Rules.

**Opinion with respect to the Audited Entity’s compliance of procedures and business processes with the GSI Rules**

*Subject to the inherent limitations set out in Section 1.3.4 and the qualifications set out above, it is our opinion that AEMO's internal procedures and business processes comply with the GSI Rules in all material respects.*

**Opinion with respect to the Audited Entity’s compliance with the GSI Rules and GSI Procedures**

*Subject to the inherent limitations set out in Section 1.3.4, 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 has not been compliant with the GSI Rules and GSI Procedures during the Audit Period, in all material respects.*

*Subject to the inherent limitations set out in Section 1.3.4, 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 the IMO has not been compliant with the GSI Rules and GSI Procedures during the Audit Period prior to 30 November 2015, in all material respects.*

**Opinion with respect to the Audited Entity’s processes for software management**

*Subject to the inherent limitations set out in Section 1.3.4, 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 were not compliant with the GSI Rules and GSI Procedures during the Audit Period, in all material respects.*

*Subject to the inherent limitations set out in Section 1.3.4, 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 the IMO’s processes for software management were not compliant with the GSI Rules and GSI Procedures during the Audit Period prior to 30 November 2015, in all material respects.*

**Opinion with respect to the compliance of software systems for the GBB and GSI Fees calculations with the GSI Rules and GSI Procedures**

*Subject to the inherent limitations set out in Section 1.3.4, it is our opinion that the software used by AEMO in the operation of the GBB, and in the calculation of GSI Fees, has been compliant with the GSI Rules and GSI Procedures, in all material respects.*

**PA Consulting Group**



A handwritten signature in black ink, appearing to read 'SJT', enclosed in a thin black rectangular box.

**Stephen James Thornton**  
**Member of PA’s Management Group**

9 December 2016

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# 1 INTRODUCTION

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This chapter sets out the regulatory context for Audit 3 and our approach to performing the audit.

## 1.1 Regulatory context and scope

The requirement for the audit of the AEMO is set out in the Gas Services Information Rules (the GSI Rules).

Table 6 provides further detail on the heads of power that mandate this audit.

**Table 6: GSI Rules references pertaining to audits**

Clause reference	Comment
174 (1)	Requirement for AEMO to appoint auditor at least annually
174 (2)	Defines the scope for Audit 3 to include: <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<sup>5</sup></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>
Schedule 3, Part 2, Rule 4 (Transitional)	Requires the audited entity to be IMO prior to the AEMO Transition Date and AEMO thereafter

This report covers our audit of AEMO and the IMO under 174 (1) and (2).

At the time of the previous audit there were no obligations on AEMO, nor did AEMO have any documented procedures relating to the GSI Rules. On 30 November 2015, most IMO functions and rule obligations were transferred to AEMO. The personnel implementing the obligations largely remained the same, as did the IT systems, operational processes, procedure documentation, and other controls. This means that from an operational perspective, there is continuity between the two organisations, and for this reason, where we refer to amendments or changes to AEMO obligations or AEMO procedures, we mean the differences between AEMO obligations or procedures and the equivalent IMO obligations or procedures as at the time of the previous audit.

## 1.2 Audited Entity

For avoidance of doubt, the Audited Entity for this audit is:

- The Independent Market Operator (IMO) prior to the AEMO Transition Date
- AEMO following the AEMO Transition Date.

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<sup>5</sup> Procedures defined in the GSI Rules will be referred to from here-on as GSI Procedures to clearly distinguish them from Market Procedures as defined under the Electricity Rules.

## 1.3 Approach

### 1.3.1 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 the compliance of:

- The Audited Entity's internal procedures with the GSI Rules, and
- Software systems for the GBB and GSI Fees calculations

We provide limited assurance under this standard with respect to our review of:

- The Audited Entity's compliance with the GSI Rules and GSI Procedures, and
- The Audited Entity's software management processes

### 1.3.2 Risk ratings and materiality

#### Compliance and risk ratings

Audit findings are categorised as shown in Table 7:

**Table 7: Compliance Ratings for Audit Findings**

Compliance rating	Description
1	Instances of non-compliance with GSI Rules and GSI Procedures noted in audit.
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

Risk ratings for audit findings were set in consultation with AEMO and are set out in Table 8.

**Table 8: Risk Ratings for Audit Findings**

Risk rating	Description
Critical 	Potential for catastrophic impact on dispatch, settlement or other market outcomes if not addressed immediately. Requires executive actions and monitoring at board level.
Significant 	Potential for major impact on dispatch, settlement 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 dispatch, settlement or other market outcomes if not addressed within a reasonable timeframe. Requires management attention with regular monitoring.

Risk rating	Description
Low 	Potential for minor impact on dispatch, settlement or other market outcomes if not addressed in the future. Requires team level attention with regular monitoring.

Each finding has been categorised according to its impact and likelihood, using the matrix in Table 9, and AEMO's standard impact definitions shown in Table 10.

**Table 9: Classification of Audit Findings**

		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

**Table 10: AEMO impact ratings**

Type of impact	EXTREME	MAJOR	MODERATE	MINOR	IMMATERIAL
<b>Reputation &amp; Stakeholders</b>	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
<b>AEMO Financial Impact</b>	>\$25M	>\$5M-25M	>\$500K-\$5M	>\$100K-\$500K	<\$100K
<b>Safety</b>	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
<b>Infrastructure, Assets &amp; Environment</b>	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
<b>Market</b>	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 days for gas market or >1 day for electricity market	Loss of supply to >5% of customer demand in any one jurisdiction or >2% across multiple jurisdictions Market operating in an administered state for <5 days for gas market or <1 day for electricity market	No restriction of supply No disruption to markets
<b>Legal &amp; Regulatory</b>	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

## Qualification of audit opinion

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

- Purpose and objectives of the audit
- AEMO’s overall objectives
- AEMO’s risk matrix definitions of impact
- Financial impacts on participants
- The number of participants or other stakeholders affected
- The impact of an issue on the GSI objectives
- Whether or not an issue is systemic
- Whether or not an issue is recurring (from previous audits).

### 1.3.3 Audit activities

#### Review of Audited Entity’s processes and procedures

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.
- 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 the AEMO (WA) teams, with a particular emphasis on the market operations team.

The first two activities were conducted as part of a field-visit in September 2016. Remaining activities 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 include:

- Provision of information to the IMO
- Budgeting and division of fees
- Separation of procedures
- EMF activation.

AEMO staff have provided all information, documentation and data required for our audit procedures.

While the transition of functions to AEMO affected a large number of obligations, and gave the AEMO a slightly reduced set of functions (as compared to the IMO prior to transition date), there were no substantive changes affecting the performance of market functions.

#### Review of Audited Entity’s GSI software and software management processes

We have approached the audit in two components<sup>6</sup>, respectively examining:

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<sup>6</sup> AEMO’s software management processes were reviewed in a separate audit conducted by PA concurrently with this audit. The results of this review can be viewed in Chapter 2 of the report entitled “*Audit 2: Compliance of AEMO’s market software systems and processes for software management*”. While the focus of that report is on AEMO’s processes in regards to management of WEM software, the same processes are used in the management of software used in GSI systems.

1. AEMO's software management processes and controls and
2. Changes to the software itself.

With respect to the software management processes and controls we have:

- Examined the documented processes for software management
- Compared them to actual operational practices through interviews with AEMO staff and inspections of process records
- Reviewed the compliance of operational practices with the GSI Rules.

With respect to the software changes, we have:

- Reviewed all system changes implemented since the last audit
- Reviewed whether or not those changes have been certified as required under the GSI Rules
- Reviewed all rule changes commencing since the last audit
- Assessed whether a rule change requires a change to the systems
- Identified where those changes have not been implemented.

We conducted one field-visit in September 2016 to interview AEMO staff and to walk through the software management processes.

All audit information (documentation, logs and system outputs) has been provided to us by AEMO's Operations and IT team.

#### **1.3.4 Inherent limitations and qualifications**

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.

An audit does not guarantee every procedure and action carried out in the operation of the GSI functions 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 are therefore subject to the following caveats:

1. 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, in the event that we were to detect any fraudulent or illegal activity, we would report this to AEMO. No such findings have been made during this audit.
2. 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. Specifically, our business process reviews assessing the use of controls were undertaken after the end of the Audit Period. As such:
  - a. Although our findings are indicative of AEMO's practices during the Audit Period, they do not constitute definitive evidence that AEMO applied those controls during the Audit Period.
  - b. Projections of our findings to future periods carry the risk that:

- i. Controls may become inadequate over time due to changes in the GSI Rules or AEMO's business processes, procedures and systems
  - ii. The degree of compliance with the control procedures we have reviewed deteriorates over time.
3. We have reviewed the governance of AEMO's internal procedures, and are satisfied that the change management process described is robust. However, we have not tested the AEMO's operational compliance against its procedure change management policies and have relied on the AEMO's list of documented changes to internal procedures, including some which are still in draft status. Further, we have focused on changes relating to rule changes in the Audit Period, and sample checks of obligations that have not changed, and have not exhaustively reviewed all procedures against all rule obligations. Therefore, there is a minor risk that unauthorised changes may have been made to internal procedures that we have not reviewed.

## 1.4 Structure of this report

The remainder of this report is structured based on the parts of the GSI Rules and includes:

- A brief summary of rule part contents.
- Commentary on whether AEMO's procedures (GSI Procedures and Internal Procedures) have been updated during the Audit Year, and whether they comply with the Rules. Our internal procedure review included consideration of the 1 July 2016 rule changes.
- Commentary on AEMO's operational compliance and areas of compliance risk (where relevant).

Unless otherwise specified, all references to the GSI Rules refer to the most recently applicable rules as at the end of the Audit Year (i.e. the GSI Rules as at 30 November 2015).

## 2 PART 1: INTRODUCTORY AND 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 AEMO processes and procedures

#### 2.1.1 Rule amendments

Rule changes relate to the transfer of functions from the IMO to AEMO. Most (but not all) of the obligations previously placed on the IMO under Part 1 have been transferred to AEMO. Obligations not transferred to AEMO include oversight and secretariat functions for the Gas Advisory Board.

#### 2.1.2 Procedures

The following GSI Procedures relating to Part 1 of the GSI Rules were updated in the Audit Period.

ID	Title	Updated
GSI2	Operation of the Gas Bulletin Board (WA) and the Emergency Management Facility	November 2015

The following Internal Procedures relating to Part 1 have been updated since the last audit:

ID	Title	Updated
1.2	Compliance Monitoring and Enforcement	July 2016
1.4	Market Audits	June 2016

#### 2.1.3 Compliance of AEMO's Procedures with Part 1 of the GSI Rules

We have not noted any instances in which AEMO's Internal Procedures, if followed, would result in non-compliance with Part 1.

### 2.2 Compliance with Part 1

#### 2.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Part 1 of the GSI Rules:

- Provision of information to the IMO
- Separation of procedures (removal of IMO and ERA obligations from AEMO procedures)

#### 2.2.2 Audit Findings

There are no findings relating to Part 1.

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 participants and facilities, including registration, deregistration, transfers, and exemptions.

### 3.1 AEMO processes and procedures

#### 3.1.1 Rule amendments

All obligations previously placed on the IMO under Part 2 have been transferred to AEMO. A handful of new obligations to notify the IMO in certain situations have been added.

#### 3.1.2 Procedures

The following GSI Procedures relating to Part 2 of the GSI Rules were updated in the Audit Period.

ID	Title	Updated
GSI1	GBB Registration	November 2015

The following Internal Procedures relating to Part 2 have been updated since the last audit:

ID	Title	Updated
CF1	GBB Work Instructions (confluence)	August 2015

#### 3.1.3 Compliance of AEMO's Procedures with Part 2 of the GSI Rules

We have noted the following instances in which AEMO's internal procedures, if followed, would result in non-compliance with Part 2:

- AEMO's confluence wiki functions as the internal procedures for GSI functions. They have not been updated to include new obligations arising from the 30 November 2015 transfer of IMO functions to AEMO.

### 3.2 Compliance with Part 2

#### 3.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Part 2 of the GSI Rules:

- Provision of information to the IMO.

#### 3.2.2 Audit Findings

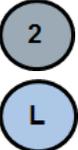
Table 11 summarises audit findings by compliance rating and risk rating.

Table 12 provides details of audit findings that were classified as Compliance Rating 2 and 3.

**Table 11: Summary of audit findings classified by compliance and risk ratings**

Risk rating	Compliance rating		
	1	2	3
		1	

**Table 12: Summary of Compliance Rating 2 & 3 Audit Findings**

Finding	Compliance & Risk Rating	Description
<p>Confluence work instructions for GBB registration have not been updated for IMO-&gt;AEMO transition</p>	 <p>The rating consists of two circular icons: the top one contains the number '2' and the bottom one contains the letter 'L'.</p>	<p>AEMO's confluence wiki functions as the internal procedures for GSI functions. They have not been updated to reflect the 30 November 2015 transfer of IMO functions to AEMO. In particular, they are missing rules 34(4), 36(5) and 39(5) which relate to advising the IMO of any conditions AEMO impose on a registered, deregistered or transferred facility.</p> <p>The changes are relatively minor, and are only triggered with new registrations, deregistrations, or transfers, so we have not observed anything that suggests there has actually been an issue in this area. Nevertheless, correct procedure documentation is an important control for compliance risk. If the instructions were followed as written, AEMO would not comply with the rules.</p>

# 4 PART 3: PROVISION OF INFORMATION FOR GBB

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 AEMO processes and procedures

### 4.1.1 Rule amendments

All obligations previously placed on the IMO under Part 3 have been transferred to AEMO.

### 4.1.2 Procedures

The following GSI Procedures relating to Part 3 of the GSI Rules have been updated since the last audit.

ID	Title	Updated
GS11	GBB Registration	November 2015

There are no internal procedures relating to Part 3.

### 4.1.3 Compliance of AEMO’s Procedures with Part 3 of the GSI Rules

We have not noted any instances in which AEMO’s Internal Procedures, if followed, would result in non-compliance with Part 3.

## 4.2 Compliance with Part 3

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

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

## 5.1 AEMO processes and procedures

### 5.1.1 Rule amendments

All obligations previously placed on the IMO under Part 4 have been transferred to AEMO.

### 5.1.2 Procedures

There are no GSI Procedures or internal procedures relating to Part 4 of the GSI Rules.

## 5.2 Compliance with Part 4

### 5.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Part 4 of the GSI Rules:

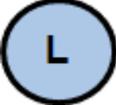
- EMF activation.

### 5.2.2 Audit Findings

Table 13 summarises audit findings by compliance rating and risk rating.

Table 14 provides details of audit findings that were classified as Compliance Rating 1 (i.e. incidents of non-compliance with Part 4 of the GSI Rules).

**Table 13: Summary of audit findings classified by compliance and risk ratings**

Risk rating	Compliance rating		
	1	2	3
	1		

**Table 14: Summary of Compliance Rating 1 Audit Findings (i.e. incidents of non-compliance with Part 4 of the GSI Rules).**

GSI Rule	Risk Rating	Description
86		<p>Rule 86 (1) requires AEMO (and previously the IMO) to publish Nominated and Forecast flow information on the GBB for each Gas Day. This information is submitted by Pipeline Operators under Rule 59 (1) and (2) by 6pm the day before, and updated under Rule 59 (3) on the day.</p> <p>From GSI commencement until August 2016, the IMO and AEMO published the first 86(1) data at 6am. However, this initial publication was based on the latest submitted data (the 59(3) data) which related to the previous day, rather than the latest submitted data for the current day (the 59(1) and (2) data). The reports were recalculated correctly on the receipt of the first 59(3) submission for the current day.</p> <p>The IMO and AEMO did publish the correct data every day, but for between 2 and 5 ½ hours at the beginning of each day, incorrect data was displayed. This issue was caused by a software bug in the GBB, which was corrected in August 2016.</p> <p>We have deemed these incidents to be non-material incidents as it is unlikely that participant decisions would have been affected by the incorrect information in that timeframe.</p>

# 6 PART 5: THE EMERGENCY MANAGEMENT FACILITY

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 AEMO processes and procedures

### 6.1.1 Rule amendments

All obligations previously placed on the IMO under Part 5 have been transferred to AEMO.

### 6.1.2 Procedures

The following GSI Procedures relating to Part 5 of the GSI Rules were updated in the Audit Period.

ID	Title	Updated
GSI2	Operation of the Gas Bulletin Board (WA) and the Emergency Management Facility	November 2015

The following Internal Procedures relating to Part 5 have been updated since the last audit:

ID	Title	Updated
CF1	GBB Work Instructions (confluence)	August 2015

### 6.1.3 Compliance of AEMO's Procedures with Part 5 of the GSI Rules

We have not noted any instances in which AEMO's Internal Procedures, if followed, would result in non-compliance with Part 5.

## 6.2 Compliance with Part 5

### 6.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Part 5 of the GSI Rules:

- EMF activation.

### 6.2.2 Audit Findings

There are no findings relating to Part 5.

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

# 7 PART 6: THE GAS STATEMENT OF OPPORTUNITIES

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 AEMO processes and procedures

### 7.1.1 Rule amendments

All obligations previously placed on the IMO under Part 6 have been transferred to AEMO.

### 7.1.2 Procedures

There are no GSI Procedures relating to Part 6 of the GSI Rules.

The following Internal Procedures relating to Part 6 have been updated since the last audit:

ID	Title	Updated
3.7.1	Preparation of the GSOO	August 2016

### 7.1.3 Compliance of AEMO’s Procedures with Part 6 of the GSI Rules

We have not noted any instances in which AEMO’s Internal Procedures, if followed, would result in non-compliance with Part 6.

## 7.2 Compliance with Part 6

We have not conducted any audit procedures to assess AEMO’s compliance with 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

---

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

### 8.1 AEMO processes and procedures

#### 8.1.1 Rule amendments

Many (but not all) of the obligations previously placed on the IMO under Part 7 have been transferred to AEMO. Provisions relating to the determination of the IMO budget have remained with the IMO, and new provisions introduced relating to the determination of the AEMO budget. There are also changes to fee calculations and invoicing to incorporate the multiple entities (AEMO, ERA and IMO) who recover costs through market fees, though these are amended by the transitional rules in Schedule 3.

#### 8.1.2 Procedures

There are no GSI Procedures relating to Part 7 of the GSI Rules.

The following Internal Procedures relating to Part 7 have been updated since the last audit:

ID	Title	Updated
5.2	Determination of AEMO Budget	August 2016
5.3	Fees	August 2016

#### 8.1.3 Compliance of AEMO’s Procedures with Part 7 of the GSI Rules

We have noted the following instances in which AEMO’s internal procedures, if followed, would result in non-compliance with Part 7:

- AEMO’s internal procedure 5.2 *Determination of AEMO Budget* has not been updated to reflect the new (30 November 2015) provisions for AEMO budgeting
- AEMO’s internal procedure 5.3 *Fees* has not been updated to reflect the 30 November transfer of IMO functions to AEMO.

### 8.2 Compliance with Part 7

#### 8.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Part 7 of the GSI Rules:

- Budgeting and division of fees.

#### 8.2.2 Audit Findings

Table 15 summarises audit findings by compliance rating and risk rating.

Table 16 provides details of audit findings that were classified as Compliance Rating 2 and 3.

**Table 15: Summary of audit findings classified by compliance and risk ratings**

Risk rating	Compliance rating		
	1	2	3
		1	
		1	

**Table 16: Summary of Compliance Rating 2 & 3 Audit Findings**

Finding	Compliance & Risk Rating	Description
Internal procedure 5.2 Determination of AEMO Budget has not been updated to reflect rule changes in the period	 	<p>This internal procedure has not been updated to reflect the new (30 November 2015) rules around AEMO budgeting, in particular there is no implementation of the new Rules 111A(1)-(6) "Determination of AEMO Budget".</p> <p>The full set of new obligations has not yet been triggered, and we have not observed anything that suggests there has actually been an issue in this area, but correct procedure documentation is an important control for compliance risk. If the procedure were followed as written, AEMO would not comply with the rules.</p>
Internal procedure 5.3 Fees has not been updated to reflect rule changes in the period	 	<p>This internal procedure has not been updated to reflect the new rules around setting and paying GSI fees, and in particular, makes no mention of payments to the IMO and ERA.</p> <p>The full set of new obligations has not yet been triggered, and we have not observed anything that suggests there has actually been an issue in this area. Payments have been made to the IMO and ERA on a reasonable basis, as per transitional provisions, and were not required to be itemized on GSI invoices during the audit year. Nevertheless, correct procedure documentation is an important control for compliance risk. If the procedure were followed as written, AEMO would not comply with the rules.</p> <p>We understand that AEMO has drafted, but not yet approved, updates to this procedure.</p>

## 9 PART 8: RULE CHANGES

---

Part 8 of the GSI Rules details the process for making changes to the GSI Rules, including rule change proposals, consultations, approvals and timelines.

### 9.1 AEMO processes and procedures

#### 9.1.1 Rule amendments

None of the obligations previously placed on the IMO under Part 8 have been transferred to AEMO.

#### 9.1.2 Procedures

There are no GSI Procedures or Internal Procedures relating to Part 8 of the GSI Rules, as the IMO's 'Rule Change' internal procedure was not retained by AEMO after 30 November 2015.

### 9.2 Compliance with Part 8

#### 9.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Part 8 of the GSI Rules:

- Separation of procedures (removal of IMO and ERA obligations from AEMO procedures).

#### 9.2.2 Audit Findings

There are no findings relating to Part 8.

There have been no self-reported instances of non-compliance with Part 8.

# 10 PART 9: GSI PROCEDURES

---

Part 9 of the GSI Rules details the process for developing and changing GSI Procedures, including subject matter, procedure change proposals, consultations, approvals, publication, and timelines.

## 10.1 AEMO processes and procedures

### 10.1.1 Rule amendments

Procedure making obligations previously placed solely on the IMO under Part 9 are now placed on both IMO and AEMO, but only in relation to their respective functions.

### 10.1.2 Procedures

There are no GSI Procedures relating to Part 9 of the GSI Rules.

The following Internal Procedures relating to Part 9 have been updated since the last audit:

ID	Title	Updated
4.2.2	Market Procedure Change	July 2016

### 10.1.3 Compliance of AEMO's Procedures with Part 9 of the GSI Rules

We have not noted any instances in which AEMO's Internal Procedures, if followed, would result in non-compliance with Part 9.

## 10.2 Compliance with Part 9

### 10.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Part 9 of the GSI Rules:

- Separation of procedures (removal of IMO and ERA obligations from AEMO procedures).

### 10.2.2 Audit Findings

There are no findings relating to Part 9.

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

# 11 PART 10: COMPLIANCE AND ENFORCEMENT

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 AEMO processes and procedures

### 11.1.1 Rule amendments

Annual compliance audit obligations previously placed on the IMO under Part 10 have been transferred to AEMO. All other IMO obligations under Chapter 10 were retained by the IMO, and transferred to the ERA on 1 July 2016. New obligations were added requiring AEMO to support the IMO's (and subsequently the ERA's) monitoring functions.

### 11.1.2 Procedures

There are no GSI Procedures relating to Part 10 of the GSI Rules.

The following Internal Procedures relating to Part 10 have been updated since the last audit:

ID	Title	Updated
1.2	Compliance Monitoring and Enforcement	July 2016
1.4	Market Audits	June 2016
1.14	GBB CAST	February 2016

### 11.1.3 Compliance of AEMO's Procedures with Part 10 of the GSI Rules

We have not noted any instances in which AEMO's Internal Procedures, if followed, would result in non-compliance with Part 10.

## 11.2 Compliance with Part 10

### 11.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Part 10 of the GSI Rules:

- Separation of procedures (removal of IMO and ERA obligations from AEMO procedures).

### 11.2.2 Audit Findings

There are no findings relating to Part 10.

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

# 12 SCHEDULE 3: TRANSITIONAL RULES

---

Schedule 3 of the GSI Rules covers the transitional arrangements leading up to, and for a period after:

- the date when the GSI Rules took effect (GSI Commencement Date)
- the date when GSI functions were transferred from the IMO to AEMO (AEMO Transition Date)
- the date when GSI functions were transferred from the IMO to the ERA (ERA Transfer Date).

## 12.1 AEMO processes and procedures

### 12.1.1 Rule amendments

Transitional obligations relating to GSI Commencement were not amended, and remained with the IMO. New transitional obligations were introduced relating to AEMO Transition Date and ERA Transfer Date, including relaxation of some of AEMO's budgeting and fee setting obligations.

### 12.1.2 Procedures

There are no GSI Procedures relating to Schedule 3 of the GSI Rules.

The following Internal Procedures relating to Schedule 3 have been updated since the last audit:

ID	Title	Updated
5.2	Determination of AEMO Budget	August 2016
5.3	Fees	August 2016

### 12.1.3 Compliance of AEMO's Procedures with Schedule 3 of the GSI Rules

We have not noted any instances in which AEMO's Internal Procedures, if followed, would result in non-compliance with Schedule 3.

## 12.2 Compliance with Schedule 3

### 12.2.1 Audit Activities

We have undertaken compliance testing and business process walkthroughs in the following functional areas relating to Schedule 3 of the GSI Rules:

- Budgeting and division of fees.

### 12.2.2 Audit Findings

There are no findings relating to Schedule 3.

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

# 13 GSI SYSTEMS AND SOFTWARE

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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 subrule 174(2)(c) of the GSI Rules.

- Section 13.1 sets out our review of AEMO's software systems for the GBB and the calculation of GSI Fees
- Section 13.2 sets out our review of AEMO's processes for software management.

## 13.1 Software certification

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.

### 13.1.1 Certification of the GBB

The initial version of the GBB was certified by PA 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 17. 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 17: Previous production software changes**

System	Version number	Release date	Material impact under 19(2)?	Certification status
GBB	1.0 (“Initial version”)	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

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 subrule 19(2). In each case, we agreed with the IMO and AEMO that certification was not required. The details of these changes are shown in Table 18.

**Table 18: Changes to GBB systems in the Audit Period**

System	Version number	Release date	Material impact under 19(2)?	Certification status	Comment
GBB	1.4-209-7	9/09/2015	No	Maintained	Support for yearly data extracts
GBB	1.5-255-3	3/11/2015	No	Maintained	Browser compatibility fix
GBB	1.6-289-4	29/11/2015	No	Maintained	Rebranding to AEMO
GBB	1.6-289-7	30/03/2016	No	Maintained	Fixes, new pipeline
GBB	1.7-303-6	21/06/2016	No	Maintained	Report fix, new connection point

### 13.1.2 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.

### 13.1.3 The GSI Fee Calculation Tool was updated in the Audit Period to incorporate changes to invoice presentation. The updated tool was independently certified on 24 June 2016. 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.

## 13.2 Software management

AEMO's software management processes were reviewed in a separate audit conducted by PA concurrently with this audit. The results of this review can be viewed in Chapter 2 of the report entitled "Audit 2: Compliance of AEMO's market software systems and processes for software management". While the focus of that report is on AEMO's processes in regards to management of WEM software, the same processes are used in the management of software used in GSI systems.

### 13.2.1 Management of the GBB software

In addition to the Audit 2 report, here we comment specifically on AEMO's software change management performance in relation to the GBB systems. The AEMO's obligations in this regard are specified in subrule 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 18 in the previous section.

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

#### General comment on the Audited Entity's compliance with subrule 18(1)

The AEMO's software management processes for the GBB remain sufficient to comply with the market rules.

**Table 19: Comment on Audited Entity's compliance with subrule 18(1) of the GSI Rules during the Audit Year**

Clause	Comment on compliance
18(1)(a)	The Audited Entity has maintained a record of all versions of market software used together with their dates in service, in the form of JIRA records.
18(1) (b)	The Audited Entity 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)	The Audited Entity has conducted appropriate testing of all new releases of the market software prior to their being placed in service.
18(1) (d)	The Audited Entity has ensured that all software versions are covered by an independent certification prior to implementation where required.

#### Audit Findings

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

We have no audit findings to report with respect to the compliance of the Audited Entity's processes for software management with the GSI Rules.



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