



To: The Board of Directors of AEMO

Independent assurance report to the Board of Directors of the Australian Energy Market Operator Limited (AEMO) for the Wholesale Electricity Market

Scope

In accordance with our contract dated 14 January 2022, we were engaged by the Australian Energy Market Operator (AEMO) to perform an independent limited assurance engagement in respect of AEMO's internal control procedures in relation to compliance with the Wholesale Electricity Market Rules (WEM Rules) and WEM Procedures, for the year ended 30 June 2022, in the following areas:

- the compliance of AEMO's internal procedures and business processes with the WEM Rules;
- AEMO's compliance with the WEM Rules and WEM Procedures; and
- AEMO's market software systems and processes for software management.

AEMO Management's responsibilities

AEMO Management is responsible for maintaining an effective internal control structure, including control procedures, to ensure compliance with the WEM Rules and WEM Procedures. This responsibility includes establishing and maintaining internal controls relevant to compliance with the WEM Rules and WEM Procedures and the preparation and fair presentation of information that is free from material misstatement.

Our Independence and Quality control

We have complied with relevant ethical requirements related to assurance engagements, which include independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality, and professional behaviour.

In accordance with Auditing Standard ASQC 1 *Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, Other Assurance Engagements and Related Services Engagements* the firm maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

Our responsibilities

Our responsibility is to express a limited assurance conclusion based on the procedures we have performed and the evidence we have obtained.

Our engagement has been conducted in accordance with the Australian Standard on Assurance Engagements (ASAE 3000) *Assurance Engagements Other Than Audits or Reviews of Historical Financial Information*. That standard requires that we plan and perform this engagement to obtain limited assurance about whether anything has come to our attention to indicate that the AEMO internal control procedures in relation to the areas listed under the Scope section above, have not been, in all material respects, effectively designed and operated, in order to comply with the relevant criteria outlined in:

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- Wholesale Electricity Market Rules (1 July 2021) to Wholesale Electricity Market Rules (1 June 2022).

Where the effectiveness of key controls was used to determine compliance with the criteria above, the identification of key controls was performed with reference to applicable AEMO policy or procedure documentation.

The procedures we performed were based on our professional judgement and included:

- inquiry and observation of staff and management to understand the operation of controls
- review of relevant AEMO policies and procedures
- undertaking procedures to evaluate the design effectiveness of key controls
- performing limited sample testing to validate the operating effectiveness of key controls.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement and consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Scope Exclusions

Our review did not include any assessment of compliance or controls by market participants other than AEMO. For example, our procedures didn't consider application and IT controls over systems that are operated by external organisations, the compliance with Service Level Requirements, or the control procedures in place at those agencies not controlled by AEMO, such as:

- Rule Participants other than AEMO
- Real time systems
- Retailers
- Distributors.

To support AEMO processes, AEMO relies on market participants operating in compliance with the WEM Rules or other relevant requirements (the 'market participants' compliance'). There are a number of AEMO's internal control procedures that rely on market participants' compliance, for example, among others:

- Market participants are responsible for the completeness and accuracy of Supervisory Control and Data Acquisition (SCADA) readings, which are used by AEMO to operate the WEM in compliance with the WEM Rules.
- Initial administrator user access is granted to key AEMO applications on request from market participants who are then responsible for ongoing access management for the applications. This would include controls for the approval, termination and periodic review of user access for appropriateness.



- Metering data is received by AEMO from Western Power. AEMO assumes that the metering data is complete, accurate and valid. Our control procedures are limited to the procedures AEMO performs to validate the reasonableness of this data.

Our procedures did not extend to assessing the market participants' compliance.

It is assumed that automated pricing, dispatch and settlement calculations are consistent with the WEM Rules. Our scope did not include certification of electricity market systems such as the Real Time Dispatch Engine (RTDE), Wholesale Electricity Market System (WEMS), settlements systems, or other market systems.

We accept no responsibility for the adequacy or accuracy of work performed by AEMO or the Independent Certifier in relation to system certification. We accept no liability to AEMO or to any other person for any part of our review report that relies on, or assumes the adequacy of, system certification.

Our work is based primarily on information supplied by management and was carried out on the basis that such information is accurate and complete.

Whilst our engagement may involve the analysis of financial information and accounting records, it does not constitute an audit in accordance with Australian Auditing Standards or a review in accordance with Australian Auditing Standards applicable to review engagements and accordingly no such assurance will be provided in our report or deliverables.

Use of report

We prepared this report solely for AEMO's use and benefit in accordance with and for the purpose set out in our Master Supplies Agreement (MSA) between PricewaterhouseCoopers and AEMO dated 14 January 2022, and Description of Supplies for Market Audit Services dated 14 January 2022. In doing so, we acted exclusively for AEMO and considered no-one else's interests.

We accept no responsibility, duty or liability:

- to anyone other than AEMO in connection with this report
- to AEMO for the consequences of using or relying on it for a purpose other than that referred to above.

We make no representation concerning the appropriateness of this report for anyone other than AEMO. If anyone other than AEMO chooses to use or rely on it they do so at their own risk.

This disclaimer applies:

- to the maximum extent permitted by law and, without limitation, to liability arising in negligence or under statute; and
- even if we consent to anyone other than AEMO receiving or using this report.

Inherent limitations

Because of the inherent limitations of any internal control system, it is possible that fraud, error, or non-compliance may occur and not be detected. Further, the internal compliance and control culture has not been reviewed and no view is expressed as to its effectiveness.



A limited assurance engagement is not designed to detect all instances of non-compliance of the internal compliance and control system, as it is limited primarily to making enquiries, with management and staff, and applying analytical procedures. The limited assurance conclusion expressed in this report has been formed on the above basis.

Materiality

We have considered materiality when evaluating the effect of identified control weakness on our conclusion. Materiality is considered in the context of AEMO's objectives relevant to the area of activity being examined. When assessing materiality, we considered qualitative factors as well as quantitative factors, including:

- the purpose of the engagement and specific requirements of the engagement
- the economic, social, political, and environmental impact of control weaknesses
- the importance of an identified control weakness in relation to the area of activities and the entities overall objectives
- the impact of a centralised function on other parts of the entity
- public perception and/or interest in the area of activity
- the cost of alternative controls relative to their likely benefit
- the length of time an identified control weakness was in existence.



Summary of Findings

The table below summarises new findings reported, and findings from prior periods which remained open as at 30 June 2022. This includes findings reported by AEMO management or through our review procedures.

	Critical	High	Medium	Low
Level 1	0	0	8	13
Level 2	0	0	6	3
Level 3	0	0	1	1
Total	0	0	15	17

The table below summarises findings from prior periods which have been closed during FY22.

	Critical	High	Medium	Low
Level 1	0	0	3	12
Level 2	0	0	3	4
Level 3	0	0	0	6
Total	0	0	6	22

All findings in the table above have been agreed with management and formally reported to AEMO's Finance Risk and Audit Committee.



We have categorised control observations noted according to agreed risk and compliance ratings. The risk ratings applied for each finding are consistent with the likelihood and consequence matrix adopted by AEMO’s Risk and Audit Committee.

The ratings have been tailored to reflect the potential impact on the market as follows:

Risk Rating	Definition
Critical	Findings which may have a catastrophic impact on the market operations if they are not addressed immediately and require executive action with regular reporting at Board level.
High	Findings which may have a major impact on the market operations if they are not addressed as a matter of priority. These findings require senior management attention with regular monitoring and reporting at executive and Board meetings.
Medium	Findings which may have a moderate impact on the market operations if they are not addressed within a reasonable timeframe. These findings require management attention with regular ongoing monitoring.
Low	Findings which may have a minor impact on market operations if they are not addressed in the future. These findings are the responsibility of management with regular monitoring and reporting at staff meetings.

Compliance Rating	Definition
Level 1 (Non-compliance)	Evidence of non-compliance with review criteria. These should be addressed as a matter of high priority.
Level 2 (Gaps in control design or operating effectiveness)	Issues which could possibly result in non-compliance with review criteria but where no evidence of actual non-compliance was found. However, there is considered to be insufficient formal evidence of controls in place or being actioned in relation to these issues.
Level 3 (Control improvement opportunities)	Housekeeping matters and opportunities for improving internal controls and procedures relating to gas market procedures.

Other information

The information included in Appendix 1 is presented by AEMO management to provide risk rating details, root cause, recommendations, management responses and timelines for the observed exceptions. Such information has not been subject to the procedures applied by PwC in the assessment of AEMO’s compliance with the criteria and accordingly, we express no opinion on it.



Conclusion

Based on our review, which is not an audit, nothing has come to our attention that causes us to believe that the Australian Energy Market Operator did not maintain, in all material respects, effective control procedures in relation to compliance with the WEM Rules and WEM Procedures for the year ended 30 June 2022, based on the scope referred to above.

A handwritten signature in cursive script that reads 'PricewaterhouseCoopers'.

PricewaterhouseCoopers

A handwritten signature in cursive script that reads 'Sian Ashdown'.

Sian Ashdown
Partner

Perth
19 December 2022

Appendix 1 Summary of Observations & Management Comments

The following table provides a summary of issues against the criteria. It is presented by AEMO's management to the Economic Regulation Authority Western Australia (ERA) but is not included within the scope of this report and has not been subjected to the procedures applied by PwC in the assessment of AEMO's compliance with the criteria.

The detailed findings in relation to the Wholesale Electricity Market (WEM) are shown below, split between findings from the current review period (PwC reported and Management reported) and a status update of findings identified during the prior year review.

Findings reported have been discussed and agreed with Management and their comments are included. Target resolution dates for each issue have also been agreed and reported.

Appendix 1.1 – Wholesale Electricity Market – Findings reported by PwC – 1 July 2021 to 30 June 2022

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
22 WEM 1	<p>Issue Type</p> <p>Non-compliance identified by PwC</p> <p>Obligation</p> <p>WEM Rule 10.2.1; 10.9.1</p>	<p>AEMO's 'Information Confidentiality Status of WEM Related Information and Documents' procedure has not been reviewed and updated</p> <p>In accordance with clause 10.2.1 of the WEM Rules, AEMO must set and publish the confidentiality status for each type of market related information and document produced or exchanged in accordance with the WEM Rules or WEM Procedures.</p> <p>This includes the confidentiality status for all information provided by a Network Operator (i.e. Western Power) under clause 2.28.3B and clause 2.28.3C as 'System Operation Confidential', as required by clause 10.9.1 of the WEM Rules. Information shared by Western Power under clauses 2.28.3B and 2.28.3C includes data to model the performance of the SWIS (both current and futures state), which may include facility-specific data.</p> <p>To support these requirements, the 'Information Confidentiality Status of WEM Related Information and Documents' document (dated July 2012) published on the AEMO website, details the following:</p> <ul style="list-style-type: none"> • Clause Reference (e.g. WEM Rule 1.6.1) • Information Contained (i.e. the market information or document produced or exchanged under the WEM Rules) • Confidentiality Status (e.g. Public, System Management Confidential). <p>Review noted that the 'Information Confidentiality Status of WEM Related Information and Documents' publication was last updated in July 2012. Discussions with management confirmed that this has been discussed with the ERA and previously raised as a non-compliance, however attempts to update the document in 2019 were previously not supported by the ERA and Rule Change Panel.</p> <p>As a result, there are some areas which are not up to date, for example clause 2.28.3B and 2.28.3C that were not listed, and details for these clauses including 'Information Contained' and 'Confidentiality Status' were also absent.</p> <p>Implication:</p> <p>Where the confidentiality status is not appropriately reflected within the 'Information Confidentiality Status of WEM Related Information and Documents' document, this represents a non-compliance with WEM Rule 10.2.1.</p>	<p>Compliance Rating:</p> <p>Level 1</p> <p>Risk Rating:</p> <p>Low</p> <p>(Likelihood: Unlikely; Consequence: Immaterial)</p>	<p>We note that this item has been previously risk accepted by management, as noted in the breach deferral form dated 6 October 2022.</p> <p>Management should continue to progress this item with the ERA, or alternatively seek a letter of 'no-action' from the ERA in relation to this non-compliance.</p>	<p>Management Response</p> <p>AEMO accepts finding and recommendations</p> <p>Implementation Date</p> <p>Closed</p>
22	<p>Issue Type</p> <p>Control</p>	<p>AEMO's Regulatory Delegations of Authority should be reviewed to support the timely action of Rule Participant suspension activities</p>	<p>Compliance Rating:</p>	<p>Management should continue to evaluate the</p>	<p>Management Response</p> <p>AEMO accepts finding and</p>

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
WEM 2	<p>improvement opportunity identified by PwC</p> <p>Obligation</p> <p>WEM Rules 2.32.1 9.23.4 9.23.7</p>	<p>WEM Rules 9.23.1 and 9.23.2 outline the circumstances a ‘Suspension Event’ may be triggered in relation to a Rule Participant, which may include scenarios such as a Rule Participant failing to make a payment before it is due, or Credit Support for a Rule Participant not being received by AEMO within 90 minutes of request.</p> <p>Once AEMO becomes aware that a Suspension Event has occurred in relation to a Rule Participant and the Suspension Event has not been remedied, a ‘Cure Notice’ must be issued which details the action(s) and deadline for remedying the Suspension Event. If a Rule Participant fails to remedy the Suspension Event before the deadline, AEMO may issue a Suspension Notice in line with WEM Rules 2.32.1 and 9.23.7.</p> <p>As per AEMO’s Regulatory Delegations of Authority (DoA), AEMO’s Board must approve the issue of both the Cure Notice and Suspension Notice prior to communication to the Rule Participant. In accordance with the DoA, all members of the Board are required to convene at short notice once a Suspension Event is identified.</p> <p>Whilst the current delegations may be appropriate, given the need for timely decision making for the issue of a Cure Notice (and potentially a Suspension Notice), there is opportunity to consider whether the delegations remain practical to meet the regulatory timeframes required by the WEM rules. Management has noted that a Suspension Event that was not remedied has not occurred in the Wholesale Electricity Market.</p> <p>It is also acknowledged that management is currently underway (in preparation for the new WEM) in reviewing AEMO’s Regulatory Delegations of Authority to ensure delegations are reasonable and appropriate.</p> <p>Implication:</p> <p>Where there may be a delay in the issue of a Cure Notice or Suspension Notice, there is an increased risk of Rule Participants continuing to participate in the Wholesale Electricity Market during a period where they should either be remediating a Cure Notice, or are to be suspended from participating.</p>	<p>Level 3</p> <p>Risk Rating:</p> <p>Medium</p> <p>(Likelihood: Rare; Consequence: Moderate)</p>	<p>delegations in place to support the timely issuance of Cure Notices and Suspension Notices respectively.</p>	<p>recommendations.</p> <p>Implementation Date</p> <p>30 June 2023</p>
22 WEM 3	<p>Issue Type</p> <p>Control design issue identified by PwC</p> <p>Obligation</p> <p>WEM Rules 2.34.1</p>	<p>A periodic review of changes made to Rule Participant standing data should be performed to ensure only appropriate changes are made</p> <p>As per WEM Rule 2.34.1, AEMO must maintain a record of Standing Data for Rule Participants. This data varies based on the type of Rule Participant (e.g. scheduled generator, non-dispatchable load, etc). Standing data includes information such as (but not limited to):</p> <ul style="list-style-type: none"> • Metering Data Agent for the facility • Facility-specific attributes (e.g. nameplate capacity, fuel type, AGC capability). 	<p>Compliance Rating:</p> <p>Level 2</p> <p>Risk Rating:</p> <p>Medium</p> <p>(Likelihood: Unlikely; Consequence: Moderate)</p>	<p>Management should formalise a periodic review (e.g. monthly) of Standing Data changes made to ensure changes have been made accurately, completely and validly.</p> <p>This review should be evidenced and signed</p>	<p>Management Response</p> <p>AEMO accepts the finding and will implement the recommendation.</p> <p>Implementation Date</p> <p>31 March 2023</p>

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
		<p>All Standing Data is maintained in the WEMS application by AEMO.</p> <p>The 'Standing Data' work instruction details the process to be performed by the Analyst following a Standing Data change request from a Rule Participant and specifies for each type of Standing Data change, who the Analyst must consult with.</p> <p>Standing Data change requests are submitted by the Rule Participant via WEMS. When a Standing Data request has been submitted, an Analyst will review the request to ensure all information provided is accurate and complete. This review may include consultation with other stakeholders (e.g. Reserve Capacity, Operational Planning & Forecasting, Western Power, etc), dependent on the type of Standing Data being updated.</p> <p>Following review and determination that the change is appropriate, a request for approval is sent via email to the Manager, WA Market Operations & Support. As required by the work instruction, the Analyst will attach evidence to the request for approval that the consultation as required by the work instruction has been followed; the Manager will then review the evidence provided to verify that the work instruction process has been followed. Once approved, the Analyst will process the change within WEMS.</p> <p>There is reliance placed upon the Analyst ensuring appropriate email approval has been obtained, as the Analyst still has the ability to process the Standing Data request within WEMS regardless of an approval not being obtained.</p> <p>Discussion with management noted that although there are alternative controls to review Standing Data change requests for appropriateness prior to acceptance (e.g. Manager approval as a matter of policy), there is no mechanism in place to conduct periodic review of Standing Data changes made in a given period to ensure Manager approval was obtained.</p> <p>It is acknowledged that upon joining the WA Market Operations team, analysts will undertake a six-week onboarding plan, which includes the process for Standing Data change requests (under Registrations).</p> <p>Implication:</p> <p>Where a change in Standing Data is made without appropriate Manager approval obtained, there may be an increased risk of Standing Data being accepted without appropriate review, leading to incorrect standing data in WEMS that has not been prevented by another standing data control.</p>	Moderate)	off by the Manager, WA Market Operations & Support.	
22 WEM 4	Issue Type Non-compliance	While the Operating Protocol between AEMO and Western Power notes the requirements for UFLS and manual load shedding, and the basis upon which	Compliance Rating:	As noted, no management actions required as the	Management Response AEMO accepts finding and

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
	<p>identified by PwC</p> <p>Obligation</p> <p>WEM Rules 3.6.2, 3.6.4, 3.6.6</p>	<p>these were to be operated, AEMO did not have a separate operational plan for manual load shedding and UFLS</p> <p>Prior to the WEM Rules being updated on 1 June 2022, AEMO were required to produce operational plans for:</p> <ul style="list-style-type: none"> Implementing aggregate under frequency load shedding requirement (WEM Rule 3.6.2); and Manual load shedding (WEM Rule 3.6.6) <p>Further, AEMO were required to communicate the plans noted above to the Network Operator (i.e. Western Power) in line with WEM Rules 3.6.4 and 3.6.6.</p> <p>Through discussions with management (held prior to 1 June 2022), it was noted that operational plans were not in place for either under frequency load shedding or manual load shedding respectively.</p> <p>Management highlighted that frequent communication with Western Power was (and still is) undertaken on an ongoing basis, which includes discussion regarding maintaining power system security in high risk operating states.</p> <p>It is acknowledged that sections 12.1 and 12.2 of the <i>Operating Protocol for AEMO and Western Power version 4</i> noted the requirement for plans for under frequency load shedding and manual load shedding, and at a high level described the basis upon which these were to be operated.</p> <p>It is further acknowledged that following updates to the WEM Rules on 1 June 2022, obligations relating to Demand Control within section 3.6 of the WEM Rules were replaced with Under Frequency Load Shedding (UFLS) obligations. The Demand Control obligations were not applicable following this update.</p> <p>Further, it was noted no manual load shedding or UFLS has been required during the testing period, with the most recent event in January 2020 where UFLS was triggered.</p> <p>Implication:</p> <p>No implication has been noted. As documented above, these obligations are not applicable following 1 June 2022, and subsequently there are no further requirements upon AEMO to ensure compliance with these obligations.</p>	<p>Level 1</p> <p>Risk Rating:</p> <p>Medium</p> <p>(Likelihood: Rare; Consequence: Major)</p>	<p>obligations are not applicable following 1 June 2022.</p>	<p>recommendations</p> <p>Implementation Date</p> <p>Closed</p>
<p>22</p> <p>WEM 5</p>	<p>Issue Type</p> <p>Control design issue identified by PwC</p>	<p>Documentation to support the Detective Trigger Process could be enhanced to demonstrate that all applicable obligations have been appropriately assessed</p>	<p>Compliance Rating:</p> <p>Level 2</p>	<p>Management should update the Trigger Register and Obligations Register such that they can be reconciled by an</p>	<p>Management Response</p> <p>AEMO accepts finding and recommendations.</p>

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
	<p>Obligation</p> <p>WEM Rules (Multiple)</p>	<p>The new WEM will come into effect 1 October 2023, with a number of rule changes being staged and introduced prior to go-live. This is to ensure AEMO and other Rule Participants are adequately prepared to de-risk delivery of the wider WEM Reform.</p> <p>Due to the significant volume of regulatory change, and as a number of obligations are yet to be triggered (i.e. are contingent upon a date or specific condition or event occurring), management have developed a "Detective Trigger Process". This is a risk-based approach to determine the actions that should be undertaken by AEMO to ensure compliance in the event that the rule(s) becomes applicable.</p> <p>Where an obligation is assessed as applicable for the Detective Trigger Process, management may postpone the identification of the key controls designed to support compliance until a date, or until an event occurs that requires AEMO to comply with the obligation. In the interim, the Detective Trigger Process requires active monitoring from management on whether the defined trigger has occurred, so that a response plan may be prepared. The process includes five key criteria to assess applicability for an obligation:</p> <ol style="list-style-type: none"> 1. Assessing if the obligation is conditional 2. Identifying if sufficient time exists to respond once the compliance requirement is triggered. 3. Determining if any preparation is required to support compliance 4. Defining and monitoring the trigger for the obligation 5. Determining actions following the activation of trigger <p>Management is required to enter the details of the applicable obligations within the "Trigger Register". This register outlines the general regulatory requirement, the trigger, how it is monitored, who is responsible to monitor and when to monitor. Additionally, actions to be undertaken prior and post the trigger are documented.</p> <p>Inspection of the Trigger Register noted that, while the register clearly defines triggers, monitoring plans and actions, the level of completeness of the supporting workpapers and detailed obligations register means that it is unable to be reconciled by an independent party (e.g. auditor or regulator) with the obligations register.</p> <p>Implication:</p> <p>While a risk-based methodology has been established to manage the volume of rule changes through the Detective Trigger Process, there is insufficient traceability to support the assessment undertaken by management, making it difficult for an independent party to confirm that key criteria has been considered in a complete and accurate manner. This may increase the risk of non-compliance in the event the Detective Trigger Process cannot be effectively applied, resulting in a potential legal, reputational and financial impact to AEMO in the event of non-compliance.</p>	<p>Risk Rating:</p> <p>Medium</p> <p>(Likelihood: Unlikely; Consequence: Moderate)</p>	<p>independent party.</p>	<p>Implementation Date</p> <p>31 March 2023</p>

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
<p>22 WEM 6</p>	<p>Issue Type Control design issue identified by PwC</p> <p>Obligation All WEM Rules upon AEMO</p>	<p>AEMO's key control procedures to support compliance with market obligations have not been formally defined and documented in the compliance obligation register</p> <p>The WEM Rules details the obligations and function of AEMO (amongst other bodies) for the operation of the market. There are approximately 950 obligations upon AEMO within the Rules. To manage compliance, each respective business unit is responsible for maintaining an obligations and controls register which includes risk assessment of the obligations, responsible owners, and key control procedures to support compliance. There are four registers including:</p> <ul style="list-style-type: none"> • Systems Management (308 obligations) • Market Operations (428 obligations) • Reserve Capacity (207 obligations) • Audit and Compliance register - an overall register which records obligations and their respective attributes at a section level rather than an individual (specific) obligation level. <p>Review of the obligation registers as at the time of fieldwork (July 2022) noted:</p> <ul style="list-style-type: none"> • All in-scope sections of the Rules were mapped to a responsible obligation owner within the Audit and Compliance register. However, at an individual obligation level, there were 515 (54%) obligations that were not assigned to an obligation owner (within Systems Management and Reserve Capacity). This included 18 'major' and 205 'moderate' obligations. • All in-scope sections are assigned a control owner and risk rating in the Audit and Compliance register. However, there are 207 (22%) individual obligations that were not assigned a control owner or risk rating, all of which are related to Reserve Capacity. • 110 (11%) obligations were not mapped to a corresponding procedure or control to demonstrate how the obligation is managed. This included 17 'moderate' rated obligations. • 593 (62%) obligations were mapped to a procedure document, however the specific control activity was not clearly documented. This was across all three registers, and included 17 'major' and 321 'moderate' rated obligations. Additionally, key control attributes (e.g. control type, IT dependencies, and control frequency) were not documented. <p>It is acknowledged that the Reserve Capacity team subsequently provided an updated obligations and controls matrix that addressed a number of the gaps outlined above.</p>	<p>Compliance Rating Level 2</p> <p>Risk Rating Medium (Likelihood: Possible; Consequence: Minor)</p>	<p>The Operations, System Design and Transformation, and Market Development teams, in conjunction with Audit & Compliance, should undertake an exercise to agree and update the obligations and controls mapping document to accurately reflect management's control activities. This should prioritise higher-risk obligations.</p>	<p>Management Response AEMO accepts finding and recommendations</p> <p>Implementation Date Pre WEM-Reform: October 2023 Post WEM-Reform: April 2024</p>

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
		<p>In addition, there is no process in place for self-assessment or independent review to understand the effectiveness of key controls on a periodic basis.</p> <p>Implication</p> <p>Where key control activities and their respective attributes to support obligations are not fully documented, there is reduced traceability to understand whether controls are adequately designed or performed in line with management objectives. This may impact AEMO's ability to monitor, assess and report on the compliance status of obligations and result in instances of non-compliance not being identified and reported in a timely manner. This may have a legal, reputational and financial impact to AEMO in the event of non-compliance.</p>			
<p>22 WEM 7</p>	<p>Issue Type</p> <p>Control design issue identified by PwC</p> <p>Obligation</p> <p>WEM Rules (Multiple)</p>	<p>Processes for training identification and planning should be formalised to ensure Power Systems Operations training is relevant and aligned to management's objectives</p> <p>Real Time Operations (RTO) training, which supports RTO Operators having the necessary skills and capabilities to operate the energy systems in a secure and reliable manner, is delivered through a combination of face-to-face sessions, provision of written training guides, and eLearning modules. This training is undertaken on both the East (NEM, STTM & DWGM) and West (WEM) Coasts.</p> <p>To ensure RTO training needs are identified, prioritised and planned for, Planning Workshops are held three times a year, which are attended by the RTO Training team and RTO Operator. Training needs, prioritisation, and delivery methods are determined via collaboration and consideration of factors, such as emerging changes in the market, risks identified by Operators including past breaches, areas of focus identified by RTO Operations, and feedback from previous sessions.</p> <p>Whilst these Workshops are held on the East Coast for NEM, STTM and DWGM respectively, none are currently held for the WEM.</p> <p>Discussions with RTO Training highlighted that plans are in place to introduce Planning Workshops for WEM PSO, however this has not yet been delivered as part of the wider training uplift program that has been undertaken, which has included:</p> <ul style="list-style-type: none"> ● Introduction Skills Maintenance and Simulation (SMS) Training sessions in June/July 2022, utilising newly developed Dispatch Training Simulator. Delivering simulation training on WA System restart, in addition to a multiple contingency condition event. ● Follow up SMS through October – December, will cover other priority training areas including SCADA failure and Summer readiness topics. 	<p>Compliance Rating:</p> <p>Level 2</p> <p>Risk Rating:</p> <p>Medium</p> <p>(Likelihood: Unlikely; Consequence: Moderate)</p>	<p>Management should introduce Planning Workshops (or alternative mechanism) for WEM PSO staff to ensure training is relevant and meaningful. The Training team should leverage practices undertaken by the East Coast to support alignment, including consideration of:</p> <ul style="list-style-type: none"> ● Frequency of Workshops held ● Attendees ● Inputs and priority training areas for consideration 	<p>Management Response</p> <p>AEMO accepts finding and recommendations.</p> <p>Implementation Date</p> <p>31 March 2023</p>

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
		<p>Furthermore, aligning East and West Coast training practices will support the sharing of knowledge, lessons learnt, and facilitate continuous improvement between both coasts.</p> <p>Implication</p> <p>Where the specific objectives and the target audience of training programs are unclear, or prioritisation of training is not in line with operational requirements or management objectives, there is an increased risk of deterioration in RTO Operators' skills and competency to operate the markets safely and reliably.</p> <p>In addition, AEMO may not be able to demonstrate that PSO staff were appropriately trained in the event of an incident.</p>			
<p>22 WEM 8</p>	<p>Issue Type</p> <p>Control improvement opportunity identified by PwC</p> <p>Obligation</p> <p>WEM Rule 4.24.1</p>	<p>AEMO should define and document the minimum factors and thresholds considered by management for determining if Supplementary Reserve Capacity is required</p> <p>As per WEM rule 4.24.1, if at any time after the day which is six months before the Capacity Year AEMO considers that, in its opinion, inadequate Reserve Capacity will be available in the SWIS to maintain Power System Security and Power System Reliability, using the most recent Long Term PASA study, AEMO must determine the timeline and expected amount of the shortfall.</p> <p>AEMO's Reserve Capacity team has established a Market Procedure, <i>Supplementary Reserve Capacity</i> which outlines key processes to be undertaken throughout the Supplementary Reserve Capacity lifecycle, including steps to determine the amount of SRC required and associated timeframe.</p> <p>Through discussion with management, it was noted that the following factors (amongst others) will be considered on an ongoing basis to determine if there is inadequate Reserve Capacity:</p> <ul style="list-style-type: none"> • Outputs from Medium Term Projected Assessment of System Adequacy Reporting and the Electricity Statement of Opportunities • Bid stack behaviour • Performance indicators from Equivalent Planned Outage Hours (EPOH) monitoring • Expected forced outages <p>Whilst it is noted that these factors (amongst others) are considered in real-time by management, this criteria is not formally defined by AEMO in a policy or procedure.</p> <p>Implication</p>	<p>Compliance Rating:</p> <p>Level 3</p> <p>Risk Rating:</p> <p>Low</p> <p>(Likelihood: Unlikely; Consequence: Major)</p>	<p>Management should define and document the criteria, including key factors and thresholds (where applicable) that would trigger an assessment for determining if Supplementary Reserve Capacity is required.</p>	<p>Management Response</p> <p>AEMO accepts finding and recommendations.</p> <p>Implementation Date</p> <p>31 March 2023</p>

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
		<p>Where AEMO determines informally that nothing has come to its attention that Supplementary Reserve Capacity is required for the respective period, there is increased difficulty for AEMO to evidence the factors they have considered in coming to their final determination.</p> <p>Should there be a requirement for Supplementary Reserve Capacity in a period where AEMO has determined that they did not require Supplementary Reserve Capacity, there is an increased risk that evidence to support decisions (and in rare cases, dispute resolution) will be difficult to source.</p>			
<p>22 WEM 9</p>	<p>Issue Type Control design issue identified by PwC</p> <p>Obligation WEM Rules 2.37.1 (Credit Limits) 2.42.1 (Margin Calls)</p>	<p>AEMO should clearly define and retain evidence of steps to be taken following a Market Participant exceeding their Trading Limit</p> <p>In accordance with clause 2.37.1 and 2.42.1 of the Rules, AEMO must determine a Credit Limit for all Participants who trade in the WEM; and AEMO may issue a Margin Call Notice where a Market Participant's Trading Margin (a function of the Credit Limit) is less than zero.</p> <p>To support compliance with these requirements, AEMO has developed an internal procedural document, <i>Internal Procedures and Working Instructions</i>. The procedure requires that where a participant reaches 90% of their Trading Limit, AEMO must notify the participant and monitor trading activity, and where a participant exceeds their Trading Limit, AEMO may issue a Margin Call Notice.</p> <p>Throughout FY22, there were 78 instances across 12 Market Participants where participants reached 90% of their Trading Limit, and 16 instances across 5 Market Participants where Trading Limits were exceeded. No Margin Call Notices were issued for the period.</p> <p>Evidence should be retained to demonstrate key decisions taken by AEMO after a Market Participant exceeds their Trading Limit</p> <p>When a Market Participant exceeds their Trading Limit, the Prudentials team are to make a determination on how to proceed, whether it be through the issuance of a Margin Call Notice or an Informal Request for additional Credit Support to mitigate the negative Trading Margin.</p> <p>Sample testing of one (1) out of four (4) instances during FY22 where a participant exceeded their Trading Limit on 10 August 2021 noted:</p> <ul style="list-style-type: none"> Evidence was not retained to support the analysis of the actual Market Exposure of the participant, as required by Section 4, Step 1 of the Internal Procedures and Working Instructions, and Evidence was not retained of approval from the Group Manager, WA Markets to issue an Informal Request for additional Credit support in lieu of 	<p>Compliance Rating: Level 2</p> <p>Risk Rating: Low (Likelihood: Unlikely; Consequence: Minor)</p>	<p>Management should:</p> <ol style="list-style-type: none"> Communicate to relevant staff the requirement to retain evidence of analysis and approval of decisions made where a participant exceeds their trading limit. Update the <i>Internal Procedures and Working Instructions</i> to capture key considerations for determining under what circumstances a Margin Call Notice should be issued (noting that the considerations are not exhaustive and a decision is ultimately made at the discretion of AEMO). Update <i>Internal Procedures and Working Instructions</i> to address any internal 	<p>Management Response AEMO accepts finding and recommendations.</p> <p>Implementation Date 31 December 2022</p>

No.	Issue type & Obligation	Finding and implication	Compliance & risk rating	Recommendation	Management Comments/ Implementation Status
		<p>a Margin Call Notice (as required by Section 4.2 of Internal Procedures and Working Instructions).</p> <p>In addition, discussion with management noted that a broad range of factors are considered in determining whether a Margin Call Notice, and that the decision is at the discretion of the Prudential Analyst with approval from the Manager and Group Manager, WA Markets. While management was able to articulate some of the key factors considered in reaching a determination, these were not formally defined or documented in the <i>Internal Procedures and Working Instructions</i>.</p> <p>Internal Procedures and Working Instructions requires updating to address internal inconsistencies and reflect actual practices</p> <p>Per the <i>Internal Procedures and Working Instructions</i>, where a Participant has exceeded its Trading Limit on a business day as at 11am (during the Prudential calculation), “the Participant is generally given until 2pm of the same day ... to provide additional Prepayments/Credit Support to mitigate the negative Trading Margin prior to further action potentially being taken by AEMO before 4pm”.</p> <p>Discussion with management indicated that “generally” is typically interpreted as within 1-2 business days.</p> <p>In contrast, Section 4 of the <i>Internal Procedures and Working Instructions</i> requires that all steps must be taken before 4pm on the day of the Trading Margin breach. However, the 4pm deadline is unachievable if the 2pm deadline is completed in subsequent business days, creating an internal inconsistency within the procedure.</p> <p>Implication</p> <p>Where evidence is not retained to support analysis and approvals made by AEMO regarding Margin Call Notices there is an increased risk that, in the event of a participant defaulting, AEMO may not be able to provide justification for key determinations made.</p> <p>In addition, where there are internal inconsistencies or inaccuracies within the <i>Internal Procedures and Working Instructions</i>, there may be differences in AEMO’s response to a participant exceeding their Trading Limit.</p>		<p>inconsistencies and reflect current practices.</p>	

Appendix 1.2 – Wholesale Electricity Market – Findings reported by Management – 1 July 2021 to 30 June 2022

AEMO's Audit & Compliance team is responsible for verifying the status of non-compliances reported by Management to ensure that remediation actions have been implemented and closed. All Management identified non-compliances are reported by Audit & Compliance to the FRAC on a quarterly basis.

For Management reported findings, PwC have relied on the information provided in the compliance breach forms and the status per Management representation.

The following table is a summary of Management identified non-compliances reported to the FRAC:

No.	Obligation	Finding	Compliance Rating	Rating as reported by Management	Breach form completed	Breach form reference	Status as reported by Management
<i>22 WEM 10</i>	7.11.5(h)	System Management did not issue a Dispatch Advisory to advise Market Participants that AEMO would call upon additional LFAS Facilities other than in accordance with the LFAS Enablement Schedules.	Level 1	Low	Yes	700	Closed
<i>22 WEM 11</i>	3.21.6	System Management zeroed MW values for ex-ante Outages for a Facility that was under a Commissioning Flag.	Level 1	Low	Yes	705	Closed
<i>22 WEM 12</i>	7B.3.6	LFAS Shortfall occurring on dates: 1/03/21, 4/03/21, 30/06/21, 18/08/21, 14/09/21, 10/10/21, 15/10/21, 22/10/21, 1/11/21, 7/11/21, 9/12/21, 22/12/21, 24/12/21, 23/01/22, 24/01/22, 4/03/22, 30/03/22, 1/04/22, 2/04/22, 7/04/22, 18/04/22, 24/04/22, 3/05/22	Level 1	Low	Yes	709, 710, 715, 716, 731, 733, 734, 735, 739, 740, 741, 742, 743, 744, 745, 758, 759, 760, 761, 762, 763, 764, 770	Closed
<i>22 WEM 13</i>	3.21.6(b)	Ex-Ante Outage quantities for a Facility were incorrectly calculated to be 0 MW (for the entire Trading Day 31/07/2021). These quantities should have been 10 MW.	Level 1	Low	Yes	711	Closed
<i>22 WEM 14</i>	4.1.23B	AEMO must determine and publish the 4 Peak SWIS Trading Intervals by a specific date in accordance with clause 4.1.23B of the WEM Rules. The timeline specified in clause 4.1.23B of the WEM Rules changed effective 1 October 2021. The WEM Rules are now inoperable given the Interval Meter Deadline, as defined in clause 9.16.2(a) is related to a Trading Month, not a Trading Week. This means AEMO were non-compliant with its obligations under 4.1.23B since 1 October 2021.	Level 1	Low	Yes	719	Closed

No.	Obligation	Finding	Compliance Rating	Rating as reported by Management	Breach form completed	Breach form reference	Status as reported by Management
<i>22 WEM 15</i>	3.23.1	Report for Summer 2020 not published until 08/12/2020. As 01/12/2020 was a Tuesday the LoadWatch Report should have been published by 12:00 on 01/12/2020.	Level 1	Low	Yes	721	Closed
<i>22 WEM 16</i>	7.11.5(h), 7.6.1	Incorrect upwards constraint dispatched, no Dispatch Advisory issued about the resulting Out of Merit Dispatch.	Level 1	Low	Yes	746	Closed
<i>22 WEM 17</i>	10.2.4	AEMO sent to Synergy Daily Dispatch Plan containing cleared bid information of other Market Participants in error.	Level 1	Medium	Yes	754	Closed
<i>22 WEM 18</i>	7.6A.2(c)	Market Rule requirements 7.6A.2.(c) – AEMO must submit a day ahead Synergy Dispatch Plan before 4pm daily. Synergy Dispatch Plan for Trading Day 27/5/22 was due before 4:00pm on Scheduling Day 26/5/22. It was sent at 6:21pm (2:21 hrs late) on 26/5/22.	Level 1	Low	Yes	768	Closed
<i>22 WEM 19</i>	Appendix 2, Step 1.1	Incorrect calculation of spinning reserve costs due to using assumed rather than actual synchronisation data. One participant was affected by an estimated \$6,900.	Level 1	Low	Yes	794	Open - Not yet due

Appendix 1.3 – Wholesale Electricity Market – Summary of prior year findings reported by RBP

For the FY22 Market Audit, AEMO's Audit & Compliance team is responsible for verifying the status of non-compliances reported by RBP in prior years to ensure that remediation actions have been implemented and closed. All PwC-identified non-compliances and their respective management actions reported from FY22 onwards will be validated by PwC. All Management identified non-compliances are reported by Audit & Compliance to the FRAC on a quarterly basis.

For Management reported findings, PwC have relied on the information provided in the compliance breach forms and the status per Management representation.

The following table is a summary of RBP identified non-compliances that were open as of the time of reporting in FY21:

No.	Obligation	Finding	Compliance Rating	Rating as reported by Management	Status as reported by Management
<i>21WEM1.42</i>	2.13.9(j) and (k)	No formal processes to investigate dispatch non-compliance	Level 2	Low	Closed
<i>19WEM1.61</i>	Chapter 3	Improvement in logbook consistency and review process from Control Rooms	Level 3	Low	Closed
<i>20WEM1.43</i>	3.19	Process for ensuring sufficient Ancillary Services capacity has high risk of human error during the assessment of outage applications	Level 2	Medium	Closed
<i>21WEM1.40</i>	3.7.1	Audit trails to be improved for System Restart Testing processes	Level 3	Low	Closed
<i>21WEM1.47</i>	3.21A	No formalised process for reviewing impacts of Commissioning Test Plans on system security	Level 3	Low	Closed
<i>21WEM1.53</i>	3.10	No formalised control to mitigate the risk against incorrect Spinning Reserve activation due to fragmented Control Room kit	Level 2	Medium	Closed
<i>21WEM1.54</i>	3.6.2	No formalised operational plans for AUFLS Implementation in place	Level 3	Low	Closed
<i>21WEM1.59</i>	3.11.4	Continued trend of Spinning Reserves shortfalls	Level 3	Low	Closed
<i>21WEM1.38</i>	3A.1.3	GPS Communication Protocol between AEMO and Western Power not finalised	Level 1	Low	Closed
<i>21WEM1.52</i>	4.26.2CA, Appendix 10	Failure to recalculate Relevant Demand resulting in incorrect NSTEM Settlement calculations	Level 1	Low	Closed
<i>21WEM1.49</i>	6.20.2 6.20.11	Errors in calculation of Alternative Maximum STEM Price occurring since September 2020	Level 1	Low	Closed

No.	Obligation	Finding	Compliance Rating	Rating as reported by Management	Status as reported by Management
<i>21WEM1.46</i>	7.6.1C	No formalised approach to dispatching marginal intermittent generators	Level 2	Low	Closed
<i>21WEM1.48</i>	Chapter 3 Chapter 7	No simulator training or access to simulator for controllers, pending new EMS system implementation	Level 2	Medium	Closed
<i>21WEM1.57</i>	Chapter 3 Chapter 7	Control Room quality reviews not being conducted	Level 2	Low	Closed
<i>21WEM1.69</i>	7.13.1A(b)	Incorrect Outage Data published on WEM Market Data webpage	Level 3	Low	Closed
<i>20WEM1.04</i>	7A.3.15 7A.3.1(d)	Published Relevant Dispatch Quantity (RDQ) forecasts do not accurately reflect best estimate of forecast load	Level 1	Low	Closed
<i>20WEM1.28</i>	7A.3.2 and Section 4 of MP: Balancing Market Forecast	Non-compliant Tie Breaking methodology used due to removal of the correct methodology from the WEM Rules and Balance Forecast Market Procedure	Level 1	Low	Closed
<i>20WEM1.57</i>	7A.3.2(a)	AEMO System non-compliant with Manifest Error Rule relating to loss adjustment	Level 1	Low	Closed
<i>21WEM1.37</i>	7B.3.6	Failure to activate sufficient LFAS	Level 1	Medium	Closed
<i>20WEM1.06</i>	Appendix 2 (step 1)	Intermittent loads without registered facilities not allocated Spinning Reserve share	Level 1	Low	Closed

Appendix 1.4 – Wholesale Electricity Market - Summary of prior period findings reported by Management

No.	Obligation	Finding	Compliance Rating	Rating as reported by Management	Breach form completed	Breach form reference	Status as reported by Management
<i>21WEM1.22</i>	1.45.22	New rule clause consciously not implemented by commencement date as specified by the Energy Transformation Implementation Unit (ETIU) (Clause 1.45.10)	Level 1	Low	Yes	661	Closed
<i>21WEM1.35</i>	Appendix 5	Incorrect loss factors applied to Notional Wholesale Meter for Individual Reserve Capacity Requirement (IRCR) calculation	Level 1	Medium	Yes	692	Closed
<i>21WEM1.72</i>	Appendix 9	Failure to publish Existing Facility Load for Scheduled Generation (EFLSG) by required date	Level 1	Low	Yes	695	Closed
<i>21WEM1.73</i>	Appendix 9	Relevant Levels (RL) incorrectly calculated for the Reserve Capacity Cycle for period 2017-2020	Level 1	Medium	Yes	698	Closed
<i>21WEM1.14</i>	7.6.1C(a)	Incorrect out of merit dispatch	Level 1	Low	Yes	649	Closed
<i>21WEM1.01</i>	7B.3.6	Failure to activate sufficient LFAS	Level 1	Medium	Yes	622	Closed
<i>21WEM1.15</i>	7B.3.6	Incorrect Facility activated for LFAS	Level 1	Low	Yes	650	Closed
<i>21WEM1.30</i>	4.26.6(e)i.2 4.12.7 4.12.4	Settlement implementation issues	Level 1	Medium	Yes	677	Closed

Appendix 2 Information Technology

There were 8 Medium and 5 Low rated Information Technology findings identified by Management and PwC in FY22. These findings have the potential to impact a range of markets and systems across AEMO, including the WEM and GSI.

These findings related to logical access (4 Medium, 2 Low), physical access (2 Medium), and IT operations (2 Medium, 3 Low). No findings were identified regarding change management or program development.