

Report 9 of 2018

Battery storage procurement



Report of the Auditor-General

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26 November 2018

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Dear President and Speaker

**Report of the Auditor-General:
Report 9 of 2018 'Battery storage procurement'**

As required by the *Public Finance and Audit Act 1987*, I present to each of you Report 9 of 2018 titled 'Battery storage procurement'.

Content of the Report

The procurement of 100 megawatt grid-connected battery storage was an initiative of the former SA Government. This large scale battery storage was part of a group of initiatives included in 'Our Energy Plan' which detailed the vision to 'source, generate and control more of South Australia's power supply in South Australia so we can increase self-reliance and provide reliable, competitive and clean power for all into the future'.

Given the public interest in the reliability of the State's power system and the potential impact of power outages on households, business and the economy, we reviewed the procurement of battery storage, which was the first procurement under the Energy Plan.

This report provides detailed commentary and audit observations on our review of the project initiation process, procurement and contract management arrangements.

Acknowledgements

The audit team for this report was Salv Bianco, Philip Rossi, Simon Altus and Jodie Fitzgerald.

We also appreciate the cooperation and assistance given by staff of the Department for Energy and Mining and the Department of the Premier and Cabinet during the review.

Yours sincerely

A handwritten signature in black ink, appearing to read "Richardson", with a long horizontal flourish extending to the right.

Andrew Richardson
Auditor-General

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1 Executive summary

1.1 Introduction

The procurement of 100 megawatt (MW) grid-connected battery storage was an initiative of the former SA Government. This large-scale battery storage was part of a group of initiatives included in 'Our Energy Plan' (the Energy Plan), which detailed the vision to 'source, generate and control more of South Australia's power supply in South Australia so we can increase self-reliance and provide reliable, competitive and clean power for all into the future'.

Electricity reliability and costs to households have been issues of concern to the South Australian public. Concern about the power system has come from many contributing factors, from supply interruptions to rising power bills.¹

The former SA Government moved to implement the Energy Plan quickly, targeting 1 December 2017 (the start of summer 2017-18) as the date to have key deliverables in place. The aim was to reduce the risk of further power outages when electricity demand peaks in South Australia.

The first procurement under the Energy Plan was for battery storage through a competitive process. The objective was to obtain energy services capable of preventing load shedding events and able to provide key services to maintain system integrity in the electricity network.

The SA Government entered into a contract with Hornsdale Power Reserve (HPR) for 10 years to reserve a portion of a 100 MW battery installed near Jamestown. This was the first battery of this capacity introduced to the National Electricity Market in Australia.

While the SA Government does not own or operate the battery, it has established arrangements with HPR to ensure that it is operated in line with the SA Government's requirements. In return, the SA Government agreed to pay \$41.8 million to HPR over 10 years.

Given the public interest in the reliability of the State's power system and the potential impact of power outages on households, businesses and the economy, we reviewed the procurement of battery storage. Our review included the project initiation process, procurement and contract management arrangements.

1.2 Conclusion

A scope limitation meant we could not complete all work needed to form an opinion on one aspect of our review relevant to whether controls exercised over this procurement were sufficient to give reasonable assurance the transaction was conducted properly.

¹ 'Summer operations 2017-18', November 2017, Australian Energy Market Operator.

The former SA Government developed the Energy Plan in response to a number of significant power outages. Cabinet was extensively involved in developing the Energy Plan and procuring 100 MW battery storage services.

Because we did not have access to the relevant Cabinet documents, we could not form an opinion on whether:

- applying public funds to procure 100 MW battery storage was subject to appropriate analysis by the SA Government
- the evaluation of the initiative complied with Treasurer's Instruction 17.

A multi-stage competitive process was conducted to procure the battery storage services, with over 70 expressions of interest received. The battery was constructed by HPR within contracted time frames and has been operating for about 11 months without any significant concern reported by HPR or identified by the SA Government.

We did not identify any specific procurement probity matters, although there were aspects of the procurement that did not meet required standards or could be improved.

The processes and controls established by the SA Government to oversee the commissioning of the battery were reasonable. It engaged an independent engineer who provided certificates of performance and reliability confirming that the battery was delivered in line with contractual requirements.

For the operating phase of the battery, there have been delays in the State implementing the necessary processes and controls to ensure it is performing and operating in line with the SA Government's key objectives.

As a result, the processes and controls established by the SA Government to date do not provide it with reasonable assurance that the battery will be available when it is required and will appropriately respond to a system security event including preventing load shedding.

1.3 What we found

Developing the Energy Plan and selecting 100 MW battery storage (section 5)

We could not form an opinion on whether applying public funds to procure 100 MW battery storage was subject to appropriate analysis by the SA Government or whether the evaluation of the initiative complied with Treasurer's Instruction 17. This is because we did not have access to the Cabinet documents evidencing this.

Our ability to provide assurance to the Parliament is limited in circumstances where Cabinet is involved in developing initiatives and we do not have access to documents that demonstrate the need for the initiative and the analysis of the options available.

Governance and budget established to implement the Energy Plan (section 6)

Key governance documents were not prepared or suitably authorised until after the project had started. This was a result of the Energy Plan Implementation Taskforce having to take quick action to meet the SA Government's time frames for delivering aspects of the Energy Plan by 1 December 2017.

The stated \$550 million cost of the Energy Plan did not include whole-of-life costs for the 100 MW battery or the gas-diesel hybrid generators.

Procurement (section 7)

There were shortcomings in some key areas of the procurement process. They included:

- a lack of documented evidence and analysis to support departures from State Procurement Board guidelines and compliance with free trade agreement obligations
- some State Procurement Board guidelines were not complied with
- a number of procurement documents could not be located and there was a need to improve record management processes.

Some processes were not conducted timely, such as developing the acquisition plan, procurement risk identification and management, engaging the probity advisor and approving the probity plan. The lack of timeliness negated the intended impact of these processes.

Probity management arrangements to oversee the procurement were not properly established and evidenced. This included:

- not clearly defining and documenting the probity advisor's scope of services, key deliverables and reporting requirements
- not maintaining a record of contact and interactions with proponents for the expression of interest stage of the procurement process
- not documenting actions taken to manage a potential conflict of interest.

The Department for Energy and Mining (DEM) advised that the urgency to progress the procurement to ensure the SA Government's time frames for project delivery were met impacted the documentation and timeliness of the process.

Contract management (section 8)

Some contract management documents and processes were not established timely, such as a contract management plan and contract management arrangements. Further, key elements of the contract management arrangements were not documented.

We also noted that while some contract administration functions were being performed, there was no contract manager accountable for ensuring the key contractual obligations were being met.

Commissioning and ongoing monitoring of the battery (section 9)

Commissioning the battery

The processes and controls established by the SA Government to oversee the commissioning of the battery were reasonable. The key processes included:

- documenting the governance arrangements for delivering the battery, setting out key roles and responsibilities
- establishing a high level committee to oversee the delivery of the battery
- incorporating the requirement for commissioning, functional, performance and reliability testing in the contractual arrangements
- obtaining performance validation and reliability test certificates from an independent engineer to confirm the battery met the performance and reliability requirements.

We found, however, that to maintain independence, ideally different engineers would be used for independent certification and advisory services.

Ongoing monitoring arrangements for the battery

There were delays in implementing the necessary processes and controls to ensure the battery is performing and operating in line with the SA Government's key objectives.

Notably, we found reporting established by HPR to monitor the battery does not provide sufficient or reliable information to enable the State to assess whether the battery is performing and being operated consistent with contractual requirements and its key objectives.

Audits on the operation and performance of the battery have not been implemented to test the accuracy of the reporting provided by HPR and ensure compliance with contractual requirements. Further, the SA Government had not tested the availability, storage and access to necessary data to enable audits and investigations.

A governance framework covering key aspects of monitoring the ongoing operation and performance of the battery was not in place. Also, there were delays in establishing the key oversight committee (ie the Operating Committee) for the battery.

The SA Government had not developed a risk management plan for the operating phase of the battery.

Other key observations include:

- a formal process for rectifying compliance issues was not established
- the first scheduled review of the Operating Protocol, which specifies how the battery is to be operated contractually, was not undertaken
- HPR has not provided the SA Government with a maintenance schedule
- a resource plan for the SA Government's oversight role over the battery and formal protocols for using specialist advisors to help the SA Government exercise its responsibilities and interests was not developed.

1.4 What we recommended

Developing the Energy Plan and selecting 100 MW battery storage (section 5)

We recommend that the SA Government, together with government agencies, consider how they can demonstrate that they have fulfilled obligations to identify and evaluate options, prepare cost-benefit analysis and evaluate risks for proposed initiatives, as required by the Treasurer's Instructions, where Cabinet has extensive involvement in planning an initiative.

At the time of this Report the SA Government was reviewing the existing policy restricting access to Cabinet documents by investigative agencies.

Governance and budget established to implement the Energy Plan (section 6)

For future projects, the governance arrangements should be documented and appropriately authorised at the start of the project.

To provide increased transparency and accountability for future initiatives, DEM should ensure that all whole-of-life costs associated with delivering a program/project are reported at the time it is announced.

Procurement (section 7)

For future procurements, the evidence and analysis to support departures from SPB guidelines and compliance with free trade agreement obligations should be documented timely. Procurement risks should be identified and assessed when the procurement process starts and market documents prepared in line with State Procurement Board guidelines.

To address weaknesses in probity management arrangements, we recommended that:

- probity advisors be engaged before the procurement starts (where they are used) and the details of assurance services they are to provide clearly defined and documented
- frameworks used to manage probity be approved and provided to relevant officers at the start of the procurement process
- a complete record of all contact and interactions with proponents be maintained
- actions taken to assess and manage identified conflicts of interest be documented.

We recommended that record management processes be improved to ensure that documents that support key procurement processes and outcomes are retained and readily available for review.

Contract management (section 8)

DEM should finish establishing contract management arrangements for the battery storage and ensure that key elements of the arrangements required for it to effectively manage the contract are documented.

DEM should appoint a contract manager who is accountable for ensuring the key obligations of each party to the contract are met.

Commissioning and ongoing monitoring of the battery (section 9)

Review, in consultation with the Operating Committee, the structure, required information and presentation format for HPR's monthly report to enable an assessment of how the battery is performing and being operated.

Develop and document processes for:

- biannual performance audits of the battery (and undertake performance audits as soon as practical)
- annual reviews of the Operating Protocol and the battery reserved capacity
- escalating and rectifying compliance issues identified through the contract administration function.

Develop and document a governance framework for the operating phase of the battery and formally establish the Operating Committee.

Develop and implement a risk management plan for the operating phase of the battery.

Request a copy of the maintenance schedule from HPR and implement a timely review of the schedule in line with the Project Agreement.

Develop a resource plan for the operating phase of the battery and a protocol setting out how and when specialist advice should be sought.

1.5 Response to our recommendations

For our review of the commissioning and ongoing monitoring of the battery, DEM advised it is incorporating our recommendations into its processes for current projects. Also, given the technical nature of the findings, it provided additional comments where context or clarification was required. These comments are included in section 9.

For all other areas of our review, DEM acknowledged our findings and advised that it is incorporating our recommendations into its processes for current projects and improving record management systems. DEM had a different view on our observations about the full cost of delivering the Energy Plan. This matter and DEM's view are detailed in section 6.3.2.

DEM also advised the following:

- The battery procurement was the first procurement under the former SA Government's Energy Plan and was undertaken simultaneously with a number of other significant and urgent projects. This was at the same time as a new, small implementation team was established.

- The implementation team relied heavily on the advice of the Strategic Procurement Unit. DEM, however, acknowledges that elements of the procurement could have been undertaken and documented more comprehensively and has since continued to improve processes.
- In less than nine months (and only five months after awarding the contract) the battery was operational, delivering power to the National Electricity Market and providing system security services to South Australia. This was an incredible achievement and could not have been realised without the hard work of many dedicated public servants, who have since won procurement and energy industry awards in recognition of their efforts.
- The battery continues to perform beyond expectations, which is regularly recognised by various regulatory, academic and media institutions. For example, the Australian Energy Market Operator released a report on the performance of the battery in April 2018, illustrating how it provides a more rapid and precise response to loss of frequency than other conventional generators. Figures presented by McKinsey and Company at Australian Energy Week in May 2018 suggest the battery had reduced grid service costs by 90%, taking a 55% share in the State's frequency control and ancillary services market. Bloomberg New Energy Finance reported in July 2018 that in its first six months of operation, the battery contributed to a year on year 73% reduction in frequency control and ancillary services costs in South Australia.

DEM's comments and responses to specific findings and recommendations are included in sections 5 to 9.

2 Background

2.1 The Energy Plan

Procuring 100 MW grid-connected battery storage was one of the initiatives delivered under the Energy Plan, announced by the SA Government on 14 March 2017. Within nine months of the announcement, battery storage was procured and operational. Figure 2.1 summarises the key events during this period.

Figure 2.1: Chronology of key events for the procurement of 100 MW battery storage

Date	Event
14 March 2017	Energy Plan released
16 March 2017	Expression of interest document released to the market
5 April 2017	Acquisition plan endorsed by the then Chief Executive, Department of the Premier and Cabinet
17 May 2017	Invitation to supply documents released to 14 proponents shortlisted from the expression of interest stage
29 June 2017	SA Government approved final negotiations to proceed with preferred proponent and finalisation of an agreement between the SA Government and the successful proponent to be entered into and executed by the Minister for Mineral Resources and Energy
6 July 2017	Project Agreement between HPR, Tesla and the SA Government signed
29 September 2017	Network connection agreement between HPR and ElectraNet signed
16 December 2017	Performance validation achieved

A detailed chronology of events in Appendix 1 provides further information.

2.1.1 The Energy Plan was created in response to events that impacted the electricity network

In early September 2016 the SA Government approved a number of energy policy measures in response to challenges identified in the national energy markets. Following this there was a state-wide power outage on 28 September 2016 and a number of further significant supply interruptions between September 2016 and February 2017.

The former Chief Executive of the Department of the Premier and Cabinet (DPC) advised us that a load shedding event² on 8 February 2017, which was a day of extreme heat, resulted

² Load shedding refers to the rapid drop off (shedding) of customer demand (load) required to avoid even wider loss of supply or even a grid shutdown, www.sapowernetworks.com.au/outages/load-shedding, viewed 25 October 2018.

in large numbers of South Australian consumers and businesses being without electricity. He also advised:

- this highlighted how dependent South Australia is on the procedures and operations of the National Electricity Market³
- it drew attention to the risk of further power outages that South Australia could face over the following summer.

These events led to an intensive period of planning by the SA Government, starting in February 2017, to produce the Energy Plan that was released on 14 March 2017.

The former Chief Executive DPC advised that the Energy Plan responded to a high SA Government priority which it considered to be time sensitive. He explained that:

- it sought to deal with a local electricity market that was vulnerable to developing instability in the National Electricity Market
- the vulnerability of the South Australian market would be particularly pressing over the summer ahead (when electricity demand is at its peak). This made early December 2017 an important date to implement key parts of the Energy Plan.

2.1.2 Cabinet was significantly involved in developing the Energy Plan

We were advised by DEM and former DPC staff that Cabinet was extensively involved in the intensive planning period that produced the Energy Plan.

The former Chief Executive DPC advised us that Cabinet met frequently between 9 February 2017 and 14 March 2017, when the Energy Plan was released. He also advised that:

- Cabinet needed to make decisions on the Energy Plan because of the importance of the subject matter and the high level of judgement required
- material was prepared by expert advisors, external to government, and made available to Cabinet during its deliberations and consideration of options.

2.1.3 Six key deliverables were identified in the Energy Plan

The Energy Plan identified six key deliverables with an estimated cost of \$550 million to 'give our State greater local control of our energy security'.⁴

The six deliverables are shown in figure 2.2.

³ The National Electricity Market is a wholesale market through which generators and retailers trade electricity in Australia. It interconnects the six eastern and southern states and territories in Australia. The Australian Energy Market Operator handles the day-to-day operations of the electricity market. The Australian Energy Market Commission develops the rules by which the market must operate. Department of the Environment and Energy, www.energy.gov.au, viewed 16 October 2018.

⁴ Government of South Australia, 2017, *Our Energy Plan. South Australian Power for South Australians* pamphlet.

Figure 2.2: Deliverables in the Energy Plan

	<p>Battery storage and Renewable Technology Fund Australia’s largest battery will be built in South Australia to store renewable energy and add stability to supply as part of a new \$150 million Renewable Technology Fund.</p>
	<p>New generation, more competition The SA Government will use its bulk-buying power to attract new electricity generation to increase competition and put downward pressure on prices.</p>
	<p>State-owned gas power plant The SA Government will build its own gas power plant to have government-owned stand-by power available in South Australia for emergencies.</p>
	<p>South Australian gas incentives The SA Government will offer incentives to source more gas for use in South Australia, replacing coal-fired energy from Victoria.</p>
	<p>Local powers over national market The SA Government will legislate to give the Energy Minister direction over the market so South Australia’s best interests always come first if there is an electricity shortfall.</p>
	<p>Energy security target A new target will increase South Australia’s energy self-reliance by requiring more locally generated, cleaner, secure energy to be used in South Australia.</p>

Source: ‘Our Energy Plan’, Government of South Australia, page 3, March 2017.

2.1.4 Implementing key Energy Plan deliverables

Actions taken for each of the deliverables identified in the Energy Plan included:

- delivering a 100 MW battery storage facility
- agreements signed to provide five loans and 21 grants from the Renewable Technology Fund
- a 20-year contract established with SolarReserve to provide electricity to government agencies from 2020 through the construction of a solar thermal power station
- bridging contracts executed to provide electricity to government agencies from 1 January 2018 until 2020, when the solar thermal power station starts operation
- short-term lease and subsequent purchase of nine gas-diesel hybrid turbines for emergency electricity generation. The turbines transfer to SA Government ownership in December 2018
- four grants, totalling \$24 million, awarded under the second round of the Plan for Accelerating Exploration (PACE) grant scheme to incentivise companies to extract more gas

- implementing the *Emergency Management (Electricity Supply Emergencies) Amendment Act 2017* to give the Energy Minister direction over the market. DEM advised that the Energy Minister had not been required to use the changed legislation at the time of this Report
- the former SA Government deferred implementing the Energy Security Target until 2020.

2.1.5 Change in government resulted in new energy initiatives

A new SA Government was elected in March 2018. It identified a series of energy reforms in the 2018-19 State Budget comprising:

- \$100 million over four years for a home battery scheme
- \$50 million over four years for a Grid Scale Storage Fund
- \$30 million over three years for demand response, aggregation and integration of distributed generation
- \$4 million in 2018-19 towards early works for additional interconnection between the eastern states and South Australia.

DEM advised that the SA Government has committed to honouring contracts established for initiatives developed under the previous Energy Plan and they will continue to be managed and monitored within DEM.

The SA Government appointed a Special Investigator in April 2018 to examine the procurement of the nine gas-diesel hybrid turbines. The terms of reference included reporting on the options open to the SA Government for the future management and ownership of the turbines and the financial implications of those options.⁵ The Special Investigator's report was tabled in Parliament on 16 October 2018.⁶ In response, the Minister for Energy and Mining announced that the SA Government will undertake a tender process to lease the generators to a commercial operator for 25 years.⁷

2.2 Governance over Energy Plan implementation

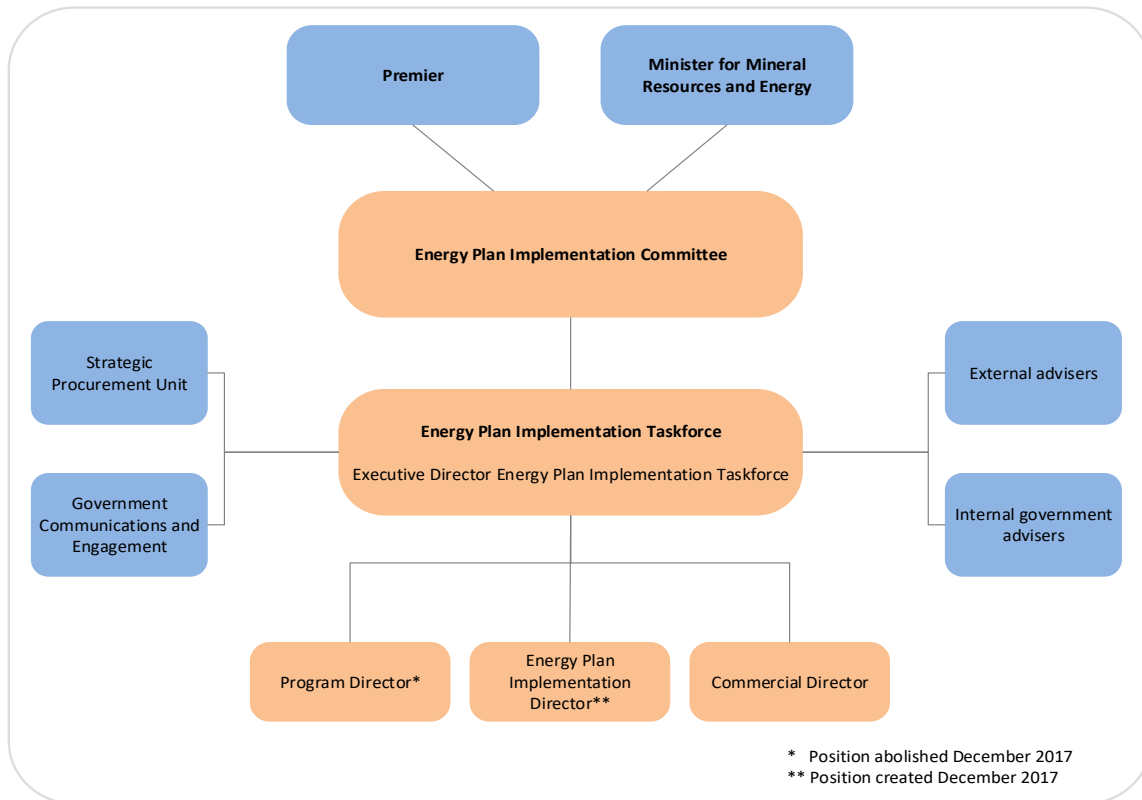
Implementation of the Energy Plan started under DPC. It established the Energy Plan Implementation Taskforce in late-March 2017 to deliver the initiatives identified in the Energy Plan. Oversight of the implementation was provided by the Energy Plan Implementation Committee (EPIC).

⁵ Chapman, V Hon (Deputy Premier, Attorney-General) 2018 'Investigating Labor's deal for the diesel generators', media release, 3 April.

⁶ M.C. Livesey QC 2018, 'Report to the Honourable Vickie Chapman MP, Attorney-General for the State of South Australia into the Procurement of Diesel Generators', Bar Chambers, 30 August.

⁷ Van Holst Pellekaan, D Hon (Minister for Energy and Mining) 2018, 'Future of temporary generators', Ministerial Statement, 16 October.

Figure 2.3: Governance structure for Energy Plan implementation



Source: Audit analysis of governance documents provided by DEM.

The governance framework for implementing the Energy Plan deliverables is documented in the ‘South Australian Energy Plan Program Governance Arrangements’ (Governance Arrangements).

The Governance Arrangements include:

- governance principles to apply in delivering the initiatives identified in the Energy Plan
- establishing two committees to provide support and oversight
- the responsibilities for key roles in delivering the Energy Plan.

2.2.1 Machinery of government changes

Following the change in government in March 2018, a number of machinery of government changes were introduced, effective from 1 July 2018. They resulted in:

- responsibility for energy implementation being moved from DPC to DEM
- the Strategic Procurement Unit, which assisted with the battery storage procurement, being moved from DPC to the Department of Treasury and Finance.

2.3 Procurement of 100 MW grid-connected battery storage

2.3.1 Procurement objectives

The acquisition plan prepared by DPC stated that the main objective of the battery storage

procurement was to provide South Australia with large-scale storage for renewable energy so power is available when it is needed.

It further explained that 100 MW grid-connected battery storage would:

- contribute to providing energy services capable of preventing certain load shedding events in South Australia
- be able to provide key services to maintain power system integrity, particularly in peak summer periods and times of loss of generation or interconnector capacity.

2.3.2 Multi-stage competitive process conducted for the procurement

A multi-stage competitive process was conducted by DPC for the procurement that included:

- releasing a public expression of interest (EOI) on 16 March 2017 to determine interest from potential proponents and understand what solutions could be offered by the market to meet the SA Government's time frames for delivery. DPC received 79 submissions from this EOI
- issuing an invitation to supply (ITS) on 17 May 2017 to 14 proponents shortlisted from the EOI stage. They were required to respond to a more detailed set of requirements. DPC received submissions from 12 of the 14 shortlisted proponents
- evaluating the 12 ITS responses over two separate stages. The evaluation team completed a preliminary evaluation of responses and shortlisted five proponents to proceed to a more detailed evaluation
- the evaluation team selecting a preferred proponent after it completed the detailed evaluation and held discussions with each of the five shortlisted proponents to clarify matters identified during the preliminary evaluation
- negotiations with the preferred proponent, which started on 30 June 2017 and concluded on 5 July 2017.

2.3.3 Criteria established and used to evaluate tender submissions

EOI evaluation

The 79 EOI submissions received were reviewed by the evaluation team against evaluation criteria, which involved assessing technical and financial details, capability and ability to deliver the project and economic contributions to the State.

ITS evaluation

Preliminary evaluation

Proponents shortlisted from the EOI stage were evaluated on their technical and financial capability, use of technology, ability to meet project delivery time frames and arrangements in place to manage supply and logistics requirements. Proponents were also assessed on their ability to meet any Foreign Investment Review Board requirements within required time frames and deliver economic contributions to the State. The evaluation team further considered if any of the ITS submissions posed a material risk to completing the procurement process and/or delivery of the project.

Detailed evaluation

The evaluation team shortlisted five proponents from the ITS preliminary evaluation and completed a further detailed review of their submissions. This assessment considered the proponents' capability and commercial offer (ie value for money), project risks related to the proposed services offered, whether proposed solutions met the project's technical requirements and delivery of economic contributions to the State.

The evaluation team also held discussions with all five proponents to further understand any barriers to reaching financial close, assessments undertaken to determine connection arrangements, known site constraints and long lead items required to be ordered to meet the SA Government's time frame.

2.3.4 Selection of preferred proponent

The ITS evaluation report endorsed by the evaluation team recommended the solution offered by Neoen (the owner of HPR) because it met the evaluation criteria to a greater extent than the other shortlisted proponents.

2.4 The Project Agreement

The SA Government engaged HPR to design, construct, commission and test the 100 MW battery storage facility and subsequently own, operate and maintain the battery. The terms and conditions are established in 'The South Australian Grid-Connected Battery Facility Project Agreement' (the Project Agreement), which was signed on 6 July 2017.

HPR must deliver the following services for 10 years under the Project Agreement:

- provide key system security services to maintain power system security and integrity and stability for the South Australian electricity network
- prevent certain load shedding events
- provide supply during critical peak periods
- participate in ancillary services and wholesale electricity markets.

The following requirements, which are defined in or attached to the Project Agreement, govern how these services must be provided:

- the Operating Protocol
- performance guarantees
- good electricity industry practice.

The Project Agreement and its attachments establish the terms and conditions for delivering the battery and its ongoing operations. The nature of these arrangements is discussed below. Other parts of the Project Agreement are referenced throughout this Report, where relevant.

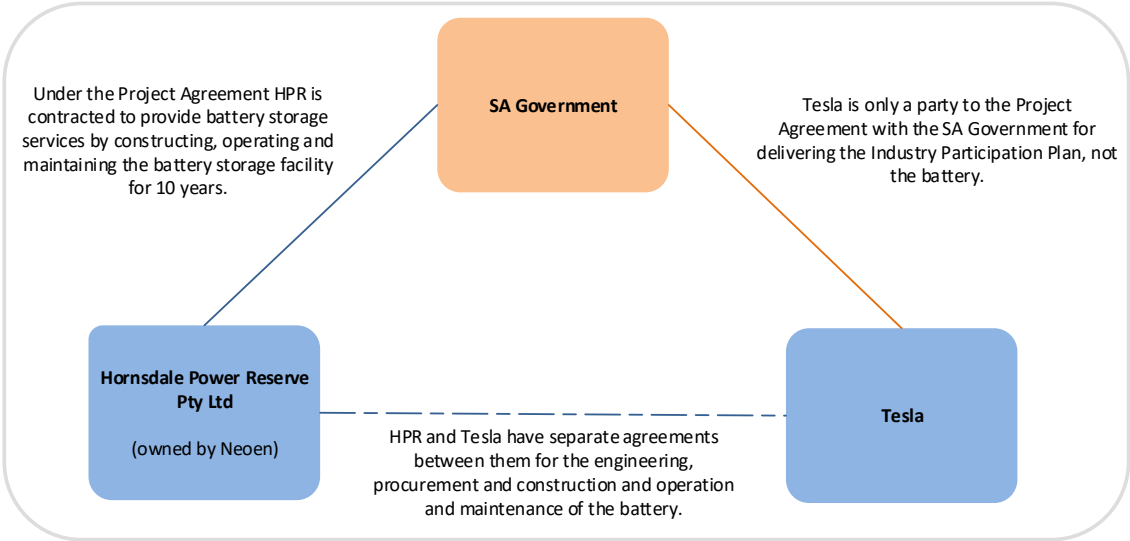
2.4.1 Parties to the Project Agreement

The parties to the Project Agreement are:

- the Minister for Mineral Resources and Energy
- Hornsdale Power Reserve Pty Ltd (owned by Neoen)
- Tesla Motors Australia Pty Ltd (Tesla).

Under the Project Agreement, HPR is the contractor engaged to deliver, own, operate and maintain the battery storage facility. Tesla is a party to the agreement only for the purpose of ensuring that its commitments and obligations to the SA Government established in the Contractor Industry Participation Plan⁸ are captured in the contract.

Figure 2.4: Relationship between the SA Government, HPR and Tesla



Source: Audit analysis of the Project Agreement and HPR’s application for the issue of an Electricity Generation Licence by the Essential Services Commission of South Australia under the *Electricity Act 1996*.

2.4.2 The SA Government reserves 70 MW of the battery’s power output capacity

HPR is responsible for the costs of constructing the battery and its ongoing operation. The SA Government makes monthly contract payments to HPR in line with the Project Agreement.

In return for the monthly contract payments, HPR grants to the SA Government the exclusive right to a reserved power output capacity of 70 MW and a reserved energy storage capacity

⁸ The Contractor Industry Participation Plan is a requirement for all SA Government procurements over \$4 million. As part of the tender for the 100 MW battery an Industry Participation Plan detailed ongoing commitments from HPR and Tesla for contributions towards the State’s economic development.

of 10 MWh,⁹ collectively known as the reserved capacity. Any excess capacity remaining in the battery after meeting the reserved capacity may be used by HPR to generate revenue. This is known as the market capacity.

The reserved capacity is subject to an annual review process. Any change to the reserved capacity is to be agreed by both parties under the Project Agreement.

2.4.3 Contract payments

The SA Government must pay HPR monthly contract payments in line with the Project Agreement. Over the 10-year contract term, the maximum contract payments amount to \$41.8 million.

2.4.4 The battery must be operated in line with the Operating Protocol

HPR must operate the battery in line with the Operating Protocol. The purpose of the Operating Protocol is to ensure that the battery operates in line with the SA Government's requirements.

The Operating Protocol was agreed to by HPR and the SA Government and is subject to annual review. It can be amended by agreement between both parties.

2.4.5 The 100 day delivery promise

The Tesla performance guarantee, attached to the Project Agreement, includes a covenant requiring reimbursement to the SA Government of any contract payments paid and payable to HPR over the contract term, if performance validation is not achieved within 100 days of the connection approval occurring.

Connection approval is the day the Network Connection Agreement is executed by the network service provider (ElectraNet) and HPR. The Network Connection Agreement was executed on 29 September 2017.

Performance validation¹⁰ was achieved on 16 December 2017, which was within the 100 day period established under the Project Agreement.

2.5 Commissioning and testing the battery storage facility

The Project Agreement required HPR to ensure the battery storage facility achieved performance validation by 1 December 2017. For this to occur, HPR needed to pass a range of tests which assessed the performance of the battery against established performance measures.

Immediately after achieving performance validation HPR was required to start reliability tests. Payments under the Project Agreement for services provided by HPR were not payable by the SA Government until the battery passed these tests.

⁹ The difference between power output capacity (MW) and energy storage capacity (MWh) is explained in section 4.1.3.

¹⁰ Section 2.5.1 discusses performance validation.

The SA Government appointed an independent engineer to witness the testing completed by HPR during the commissioning phase and to assess and certify if performance validation had been achieved and reliability tests passed.

2.5.1 Performance validation was achieved on 16 December 2017

On 22 December 2017 the independent engineer issued a certificate to confirm that the battery achieved performance validation on 16 December 2017.

The independent engineer identified some matters from the test results to be resolved between Tesla, the Australian Energy Market Operator (AEMO) and ElectraNet following performance validation. The SA Government was advised by the independent engineer that these issues did not restrict the operation of the battery or the services provided under the Project Agreement.

2.5.2 The battery passed reliability tests on 20 January 2018

To pass the reliability tests HPR needed to demonstrate reliable commercial operation of the battery for at least 28 consecutive days without interruption.¹¹

A certificate was issued by the independent engineer on 15 February 2018 to confirm that the battery passed the reliability tests on 20 January 2018.

The independent engineer concluded that during the test period the battery remained available and operational and assessed that it also maintained the minimum required power and energy storage capacities.

2.5.3 The SA Government did not pursue delay liquidated damages

The Project Agreement provided the SA Government the right to claim delay liquidated damages from HPR if performance validation was not achieved by 1 December 2017.

As performance validation was achieved on 16 December 2017 the Executive Director, Energy Plan Implementation Taskforce issued a notice to HPR on 24 January 2018 to claim payment of delay liquidated damages.

The SA Government received legal advice on this matter and decided not to pursue delay liquidated damages from HPR. We were advised by DEM that this was because of external advice that the cost of this action could exceed the value of the delay liquidated damages, and to maintain a good working relationship with HPR.

DEM further advised that the delayed performance validation only impacted HPR's market capacity and did not impact the ability of the battery to deliver services from the State's reserved capacity.

¹¹ For the reliability tests an interruption is defined as any failure of the battery to respond in line with its functional requirements, or any loss or reduction of the battery's required power or energy storage capacity throughout the test period.

3 Audit mandate, objective and scope

3.1 Our mandate

The Auditor-General has authority to conduct this review under section 36(1)(a)(iii) of the *Public Finance and Audit Act 1987*.

3.2 Our objective

We assessed whether the controls exercised by DPC and DEM over the procurement of 100 MW battery storage services were sufficient to provide reasonable assurance that the transaction was conducted properly and in accordance with the law.

A procurement transaction includes purchase planning, supply of goods or services and ongoing contract management. DPC was responsible for the battery storage procurement process until DEM became responsible for the ongoing contract monitoring and administration under machinery of government changes effective from 1 July 2018.

3.3 What we reviewed and how

In completing the review, we assessed whether:

- the process, including assessment and analysis, applied by the SA Government in developing the Energy Plan and governance arrangements established for implementing it were reasonable
- the Energy Plan implementation budget of \$550 million captured all costs of delivering the identified initiatives
- the analysis and rationale for deciding to procure large-scale battery storage was completed before the procurement process started
- the procurement met appropriate standards of probity, fairness, accountability and transparency
- ongoing financial implications and commitments for the SA Government arising from the battery storage initiative were appropriately disclosed to key decision-makers and were considered as part of the procurement process
- robust contract management arrangements have been established to ensure that the key objectives for battery storage, as defined in the procurement process, are being achieved.

Our assessment considered SA Government requirements including Treasurer's Instructions, State Procurement Board policies and procedures, other authoritative documentation (such as approvals and contractual documentation) and relevant departmental policies, procedures and guidelines.

The Energy Plan describes a package of specific initiatives identified by the former SA Government to address issues affecting electricity consumers in South Australia. Because

the procurement of 100 MW battery storage was one of the initiatives identified in the Energy Plan, our review included analysing the reasonableness of the process applied by the SA Government to develop the Energy Plan to determine if public money was applied properly.

3.3.1 Engagement of subject matter expert to assist with our review

We engaged the services of an external specialist firm to help us form an opinion on the overall objective of this review. We asked the external specialist firm to:

- review and assess the processes established by the SA Government to ensure its key objectives for the battery, as defined in the procurement process, are being delivered by HPR
- provide a high-level summary of how the battery works and interacts with the energy market and grid.

The assessment by the external specialist firm separately considered the delivery and operating phases of the battery.

For the delivery phase they assessed processes to ensure that a battery was delivered consistent with the SA Government's key objectives and that it is capable of meeting the performance and reliability requirements specified in the Project Agreement.

For the operating phase they assessed processes to ensure that the battery is being operated and continues to perform in line with the performance and reliability requirements specified in the Project Agreement.

3.4 What we did not review

Procurement of 100 MW battery storage is one element of a broader set of strategies implemented by the former SA Government under the Energy Plan. While we considered the formation of the Energy Plan as this included the initiative to procure battery storage, we did not seek to determine whether the Energy Plan was appropriate to address issues with electricity affordability, security and reliability in South Australia.

We have not assessed whether the battery has provided value for money. The criteria for assessing what represents value for money, particularly in the complex and rapidly changing energy market, is highly subjective and difficult to objectively measure.

Despite this limitation in our scope, it is important to note that the SA Government undertook a multi-stage competitive procurement process.

We have not performed any market analysis to determine if introducing battery storage has impacted on electricity prices and prices passed on to the end customer.

We did not review the operational effectiveness of the battery.

We did not review internal controls and transactions for payments made under the Project Agreement.

4 Operations of the battery storage facility

4.1 How the battery works

4.1.1 Overview

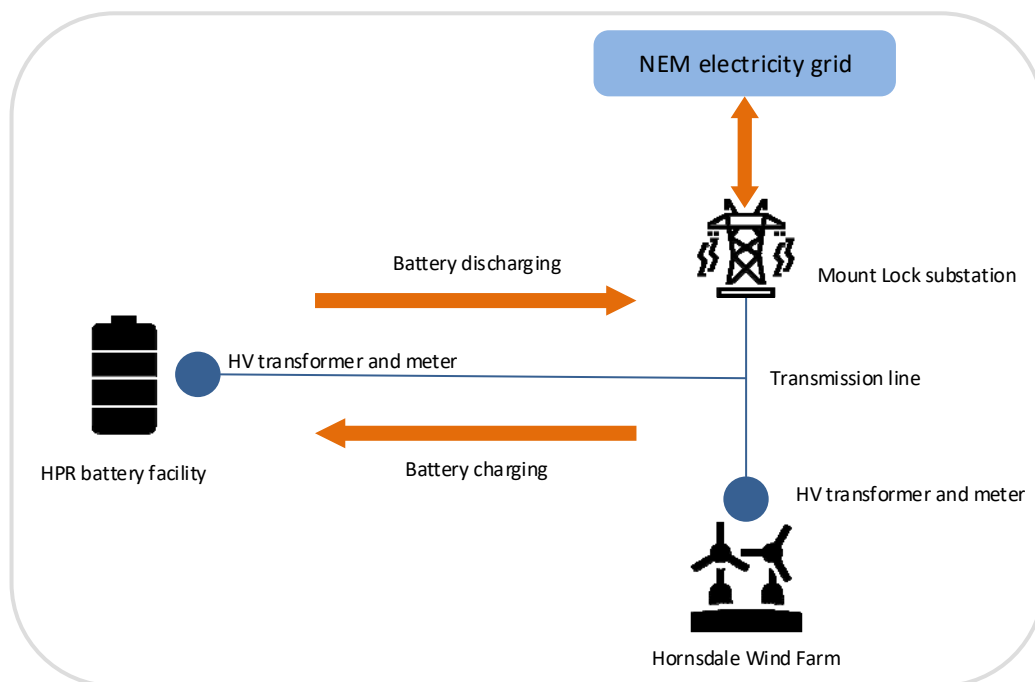
The 100 MW battery is located near Jamestown in South Australia. It is located next to the Hornsdale Wind Farm that is owned and operated by Neoen, who also own HPR.

The battery can:

- absorb electricity supplied to it to charge the battery (this can come from the Hornsdale Wind Farm or from the electricity grid)
- store electricity
- inject stored electricity into the electricity grid.

The battery can inject electricity into or withdraw electricity from the electricity grid at a very fast rate.

Figure 4.1: Connection diagram of the battery and the Hornsdale Wind Farm to the National Electricity Market



Source: Developed from information provided by DEM's external technical advisor.

In general, batteries can provide a range of services to the electricity grid. These include:

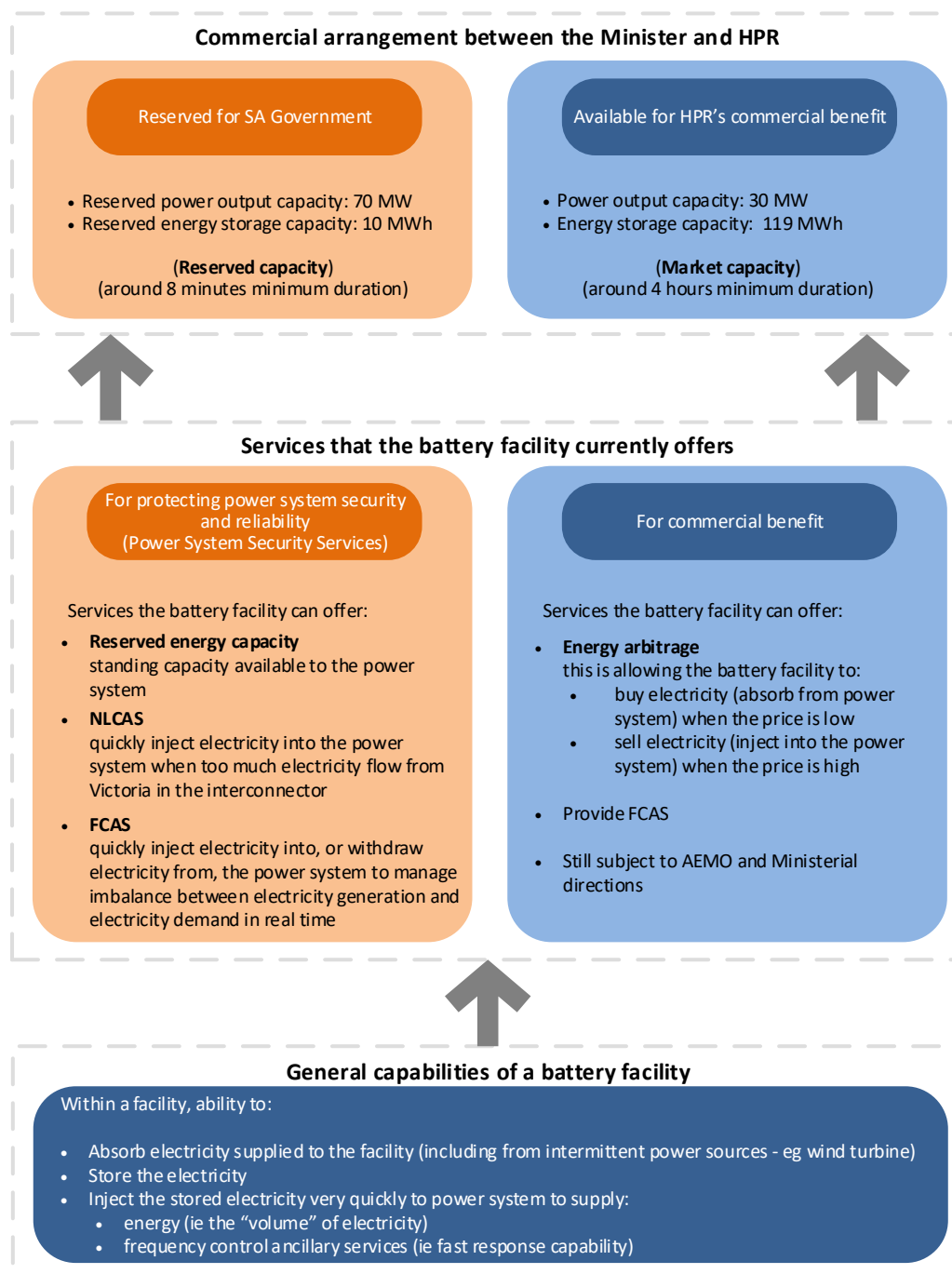
- storing excess renewable energy and discharging it later when needed
- providing frequency control to maintain the stability of the grid and security of electricity supply
- smoothing out minor variations in renewable energy output
- covering missing supply from generators when they experience outages.

4.1.2 Current operation of the battery

The operation of the battery storage facility is governed by the Project Agreement and an Operating Protocol agreed between the SA Government and HPR. The services currently provided by the battery can be categorised as those:

- required to protect power system security and reliability (power system security services)
- for HPR's commercial benefit.

Figure 4.2: Current operation of the battery storage facility



Source: Audit analysis.

Figure 4.2 illustrates that:

- **Reserved capacity** – 70 MW (ie **power**) and 10 MWh (ie **energy**) has been reserved by the Minister for HPR to provide power system security services
- **Market capacity** – 30 MW (ie **power**) and 119 MWh (ie **energy**) has been allocated to HPR for its commercial benefit.

The reserved capacity may be revised as part of an annual review process provided for in the Project Agreement.

4.1.3 Description of the power and energy characteristics of the battery

The total capacity of the battery is 100 MW for **power** output and 129 MWh of **energy** storage.

A megawatt (MW) is a measurement of **power**, describing how much power can flow into or out of the battery in any given instant.¹²

A megawatt hour (MWh) is a measurement of **energy**, describing how much electricity the battery storage system can inject or absorb in one hour.

As a simple example to explain the relationship between power and energy, if HPR injected power to the grid at the constant rate of 100 MW (the total power capacity of the battery) it would take about 75 minutes to deplete the stored energy of 129 MWh.¹³

The 100 MW battery is set up to keep a portion of the battery storage for the State with the remaining capacity available to HPR to use for commercial purposes (eg buying and selling electricity and providing power system security services for a monetary return).

As described above, the State's reserved capacity in the battery is made up of the reserved **power** output capacity of 70 MW and a reserved **energy** storage capacity of 10 MWh. This means high power is available for a short period (that is, 70 MW can be injected to the grid for approximately eight minutes) to provide power system security services. The SA Government does not receive any money for power system services provided from the reserved capacity. Power system security services are explained in section 4.2.1.

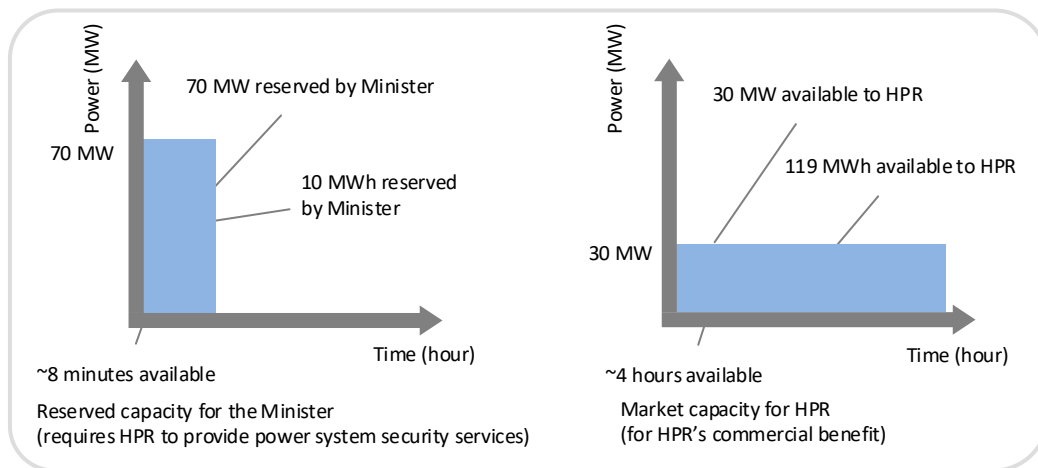
The market capacity of the battery available to HPR for commercial purposes is 30 MW **power** output and 119 MWh of **energy** storage. This means that HPR has less **power** but high **energy** which is available for a longer period (that is, 30 MW can be injected to the grid for about four hours).

The key characteristics of the battery's reserved capacity and market capacity as reflected in the Project Agreement is illustrated in figure 4.3.

¹² McLaren, J 2016, 'Batteries 101 Series: How to Talk About Batteries and Power-To-Energy Ratios', 13 April, www.nrel.gov/technical-assistance, viewed 28 August 2018.

¹³ Note that in practice, other factors also impact battery discharge.

Figure 4.3: Reserved capacity and market capacity



Source: Audit analysis (diagram not to scale).

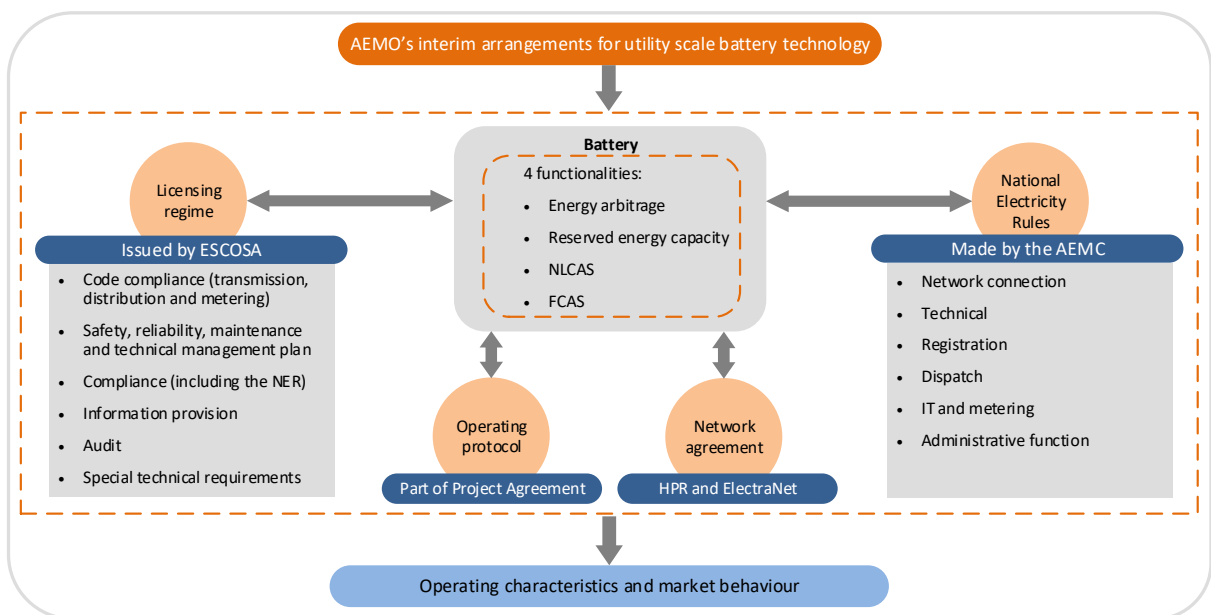
The entire capacity of the battery (ie the full 100 MW and 129 MWh) should respond to a power system security event if available. The Minister’s component is reserved so it is guaranteed to be there, whereas HPR might have depleted its component when a power system security event occurs.

The energy rating of the battery (ie the megawatt hours) will degrade over its life. Under the Project Agreement the SA Government will retain 10 MWh for the 10 years as the reserved capacity, unless the SA Government and HPR agree to change it.

4.1.4 Interaction with the electricity grid and the electricity market

The way the battery interacts with the National Electricity Market (NEM) and the grid is illustrated in figure 4.4.

Figure 4.4: Interaction of the battery with the NEM and the electricity grid



Source: Audit analysis.

The various elements that govern the interaction between the battery and the electricity market and grid are:

- the licencing arrangement – a generation licence has been issued to HPR by the Essential Services Commission of South Australia (ESCOSA) with specified conditions¹⁴
- the connection agreement between HPR and the transmission network service provider (ElectraNet)
- the National Electricity Rules (NER) which govern the operations of the NEM are made by the Australian Energy Market Commission (AEMC). Various aspects of these rules apply to the battery including network connection, technical requirements, registration, dispatch, IT and metering and administrative functions
- the Operating Protocol established between the SA Government and HPR as part of the Project Agreement. The Operating Protocol includes rules on how the reserved capacity can bid in the NEM to provide power system security services.

Implementation of these arrangements is guided by AEMO's 'Interim arrangements for utility scale battery technology'. This sets out AEMO's views on how to apply the current National Electricity Rules to battery projects, recognising that there may be scope to improve the National Electricity Rules going forward.¹⁵

The *Emergency Management Act 2004* provides for the Minister for Energy to give directions to any market participants, or require AEMO to give directions to any market participants, on the declaration of an electricity supply emergency. In such an event, the battery may be required to charge, store or discharge energy, or be placed at the disposal of AEMO for a particular function as required.

4.2 Services delivered by the 100 MW battery

Section 4.1.2 explains that the current services provided by the battery are power system security services and services available to HPR for its commercial benefit. These are discussed below.

4.2.1 Power system security services

One of the purposes of the reserved capacity being dedicated to the SA Government is to provide power system security services.

Power system security relates to the technical parameters of the power system such as voltage and frequency, the rate at which these parameters might change, and the ability of the system to withstand faults. The power system is considered secure when these technical parameters are maintained within defined limits.¹⁶

¹⁴ The electricity generation licence can be viewed at <<https://www.escosa.sa.gov.au/ArticleDocuments/1116/20171013-Electricity-GenerationLicence-HornsdalesPowerReserve.pdf.aspx?Embed=Y>>, viewed 25 October 2018.

¹⁵ Interim arrangements for utility scale battery technology, <<http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Participant-information/New-participants/Interim-arrangements-Utility-Scale-Battery-Technology>>, viewed 25 October 2018.

¹⁶ Energy system, Electricity, Electricity System, Security, <https://www.aemc.gov.au>, viewed 12 October 2018.

Under National Electricity Law,¹⁷ AEMO is responsible for maintaining power system security. It is also required by the National Electricity Rules¹⁸ to control the power system frequency and ensure that frequency is maintained within defined ranges that are set out in the frequency operating standards¹⁹ for the NEM.

The power system security services currently offered by the battery are:

- reserved energy capacity
- frequency control ancillary services (FCAS)
- network loading control ancillary services (NLCAS).

Reserved energy capacity

The Project Agreement provides that 70 MW and 10 MWh of the battery has been reserved to address any capacity shortfall in the NEM if required. This ensures that the battery always has 70 MW and 10 MWh available to inject into the power system to address a sudden capacity shortfall, such as might occur after the unplanned loss of a generating unit or an element of the transmission network.

This rapid injection into the power system allows AEMO to maintain power system security without load shedding while it instructs slower responding generating plant to increase output and/or reconfigures the network. The Operating Protocol provides rules for recharging the battery to restore the reserved capacity after it is discharged to provide power system security services.

Frequency control ancillary services (FCAS)

Ancillary services are used by AEMO to maintain key technical characteristics of the system, such as frequency and voltage. These services help to ensure that the power system operates safely, securely and reliably.²⁰

Frequency control is a key element of power system security.²¹ The two main types of services that the battery and other market participants provide to help control frequency levels are regulation FCAS and contingency FCAS. Appendix 2 explains how FCAS contribute to power system security and describes the two main services.

The NEM has eight FCAS markets. The battery actively participates in all of these markets, which enhances power system security.²² Both the market capacity and the reserved capacity can supply FCAS to the NEM. We were advised by DEM that the FCAS supplied by the battery has mostly been from HPR's use of the market capacity.

¹⁷ *National Electricity (South Australia) Act 1996*, section 49(1)(e).

¹⁸ *National Electricity Rules Version 113*, section 4.4.1.

¹⁹ Frequency operating standards define the range of allowable frequencies for the electricity power system under different conditions, including normal operation and following contingency events. These standards are determined by the Australian Energy Market Commission's Reliability Panel.

²⁰ Electricity, National Electricity Market, Security and reliability, Ancillary services, viewed 20 October 2018, <https://www.aemo.com.au>.

²¹ Frequency Control Frameworks Review, Final Report, 26 July 2018, Australian Energy Market Commission.

²² Initial Operation of the Hornsdale Power Reserve Battery Energy Storage System, April 2018, Australian Energy Market Operator, viewed 15 October 2018, <https://www.aemo.com.au>.

For an example of how the FCAS provided by a large-scale battery and other market participants help to manage power system frequency see Appendix 3.

Network loading control ancillary services (NLCAS)

The battery is included in the System Integrity Protection Scheme.²³ This new emergency frequency control scheme was commissioned by ElectraNet in December 2017.²⁴ Its purpose is to reduce the likelihood of the South Australian power system separating from the rest of the NEM after a sudden increase in electricity flow that would otherwise exceed the rated capacity of the Heywood Interconnector. When this rated capacity is exceeded, automatic systems disconnect the interconnector from service to protect it from damage. When a high flow is detected on the Heywood Interconnector, the battery will inject its stored electricity into the grid as quickly as possible to reduce the likelihood of loss of the interconnector.²⁵ The battery's injection increases local supply in South Australia, which decreases flows on the interconnector from Victoria.

AEMO notes that the loss of multiple generators in South Australia and import of electricity across the Heywood Interconnector would result in rapid frequency decline and pose a high risk of a state-wide blackout.²⁶ The battery's ability to provide services under this control scheme enhances the security of the power system.

4.2.2 Commercial benefits (ie HPR's energy arbitrage right)

HPR can use 30 MW of the battery's power output capacity and 119 MWh of its energy storage capacity in the NEM for its commercial benefit.

The market capacity has been used by HPR for energy arbitrage (ie buying and selling electricity in the NEM) by the battery charging and storing electricity when wholesale electricity prices are low and discharging the stored electricity during higher price periods. Under the Project Agreement, HPR keeps all the revenue from energy arbitrage.

The reserved capacity of 70 MW and 10 MWh is not used by the SA Government to earn market income through energy arbitrage to maximise the availability of the battery for system security purposes.

4.2.3 External analysis of the battery storage facility's operations

As the battery is the first large-scale commercial example of battery technology operating in the NEM,²⁷ there has been strong interest in its operation and the services it provides.

²³ Initial Operation of the Hornsdale Power Reserve Battery Energy Storage System, April 2018, Australian Energy Market Operator, viewed 15 October 2018, <https://www.aemo.com.au>.

²⁴ Power System Frequency Risk Review Report, June 2018, Australian Energy Market Operator.

²⁵ Initial Operation of the Hornsdale Power Reserve Battery Energy Storage System, April 2018, Australian Energy Market Operator, viewed 15 October 2018, <https://www.aemo.com.au>.

²⁶ Power System Frequency Risk Review Report, June 2018, Australian Energy Market Operator.

²⁷ Gaming in Rebidding, Final Report, 28 September 2018, Australian Energy Market Commission.

The following is a summary of some of the initial observations about the operations of the battery reported by AEMO in its role as the independent operator of the NEM.

Frequency control provided by the battery is both rapid and precise

AEMO reported in its April 2018 review of the battery's operations that the battery can provide a range of valuable power system services, including rapid, accurate frequency response and control.²⁸

Data available to AEMO demonstrates that regulation FCAS provided by the battery are both rapid and precise compared to services provided by conventional synchronous generation.²⁹

AEMO also noted that commissioning tests and simulations confirm that the battery is capable of responding more rapidly to a contingency event than synchronous generation.

The power system event of 25 August 2018

AEMO released a preliminary report in September 2018 about a significant power system event on 25 August 2018 that resulted in Queensland and South Australia separating from the rest of the NEM.³⁰ This happened after the Queensland – New South Wales interconnector tripped, which caused power system frequency to drop in South Australia and changes in the power flow of the South Australia – Victoria interconnector. AEMO indicated in this report that it is still investigating the event. It has requested data from market participants to review how they responded to this event and will publish a report when its detailed investigation is finished. At the time of this Report, AEMO had not published its report.

The battery has increased FCAS supply and market competition

AEMO has provided some insights into the battery's participation in FCAS markets. This includes that during the first quarter of 2018 the battery was enabled³¹ to provide regulation and contingency FCAS for 71% and 99% of the time respectively.³²

AEMO reported that FCAS prices decreased by \$32.7 million (57%) in the first quarter of 2018 compared to the previous quarter.³³ It noted that the battery contributed to the

²⁸ Initial Operation of the Hornsdale Power Reserve Battery Energy Storage System, April 2018, Australian Energy Market Operator, viewed 15 October 2018, <https://www.aemo.com.au>.

²⁹ Thermal (coal and gas) and hydro (water) driven power turbines are examples of synchronous generators which are directly connected to the power system and rotate in synchronism with grid frequency. Batteries do not have moving parts rotating in synchronism with the grid frequency but instead are interfaced to the power system via power electronic converters which electronically replicate grid frequency.

³⁰ 'Preliminary Report – Queensland and South Australia system separation on 25 August 2018', Australian Energy Market Operator, viewed 15 October 2018, <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Market-notice-and-events/Power-System-Operating-Incident-Reports>.

³¹ To provide FCAS, generators have some of their capacity 'enabled' in the FCAS market. This means that part of a generator's capacity is set aside to be available to respond to frequency changes when they occur.

³² Quarterly Energy Dynamics, Q1 2018, Australian Energy Market Operator, viewed 15 October 2018, <https://www.aemo.com.au>.

³³ Quarterly Energy Dynamics, Q1 2018, Australian Energy Market Operator, viewed 15 October 2018, <https://www.aemo.com.au>.

reduced prices. Reasons for the lower FCAS prices included:

- an increase in supply from new technologies, including the 100 MW battery
- new technologies capturing a larger share of FCAS markets and replacing higher-priced supply from existing technologies
- increased competition from two new FCAS providers (including HPR) coincided with reduced prices offered by some existing providers of these services.

The impact of the battery during specific instances when AEMO needed to procure FCAS from South Australian providers

Until recently, AEMO procured 35 MW of regulation FCAS from South Australian providers to keep the power system secure for times when it considered it was possible that the State could be separated from the rest of the NEM. During these periods, FCAS prices have historically been very high due to the limited number of providers of these services in South Australia. These higher costs could potentially be passed on to end consumers.

The local procurement of regulation FCAS was required on 14 September 2017 before the battery was commissioned. A similar need occurred on 14 January 2018 after it was commissioned and started to supply FCAS in the NEM.

During the 14 January 2018 event, the battery provided 12 MW of regulation FCAS which replaced supply previously provided by other existing South Australian FCAS suppliers.

This additional supply of cheaper-priced regulation FCAS saw a 97% reduction in average regulation FCAS prices from about \$9000/MWh to \$248/MWh. AEMO estimated the additional supply reduced FCAS costs by about \$3.5 million over a five-hour period.³⁴

Reduced electricity prices was not one of the SA Government's objectives for procuring the 100 MW battery storage. While we note there is potential for consumers to benefit from these reduced FCAS market costs if savings are passed on to them by market participants, we have not undertaken work to verify or confirm if this has occurred.

In October 2018 AEMO determined from its analysis that with the battery in service and South Australian system strength requirements³⁵ in place, it would no longer need to procure the 35 MW.³⁶

³⁴ Hornsdale Wind Farm 2 FCAS Trial, Knowledge Sharing Paper, July 2018, Australian Energy Market Operator.

³⁵ System strength is defined by AEMO as a measure of the power system's stability under all possible operating conditions. AEMO determines the combination of large synchronous machines (ie hydro, gas and coal generation) that must remain online for the SA system to maintain sufficient system strength.

³⁶ AEMO Electricity Market Notice 64716, 5 October 2018, <https://www.aemo.com.au>.

5 Developing the Energy Plan and selecting 100 MW battery storage

What we found

We could not form an opinion on whether applying public funds to procure 100 MW battery storage was subject to appropriate analysis by the SA Government and whether the requirement to evaluate initiatives in line with Treasurer's Instruction 17 was fulfilled. This is because we did not have access to the Cabinet documents evidencing this.

Cabinet had significant involvement in developing the Energy Plan and selecting 100 MW battery storage as a specific initiative. Under government policy, investigative agencies, including the Auditor-General's Department, do not have access to Cabinet documents.

Our ability to provide assurance to the Parliament is limited in circumstances where Cabinet is involved in developing initiatives and we do not have access to documents that demonstrate the need for the initiative and the analysis of the options available to fulfil that identified need.

What we recommended

We recommend that the SA Government, together with government agencies, consider how they can demonstrate that they have fulfilled obligations required by the Treasurer's Instructions to:

- identify and evaluate options
- prepare cost-benefit analysis
- evaluate risks for proposed initiatives

where Cabinet has extensive involvement in planning an initiative.

At the time of this Report the SA Government was reviewing the existing policy restricting access to Cabinet documents by investigative agencies.

5.1 Introduction

As discussed in section 2, the Energy Plan was the former SA Government's response to a number of significant power outages that occurred between September 2016 and February 2017.

We were advised by DEM staff and the former Chief Executive DPC that Cabinet was extensively involved in developing the Energy Plan, meeting frequently between 9 February 2017 and 14 March 2017, when the Energy Plan was released.

5.1.1 Access to Cabinet documents

In 2016 the former SA Government approved a policy stating that information on its decision-making would not be provided to investigative agencies, including the Auditor-General's Department. This includes Cabinet submissions and notes, comments and advice provided in Cabinet documents.

Under an arrangement with the former SA Government, we were given access to Cabinet decision sets that are necessary evidence of approvals and conditions for transactions. This practice has continued since the change of government in March 2018.³⁷

5.2 Audit approach

In forming an opinion on whether the controls over the procurement of battery storage services were sufficient to provide reasonable assurance that the transaction was conducted properly, we assessed:

- whether the process applied in developing the Energy Plan was reasonable, as this led to a range of procurement decisions, including the decision to procure 100 MW battery storage
- the analysis and rationale for the decision to procure large-scale battery storage as a specific initiative.

We discussed the formation of the Energy Plan and selection of 100 MW battery storage with DEM staff (formerly DPC staff) and requested documentation to support the information provided to us about the planning process.

However, as discussed in section 5.1.1, our access to Cabinet documents was limited to Cabinet decision sets. We did not have access to Cabinet submissions and notes, comments and advice provided in Cabinet documents.

5.2.1 Treasurer's Instruction 17 'Evaluation of and approvals to proceed with public sector initiatives' (TI 17)

TI 17 requires the chief executive of each public authority to ensure that public sector initiatives are evaluated. Evaluation must be in line with the evaluation framework detailed in the 'Guidelines for the Evaluation of Public Sector Initiatives' (the Evaluation Guidelines) issued by the Department of Treasury and Finance (DTF). Full compliance with these guidelines was required where an initiative had an estimated cost equal to or more than \$11 million.³⁸

A public sector initiative is defined in TI 17 to include:

³⁷ Report of the Auditor-General, Report 5 of 2018 'Annual Report for the year ended 30 June 2018, Part A: Executive summary', page 7.

³⁸ This threshold increased to \$15 million on 1 May 2017.

...any proposals involving a cost in order to derive a benefit consistent with some specified Government objective. The term public sector initiative would, for example, include a capital project, an information technology systems project, a change in pricing policy, change in service delivery models or an initiative requiring an environmental impact assessment.

The Evaluation Guidelines support the application of a comprehensive and robust evaluation process by requiring government agencies to analyse options and substantiate the decision to invest public money. The analysis and substantiation of preferred options must be documented in an investment proposal and business case.

In forming our opinion on the procurement of 100 MW battery storage, we sought to assess whether the decision to invest public money was subject to robust analysis of options and substantiation of the preferred initiative required by TI 17. As battery storage was an initiative identified through the Energy Plan, we needed to consider the development of the Energy Plan and selection of 100 MW battery storage as a specific initiative.

5.3 Findings

5.3.1 We could not conclude on some areas of the review because of limitations on access to Cabinet documents

Audit comment

The absence of available documented evidence for us to review has prevented us assessing and forming an opinion on the reasonableness of the process to develop the Energy Plan and select 100 MW battery storage as a specific initiative.

We recognise the Cabinet confidentiality convention, which is a long-established principle that aims to protect the deliberations and decisions of Cabinet.³⁹

While we respectfully observe the government policy restricting our access to Cabinet documents, the practical outcome of direct Cabinet involvement in establishing the Energy Plan is that we cannot form an opinion on:

- whether applying public funds towards 100 MW battery storage as a specific initiative was subject to robust analysis, including proper identification of the costs, benefits and risks associated with this option
- whether TI 17 has been complied with.

³⁹ The practice of classifying Cabinet information in confidence comes from the Westminster system in the United Kingdom and does not stem from any legislation. It allows Cabinet Ministers to freely debate policies and agency proposals as part of government decision-making. West Australian Office of the Auditor-General, Report 18 Opinions on Ministerial Notifications, 11 August 2016, Appendix 1: Cabinet Confidentiality.

It is a matter for the SA Government and government agencies to consider how they can demonstrate, for future initiatives where Cabinet has extensive involvement, that they have fulfilled obligations established by the Treasurer's Instructions.

At the time of this Report the SA Government was reviewing the existing policy restricting access to Cabinet documents by investigative agencies.

Finding

At the time the Energy Plan was developed, DPC was the agency responsible for energy policy, technical regulation and monitoring. DPC staff helped to develop the Energy Plan by providing information on options to Cabinet.

We were advised by DEM staff (formerly DPC staff) that a thorough process was followed to establish the Energy Plan. It included:

- identifying the issues affecting the electricity market in South Australia
- detailed consideration of many potential options to address the issues identified in the electricity market and network
- input from consultants and various agencies in the electricity sector (such as the Clean Energy Finance Corporation and the Australian Energy Market Operator)
- cost and benefit analysis
- risk assessments.

We were also advised that Cabinet analysed options and selected the initiatives to be included in the Energy Plan.

We requested documents that evidenced the process described to us, which are also required to be prepared by SA Government agencies by TI 17.

We also requested documentation from DTF to support the development of the estimated \$550 million cost to deliver the Energy Plan and any analysis to support the reasonableness of the cost estimates. We were advised that, in line with government policy, the documentation requested could not be provided as it formed part of Cabinet deliberations in developing the Energy Plan.

We were provided with Cabinet decision sets for the Energy Plan and procurement of 100 MW battery storage in line with protocols established by the former SA Government. These decision sets provide necessary evidence of approval by Cabinet for the Energy Plan and the procurement of 100 MW battery storage. However, they do not provide any evidence of the analysis and evaluation of options considered under the plan.

We wrote to the Chief Executive DPC to request that an exception provided in the policy on investigative agencies' access to Cabinet documents be applied:

In the event that an investigative agency seeks access to Cabinet documents, such a request may be considered by Cabinet as to whether it considers an exception to the policy is warranted depending upon the circumstances of any particular investigation undertaken by the investigative agency.

As the Energy Plan was established under the former SA Government, in September 2018 we asked DPC to relate with the Leader of the Opposition about our request to access the relevant Cabinet documents.

At the time of this Report we had not received a response to our request.

Australian Auditing Standards require that an auditor must obtain sufficient appropriate audit evidence to provide a basis for an audit conclusion. If an auditor is unable to obtain sufficient appropriate evidence, conclusion scope limitation exists and they should express a qualified conclusion or disclaim a conclusion.

A scope limitation for a review limits the assurance we can provide to the Parliament for a particular project, program or service delivered by the Government.

DEM response

DEM responded that it is constrained by Cabinet conventions. The policy development of the Energy Plan was undertaken by Cabinet with the support of the former Department of State Development⁴⁰ before the implementation team was established.

DEM also stated that it understands the requirement to demonstrate compliance with Treasurer's Instructions separately to documentation that is prepared for Cabinet.

⁴⁰ The Resources and Energy Group formed part of the Department of State Development until 31 March 2017 when, due to machinery of government changes, it became part of DPC.

6 Governance and budget established to implement the Energy Plan

What we found

Key governance documents were not prepared or suitably authorised until after Energy Plan implementation commenced. This was a result of the Energy Plan Implementation Taskforce having to take quick action to meet the SA Government's time frames for delivering aspects of the Energy Plan by 1 December 2017. In particular, we found that:

- the South Australian Energy Plan Program Governance Arrangements, which documented the roles of key staff and established the overall implementation framework, were not documented until three months after work on implementing the Energy Plan started
- terms of reference for the oversight committee (EPIC) and the leadership team (EPLT), were not approved until July 2017. Implementation of the various deliverables in the Energy Plan were well underway by this time and meeting records showed that EPIC met four times before its terms of reference were authorised.

We also found that the stated \$550 million cost of the Energy Plan did not include whole-of-life costs for the 100 MW battery or the gas-fired generators. It only represented the cost of delivering the Energy Plan for the five-year period presented in the 2017-18 State Budget.

What we recommended

For future projects, the governance arrangements should be documented and appropriately authorised at the start of the project. The governance arrangements and terms of reference for committees are important for setting expectations, assigning responsibilities to key personnel and making individuals and groups accountable for delivering expected outcomes.

To increase transparency and accountability for future initiatives, DEM should ensure that all whole-of-life costs associated with delivering a program/project are reported at the time initiatives are announced, in addition to the estimated costs/commitments included in the State Budget.

6.1 Introduction

The Energy Plan Implementation Taskforce was established within DPC to implement the Energy Plan (it moved to DEM on 1 July 2018). This included procuring 100 MW battery storage.

DPC also established a governance framework to ensure that the Energy Plan objectives could be delivered while meeting four basic elements of governance: accountability, participation, predictability and transparency.

6.1.1 Governance arrangements

The governance arrangements documented by DPC included:

- the governance principles to apply in delivering the initiatives in the Energy Plan
- establishing two committees to provide support and oversight
- the responsibilities for key roles in delivering the Energy Plan.

Energy Plan implementation committees

The two committees established and their roles were:

- Energy Plan Implementation Committee (EPIC) – to support project review and validation, endorse recommendations for Cabinet and ensure that the Energy Plan Program has the required resources from across the SA public sector. EPIC comprised a number of chief executives from government agencies, a representative from the Crown Solicitor’s Office and the Executive Director, Energy Plan Implementation Taskforce.
- Energy Projects Leadership Team (EPLT) – to help deliver the project objectives within specified quality, time frames and budget, report weekly to the project lead and assess, manage and monitor risks. EPLT membership included project sponsors, project managers, the Chief Procurement Officer, the Executive Director, Energy Plan Implementation Taskforce, the Health, Safety and Environment Manager and the Project Controls Manager.

Terms of reference were established for both committees outlining their purpose, membership and reporting requirements.

6.1.2 The cost to deliver the Energy Plan was disclosed as \$550 million

The initial estimated cost for delivering the Energy Plan was \$550 million. The Energy Plan (released publicly in March 2017) detailed that a \$150 million Renewable Technology Fund would be established and \$24 million provided for South Australian gas incentives through the Plan for Accelerating Exploration (PACE) grants. At that time no further details were provided in the Energy Plan on how the rest of the \$550 million would be allocated to the other initiatives in the plan.

The estimated costs of delivering the Energy Plan were included in the 2017-18 State Budget, released in June 2017.

Figure 6.1: Breakdown of Energy Plan costs included in the 2017-18 State Budget

	2016-17 \$'million	2017-18 \$'million	2018-19 \$'million	2019-20 \$'million	2020-21 \$'million	Total \$'million
Operating						
Communication strategy	672	2 328	-	-	-	3 000
Implementation team	2 727	11 494	1 860	-	-	16 081
Long-term standby emergency generation capacity	-	-	2 975	8 322	9 122	20 419
Renewable Technology Fund, including 100 MW battery storage	-	18 750	18 750	18 750	18 750	75 000
PACE grants	-	24 000	-	-	-	24 000
Short-term emergency generation capacity	1 400	88 336	21 764	-	-	111 500
Investing						
Long-term standby emergency generation capacity	-	16 688	267 212	16 100	-	300 000
Total expenditure	4 799	161 596	312 561	43 172	27 872	550 000

Source: Budget information provided by DTF.

6.2 Audit approach

In determining whether the controls over procuring 100 MW battery storage were sufficient, we considered the governance framework established to implement the initiatives in the Energy Plan.

DEM provided us with information and documentation to demonstrate the governance framework established.

We also considered whether the Energy Plan implementation budget of \$550 million captured all costs of delivering the identified initiatives.

As the initial costings were established as part of the Energy Plan and were recorded in Cabinet documents, we did not have access to them (refer to section 5.1.1). To understand how the \$550 million was allocated to the initiatives in the Energy Plan, we reviewed information that was used by DTF to develop the 2017-18 State Budget (released after the Energy Plan in June 2017) and the mid-year budget review released in December 2017.

We reviewed financial information used by DEM to monitor actual implementation costs for the Energy Plan.

We also considered a report on the procurement of diesel generators issued by a Special Investigator appointed by the current SA Government.⁴¹ It provided commentary on the expected cost of the gas-diesel hybrid generators.

⁴¹ M.C. Livesey QC 2018, 'Report to the Honourable Vickie Chapman MP, Attorney-General for the State of South Australia into the Procurement of Diesel Generators', Bar Chambers, 30 August.

6.3 Findings

6.3.1 Governance arrangements were not documented or appropriately authorised at the start of project delivery

Recommendation

For future projects, the governance arrangements should be documented and appropriately authorised at the start of the project because they are important for setting expectations, assigning responsibilities to key personnel and making individuals and groups accountable for delivering expected outcomes.

Finding

The Executive Director, Energy Plan Implementation Taskforce advised us that the SA Government's imperative to implement the Energy Plan deliverables by the start of the 2017-18 summer season required the Energy Plan Implementation Taskforce to move quickly to establish the necessary processes. While the governance structures were established as a priority to allow procurement processes to start, the documentation of them was prepared as soon as it was practicably possible.

The Governance Arrangements

The South Australian Energy Plan Program Governance Arrangements are dated 21 June 2017. Implementation of the Energy Plan started in March 2017. By the time the Governance Arrangements were documented, EPIC had met three times and procuring 100 MW battery storage was well advanced.

We also found the Governance Arrangements document was not signed to evidence it was authorised. We were advised that the Governance Arrangements document was prepared by the Executive Director and Program Director of the Energy Plan Implementation Taskforce. The responsibilities of both officers are defined in the Governance Arrangements.

As the Governance Arrangements establish key principles and structures and assign responsibilities to key personnel, we expected to see approval by the Chief Executive DPC, as the most senior level executive responsible for implementing the Energy Plan.

EPIC and EPLT terms of reference

The EPIC and EPLT terms of reference were approved by the Executive Director and Program Director of the Energy Plan Implementation Taskforce in July 2017. EPIC had met at least four times before its terms of reference were approved. EPLT did not maintain meeting minutes and therefore we could not review the operations of this group.

EPIC's terms of reference do not cover the following matters that are typically addressed in a terms of reference document:

- the requirement to maintain meeting minutes (although minutes were maintained)
- how changes can be made to the terms of reference
- what constitutes a quorum for decision-making purposes

- who should act as Chair in the absence of the nominated Chair
- conventions for how decisions are to be made (for example consensus required, or the Chair having the final decision).

DEM response

DEM advised that governance arrangements were put in place within three months of starting to implement the Energy Plan. This was reasonable, considering:

- the scale of the work underway
- the establishment of a new team
- the requirement for a number of projects to be delivered before the 2017-18 summer
- once the majority of the team were engaged, the governance arrangements were finalised.

6.3.2 The full cost of delivering initiatives in the Energy Plan was not reported

Recommendation

To provide increased transparency and accountability for future initiatives, all whole-of-life costs associated with delivering a program should be reported at the time the initiative is announced, in addition to the estimated costs/commitments included in the State Budget.

Finding

The \$550 million budget provided in the 2017-18 State Budget captures Energy Plan implementation costs up to 2020-21. It does not include the full life-cycle costs of delivering the Energy Plan initiatives.

We observe from analysis of the 2017-18 budget figures that:

- only four years of payments (totalling \$15 million) for the 100 MW battery storage were included in the overall Energy Plan budget of \$550 million. These four years of payments are recognised in the Renewable Technology Fund's grants of \$75 million. The contract for 100 MW battery storage services is for 10 years. The remaining six years of contract payments, which are about \$27 million, are not included in the \$550 million budget because they fall outside the estimate years in the 2017-18 State Budget
- there was uncertainty as to whether the long-term gas generators could be delivered within the \$300 million budget established for long-term standby emergency generation. This uncertainty was recorded at the time approval was sought to release an expression of interest to the market to relocate, operate and maintain the long-term emergency stand-by generators. The uncertainty was over relocation and operating costs which were estimated to be in the range of \$70 million to \$110 million. DEM advised that subsequent analysis performed by the Energy Plan Implementation Taskforce determined that the estimated costs would most likely be in the range of \$70 million to \$80 million, which mitigated some of the risk of exceeding the \$300 million budget

- the \$550 million budget did not include the estimated whole-of-life costs for delivering the gas turbine generators (ie long-term emergency generation capacity). Again, this was because the expected cost falls outside the four-year time frame covered by the State Budget. The Special Investigator identified that the likely overall cost for the generators would be \$610 million, comprising at least \$494.5 million to procure, relocate, operate and maintain them, and initial lease costs for the first 13 months of around \$115 million.⁴²

We were advised that after the March 2018 election, the Energy Plan was superseded by the new SA Government's energy strategy and is no longer recognised as a specific ongoing program. As mentioned in section 2.1.5, the SA Government announced in October 2018 that it will undertake a tender process to lease the generators to a commercial operator for 25 years.

The Energy Plan included significant initiatives that envisaged longer term arrangements and financial commitments extending beyond the four estimate years in the 2017-18 State Budget. Reporting on Energy Plan implementation by DPC⁴³ was based on the budget amount of \$550 million included in the State Budget and disclosed in the Energy Plan, not on the full estimated project cost required to deliver all of the Energy Plan initiatives.

DEM response

DEM provided a different view on our finding. It responded that the \$550 million budget was for implementation and capital expenditure (that is, the cost of procuring the generators), and that the long-term operational budgets for the generators and the battery were allocated within operational budgets as part of normal government processes. It also advised that it is not normal practice to roll up capital expenditure and ongoing operational costs and add them all together for a total project cost. Cabinet, DTF and DPC were all aware of the costs and the Energy Implementation Unit continues to closely monitor and report on them each month.

Audit comment

We acknowledge DEM's point of view. However, we consider that to improve transparency and accountability it would have been prudent for DEM to report the expected full costs (including ongoing costs) of delivering the initiatives in the Energy Plan when it was established.

⁴² M.C. Livesey QC 2018, 'Report to the Honourable Vickie Chapman MP, Attorney-General for the State of South Australia into the Procurement of Diesel Generators', Bar Chambers, 30 August, page 8.

⁴³ The Energy Plan Implementation Taskforce was part of DPC until it moved to DEM on 1 July 2018.

7 Procurement

What we found

We identified a number of shortcomings in the acquisition planning process and market approach for the battery procurement. These included:

- DPC and the State Procurement Board (SPB) could not provide us with any documented analysis outlining the factors that created an urgent need to approach the market and not comply with aspects of the SPB guidelines
- DPC did not document its rationale and analysis to demonstrate that the market approach complied with its free trade agreement obligations
- procurement risks were not formally identified, evaluated and managed until after tender evaluation had started
- DPC did not document how an SPB recommendation to consider including a senior procurement representative on the evaluation team was considered and assessed
- the EOI market document and acquisition plan did not include details required by SPB guidelines.

Probity management arrangements to oversee the procurement were not properly established and evidenced. Key issues included:

- the probity advisor was engaged after the procurement process started
- DPC's agreement with the probity advisor did not clearly define and document sufficient details about the nature and extent of services to be provided, key deliverables and reporting requirements
- a probity plan was approved and provided to officers involved in the procurement after tender evaluation started
- actions taken to manage a potential conflict of interest were not clearly documented and conflict of interest declarations for two officers involved in the procurement process could not be located
- a record of all contact and interactions with proponents during the EOI stage was not maintained.

We also found that a number of procurement documents could not be located and that there was a need to improve record management processes.

What we recommended

For future procurements, to address the shortcomings related to the acquisition planning process and market approach we recommended that:

- where a need is identified within government to depart from SPB policy requirements, the rationale and analysis that explains and supports the departure is documented and provided to decision-makers for their approval

- the rationale and analysis to substantiate the reason for departing from free trade agreement obligations is documented timely
- processes to identify, evaluate and manage risks are established at the start of the procurement process
- the rationale for not implementing recommendations suggested by the SPB for consideration is clearly documented
- market documents are prepared in line with SPB guidelines.

To ensure probity management arrangements for future procurements are properly established and evidenced, we recommended that:

- where probity advisors are used, they are engaged before the procurement process starts
- details of probity assurance services to be provided, key deliverables and reporting requirements are documented and agreed before the probity advisor start their engagement
- frameworks (eg probity plans) used to manage the probity of large and complex procurements are developed, approved and communicated to relevant officers at the start of the procurement process
- the actions taken to assess and manage identified actual, perceived or potential conflicts of interest are appropriately documented
- a complete record of all contact and interactions with proponents is maintained
- communication protocols are established, followed and clearly communicated to proponents for all stages of the procurement process.

To improve records management processes, we recommended using a single record management file and ensure that a complete record of all documents that support key procurement processes and outcomes is retained and readily available for review.

7.1 Introduction

A multi-stage competitive process was used by DPC for the procurement, which included:

- the release of an expression of interest (EOI) to determine interest from potential proponents and understand what solutions could be offered by the market to meet the SA Government's time frames for delivery
- an invitation to supply (ITS) issued to proponents shortlisted from the EOI process requiring a response to a more detailed set of requirements.

For more details about each stage of the procurement process, including the evaluation criteria established and used by the evaluation team, see section 2.3.

The procurement was substantially managed by a project team from the Energy Plan Implementation Taskforce (now part of DEM). The project team received support from DPC's Strategic Procurement Unit (now part of DTF). We were advised by the Strategic Procurement Unit that its involvement started after the project team had developed and released the EOI market document.

DPC engaged a consultancy firm to provide probity advice to support the procurement due to its complexity and value. A probity advisor is typically engaged to provide independent advice to management on processes and works actively with the evaluation panel to ensure probity issues are considered and actioned during the procurement process.

A chronology that includes events for the procurement is provided in Appendix 1.

7.2 Audit approach

We reviewed the procurement process to assess whether it met appropriate standards of probity, fairness, accountability and transparency.

We considered whether the procurement process followed the SPB policy framework, DPC policies and procedures and best practice procurement principles.

7.3 Findings

7.3.1 No documented rationale and analysis to support a departure from the State Procurement Board's policy framework

Recommendation

Where a need is identified within government to depart from SPB policy requirements, the rationale and analysis that explains and supports the departure should be documented and provided to decision-makers for their approval.

Finding

On 8 March 2017 the SPB approved DPC approaching the market for goods and/or services related to creating greater certainty in South Australia's electricity supply, before establishing an acquisition plan as normally required under the SPB policy framework.

Under section 12(1)(d) of the *State Procurement Act 2004*, the SPB directed that DPC may carry out an alternative procurement process, whereby required planning documentation could be developed concurrently with the market approach. In providing this direction the SPB requested that DPC complete the rest of the process in line with the SPB policy framework.

The SPB considered in giving its direction that a departure from usual procurement practices was required to safeguard the State's energy security requirements. It relied on a detailed verbal briefing that risks resulting from the following factors gave rise to an extreme urgency:

- insufficient capacity through or failure of the interconnector
- low wind generation
- issues that may arise at existing generation plants.

DPC released the battery storage EOI document to the market on 16 March 2017, before it developed the acquisition plan. The acquisition plan was endorsed by the then Chief Executive DPC on 5 April 2017 and subsequently approved by the SPB on 10 April 2017.

DPC and the SPB could not provide us with any documented analysis that outlined the factors that created an urgent need to approach the market and not comply with aspects of the SPB guidelines.

SPB policies and guidelines are based on sound procurement principles. When followed, they help procuring entities to achieve key procurement outcomes, including:

- obtaining value in the expenditure of public money
- providing ethical and fair treatment of participants
- ensuring probity, accountability and transparency in procurement operations.

Where a procuring entity plans to depart from the SPB policy framework or its own established processes, it is sound practice to document the rationale. This helps to demonstrate that proposed departures are supported by appropriate evidence based analysis. It also enables decision-makers, when providing their approval, to consider the evidence and the impact on achieving planned procurement outcomes and objectives.

Key departures from established procedures and the impact on the process included that the acquisition and probity plans were not developed timely and procurement risks were not formally identified and assessed until after the EOI evaluation process started. Further, changes to the EOI evaluation plan recommended by SPB support staff from their review of the acquisition plan could not be made by DPC as the evaluation of proposals had started.

We also wrote to the SPB on this matter, recommending that the analysis that explains and supports the need to depart from SPB policy requirements be documented and provided to the SPB as part of the approval process. In my view, if the SPB is not provided with this documented analysis there is a risk that it may not have all the information required to assess the need for an alternative procurement process.

In response to this recommendation the SPB:

- agreed that it is sound practice to appropriately document the rationale for any procurement process to ensure informed, transparent decision-making, and support the achievement of planned procurement outcomes and objectives
- advised that it will update the SPB handbook for members and code of conduct to reflect that the SPB can only consider procurement proposals submitted in writing by the relevant government agency.

The SPB Presiding Member also advised that in considering this matter, she sought advice from the Crown Solicitor's Office and was satisfied that the SPB had the statutory power to allow a change to usual procurement practices in the current circumstances. The SPB therefore made its decision based on the verbal briefing and sought subsequent written confirmation of those factors in a letter to DPC. To date DPC has not supplied it to the SPB. The SPB accepts that it should have followed up DPC for the written confirmation earlier, and indicated that it will now do so.

DEM response

DEM noted this finding, also noting that discussions with the SPB occurred before the Energy Plan Implementation Taskforce was established.

7.3.2 Lack of documented rationale and analysis to demonstrate compliance with free trade agreement obligations

Recommendation

The rationale and analysis undertaken to substantiate the reason for departing from free trade agreement (FTA) obligations should be documented timely (and not retrospectively). This should include a risk analysis of the consequences of the departure.

Finding

DPC did not document its rationale and analysis to substantiate that a state of urgency existed to demonstrate that the market approach complied with its FTA obligations.

The SA Government is a party to a number of FTAs which contain specific government procurement commitments.⁴⁴ Some require a minimum period of 30 calendar days between advertising a tender and the closing date.⁴⁵ This period may be reduced if specific conditions exist, including where procuring entities are able to demonstrate that a state of urgency exists and makes this time frame impracticable.

The market approach for the EOI stage of the procurement occurred over a reduced 16-day period. There was also a reduced time period for proponents to respond to the ITS.

One week after the EOI was released DPC requested legal advice on this matter. The acquisition plan referred to the legal advice and mentioned that a risk of pending shortfalls in supply next summer was publicly discussed by key stakeholders. However, it did not demonstrate how DPC confirmed the market approach complied with its FTA obligations. Further, the acquisition plan was prepared and approved after the EOI had closed.

Not undertaking and documenting evidenced based analysis to support the need for a reduced market approach increases the risk of non-compliance with FTA obligations and the procurement process being challenged by proponents.

⁴⁴ The SPB International Obligations Policy sets out the requirements for agencies to comply with these FTAs.

⁴⁵ The SPB Supplier Selection Policy explains that a minimum of 30 days provides suppliers with sufficient time to respond effectively to an invitation to submit an offer and provide higher quality offers.

DEM response

DEM noted this finding, also noting that the rationale was to have the battery storage in place before summer as part of the broader rationale for the Energy Plan.

7.3.3 Procurement risk management plan was prepared after tender evaluation had started

Recommendation

For future procurements, processes to identify, evaluate and manage risks should be established at the start of the procurement process.

Finding

Procurement risks were not formally identified, evaluated and managed during the acquisition planning process.

SPB guidelines require a procurement risk management plan to be prepared and attached to the acquisition plan for procurements high in risk and/or value. While the acquisition plan stated that the risk profile of the procurement was considered high, a procurement risk management plan was not prepared and attached to the acquisition plan.

DEM advised that a risk register for the battery storage project, which included procurement related risks, was created in late-May 2017. This was after EOI submissions had been evaluated and ITS documents issued to shortlisted proponents.

For significant and complex projects, it is particularly important to identify, evaluate and manage key procurement risks early in the procurement process. They can then be continually evaluated and managed to minimise any material consequences and ensure the intended outcomes and objectives of the procurement are achieved.

DEM response

DEM noted this finding and advised that a program-wide risk register was in place and a detailed risk register for the battery storage project was set up after the EOI and before the ITS process.

7.3.4 Acquisition plan did not include details required by the State Procurement Board's acquisition planning template

Recommendation

Acquisition plans prepared for procurements should clearly document and provide sufficient details about the business need that is being addressed, including:

- references to any business case prepared to support the procurement activity
- information about the costs/benefits that have been considered.

Finding

The acquisition plan stated that the requirement for 100 MW grid-connected battery storage was identified as part of developing the Energy Plan. However, no reference was made in the acquisition plan (or the Energy Plan) to any business case that was prepared and no information was provided on the costs/benefits that were considered by the SA Government in selecting the battery storage initiative as part of the Energy Plan.

The SPB has developed an acquisition planning template which requires agencies to document these matters in acquisition plans.

Given the nature and value of the procurement, it was important for DPC to document these details in the acquisition plan to demonstrate to those responsible for approving it (ie the SPB) that they were sufficiently considered and addressed in the acquisition planning process.

DEM response

DEM noted this finding. It advised that the policy development of the Energy Plan was undertaken by Cabinet with the support of the former Department of State Development before the Energy Plan Implementation Taskforce was established.

7.3.5 DPC did not document how a State Procurement Board recommendation was considered and addressed

Recommendation

For future procurements, the rationale for not implementing recommendations suggested by the SPB for consideration should be clearly documented. This will demonstrate how the recommendation has been considered by the agency and should include a risk analysis of the consequences of not implementing the recommendation.

Finding

In approving the acquisition plan the SPB recommended that DPC consider including a senior procurement representative on the evaluation team.

A senior procurement representative was not included on the EOI and ITS evaluation teams. While the Strategic Procurement Unit provided support during the procurement process, DPC did not document how it considered the SPB recommendation and why it determined it was appropriate to not have a senior procurement representative on the evaluation teams.

It was important for DPC to document its basis for not including a senior procurement representative on the evaluation teams given the acquisition plan assessed the procurement as high risk due to its complexity and limited time frames. If matters raised by the SPB are not adequately considered by procuring agencies, it increases the risk of required procurement standards not being met.

DEM response

DEM noted this finding.

7.3.6 Probity advisor engaged after the procurement process started

Recommendation

For future procurements where probity advisors are used, they should be engaged before the procurement process starts.

Finding

DPC engaged a consultancy firm to provide probity advisory services about two weeks after the EOI market document was released. As a result, the probity advisor was not able to:

- conduct a risk assessment, identify possible probity issues that may occur and communicate them to relevant officers before the process started
- review the EOI market document before it was released
- review and assess the probity risks of enquiries received from potential proponents and the SA Government's responses to those enquiries
- provide advice about, or attend, meetings that were held with battery providers while the EOI was open.

Engaging the services of a probity advisor for large and complex procurement projects should happen before the procurement process starts. This ensures that probity risks and issues during the initial stages of the procurement process are promptly identified and assessed, reducing the risk of issues not being appropriately managed.

DEM response

DEM noted this finding, advising that probity advice was obtained from the Strategic Procurement Unit before the external probity advisor was engaged. The probity advisor was engaged before the tender evaluation process started.

7.3.7 Probity assurance arrangements were not clearly defined and documented

Recommendation

The nature and extent of probity assurance services to be provided, key deliverables and reporting requirements should be documented and agreed in detail before the engagement starts.

Finding

DPC's agreement with the probity advisor did not provide sufficient details about the nature and extent of services provided, the key deliverables and reporting requirements.

The agreement only contained a single deliverable, being the provision of ‘ad hoc probity advice’ to support the Energy Plan procurements. It did not specify:

- the nature, extent, and scope of reporting responsibilities
- roles for managing conflicts of interest
- roles for reviewing or responding to any enquiries made by proponents
- services included in evaluating compliance with the acquisition plan, evaluation plans and requirements of procurement policy frameworks
- roles for reviewing post-evaluation negotiations with preferred proponents.

We note that the New South Wales Government⁴⁶ and Commonwealth Government⁴⁷ have procurement guidelines which require agencies to clearly document the scope of a probity advisor’s proposed engagement. This includes the intended role of the probity advisor in the procurement process to ensure that all parties clearly understand the level of assurance to be provided by the advisor.

In my view it is important that this is documented at the start of the engagement. Clearly documenting the nature and extent of probity assurance services makes the probity advisor accountable for the services they are engaged to provide and is particularly significant in situations where the probity of the procurement process is challenged.

Where the scope of probity assurance provided is not clearly understood and agreed by both parties, probity matters may not be identified and properly addressed, resulting in a lack of fairness and reduced transparency for the procurement process.

DEM response

DEM noted this finding.

7.3.8 Probity plan approved after tender evaluation had started

Recommendation

For large and complex procurements, frameworks used to manage the probity of the procurement process (eg probity plans) should be developed, approved and communicated to relevant officers at the start of the procurement process.

Finding

A probity plan for Energy Plan projects was approved on 24 May 2017, more than two months after the procurement process had started. It was approved and provided to officers

⁴⁶ PBD-2013-05 Engagement of probity advisers and probity auditors, NSW Procurement Board, viewed 8 October 2018, <https://arp.nsw.gov.au/pbd-2013-05-engagement-probity-advisers-and-probity-auditors>.

⁴⁷ Procurement Policy and Guidance, Buying for the Australian Government, Accountability & Transparency, Ethics and Probity in Procurement, viewed 28 September 2018, <https://www.finance.gov.au>.

involved in the battery storage procurement process after:

- EOI submissions had been evaluated
- the probity advisor was engaged
- ITS documents were issued to shortlisted proponents.

SPB guidelines highlight the importance of using probity plans for high value and high risk procurements to help ensure that probity issues are considered throughout the procurement process. For a project of this size, value and complexity, DPC should have established a probity plan at the start of the procurement process.

Not establishing a probity plan and providing it to relevant officers when the procurement process starts increases the risk of probity risks and issues not being adequately considered and addressed throughout the procurement process.

DEM response

DEM noted this finding and advised that existing DPC governance processes were followed until a specific probity plan was established.

7.3.9 Actions taken to manage a potential conflict of interest were not clearly documented

Recommendation

The actions taken to assess and manage identified actual, perceived or potential conflicts of interest should be appropriately documented.

Finding

DPC engaged an engineering and infrastructure advisory firm to provide technical specialist advice during the procurement process. The advisory firm had a key role in the procurement process which included:

- completing a technical review of the proposals submitted by the 17 EOI proponents initially shortlisted by the evaluation team. The report that documented the outcome of their review was given to the evaluation team to consider. This resulted in the evaluation team revising their preliminary scores for a number of proponents
- developing the functional specifications issued to proponents at the ITS stage
- evaluating proposals at the ITS stage. The advisory firm was responsible for evaluating proponents' capability and whether they met the project's technical requirements.

The advisory firm disclosed to DPC that it was engaged by one of the proponents to support its EOI submission. This proponent included a report prepared by the advisory firm in its EOI submission. In it the advisory firm concluded that it considered the proponent was well positioned to deliver the project in the required time frames and recommended that it proceed with submitting an EOI.

About two weeks after making the initial disclosure the advisory firm informed DPC that:

- their engagement with the proponent was only to help them submit their EOI and they were not currently engaged with the proponent beyond that scope
- the firm was not engaged by DPC until after the EOI closed and their work for the proponent was completed
- given the immaturity of the battery sector and the small pool of technical providers with capability, in their view there were very few organisations who would not have been in a similar position.

DPC provided the information from the advisory firm to the probity advisor to confirm that the arrangements were appropriate. In response the probity advisor stated the arrangements were fine, however the advisory firm (not just the individuals) was not to provide related services to any of the proponents during the time it provided support to DPC on the procurement.

While DPC obtained the views of the probity advisor we found that it did not undertake its own analysis of why it was considered appropriate for the firm to be involved in the procurement process. We found that the assessment of the risks involved and how the conflict was to be managed on an ongoing basis was not documented.

Further, we found that no actions were taken to verify the representations made by the advisory firm. Also, the extent, nature of work and evidence obtained by the probity advisor to determine the arrangements were satisfactory was not documented.

It is sound practice for agencies to document how actual, perceived or potential conflicts of interest that are identified have been assessed and managed during the procurement to support the fairness, transparency and equity of the procurement process.^{48 49}

Where actions taken to address potential conflicts of interest are not properly documented, decisions made during tender evaluation and the outcomes of the procurement process may be perceived by proponents and other external parties as being unfairly affected or influenced. This may result in the agency managing the procurement not being able to demonstrate that probity standards have been met.

DEM response

DEM noted this finding. It advised that actions were taken to manage potential conflicts of interest, but accepted that they were not consistently documented.

⁴⁸ The Victorian Ombudsman's March 2014 report 'Conflict of Interest in the Victorian Public Sector – Ongoing Concerns' states that measures put in place to manage identified conflicts of interest should be documented. This includes matters considered in deciding how to manage a conflict and the justification for decisions made.

⁴⁹ The Managing Conflicts of Interest in the Public Sector Toolkit issued by the NSW Independent Commissioner Against Corruption and Queensland Crime and Misconduct Commission outlines the need to clearly document arrangements for resolving and managing conflicts to enable organisations to demonstrate that conflicts have been appropriately managed.

7.3.10 Two conflict of interest declaration forms could not be located

Recommendation

Conflict of interest declarations should be completed by all officers before they start their role in the procurement process and records of them should be retained.

Finding

A member of the Project Governance Committee, which provided oversight and review of the ITS evaluation process, signed a conflict of interest declaration form a few months after the procurement was completed. DEM advised that this declaration related to another Energy Plan project and that an earlier declaration for the battery storage project was completed but could not be located.

Another conflict of interest declaration form could not be located by DEM for a member of the team assigned to negotiate with the preferred proponent.

Where actual, perceived or potential conflicts of interest are not formally and promptly disclosed, it reduces the ability for any impact on the procurement process to be assessed and for mitigation strategies to be implemented if required.

DEM response

DEM noted this finding.

7.3.11 Process to manage interactions with proponents was not in place during the EOI stage

Recommendation

For future procurements a complete record of all contact and interactions with proponents should be established and maintained.

Finding

A complete record of all contact and interactions with proponents during the procurement process was not maintained.

An enquiries register was used as a mechanism to record and manage interactions between DPC and the proponents. However, only interactions from 8 May 2017 onwards were recorded on this register. This was after EOI submissions had been evaluated and shortlisted proponents provided with initial details about the ITS stage.

To effectively demonstrate the fairness, transparency and equity of the procurement process it is sound practice for agencies to establish and maintain a record of all contact and

interactions with proponents.⁵⁰ Such a register should be in place for the entire procurement process and be made available to probity advisors if they are engaged.

DEM response

DEM noted this finding.

7.3.12 EOI market document released by DPC did not include details required by SPB guidelines

Recommendation

For future procurements market documents should be prepared in line with SPB guidelines. They should contain sufficient details for potential proponents to understand how the market approach will be managed by the procuring entity and outline the conduct expected of proponents during their participation in the procurement process.

Finding

The EOI market document released by DPC did not have many of the details required by SPB guidelines. The document mainly detailed the minimum project and response requirements and did not include:

- the framework for proponents to submit queries and request clarifications
- an indicative timetable of dates for completing evaluations and notifying suppliers
- the name and details of the SA Government's contact person(s)
- instructions for lodging submissions on the SA Tenders and Contracts website
- how the SA Government would consider any late responses received after the closing time
- the conduct required of proponents, including that all communications would be undertaken through the contact person and conflicts of interest are to be declared
- confidentiality requirements for information provided by proponents and the SA Government
- details of applicable SA Government policies.

It is important that market documents contain sufficient details about the procurement process to ensure that all potential proponents are aware of, understand and comply with the rules and guidelines established by the procuring entity.

Not communicating sufficient details about the market approach to potential proponents may reduce the transparency and fairness of the procurement process and increases the risk that the conduct of proponents is not consistent with the SA Government's requirements and expectations.

⁵⁰ The Queensland Government's 'Probity and Integrity in Procurement' guidance document outlines that to maintain the integrity of procurement processes particular attention should be paid to documenting any and all communication with potential suppliers. This includes both written and verbal communications.

DEM response

DEM noted this finding, advising that DPC conducted the procurement in line with SPB policies and guidance and approvals provided by the DPC Accredited Purchasing Unit.

7.3.13 Protocols for communicating with proponents were not always established or followed

Recommendation

Communication protocols should be established, followed and clearly communicated to proponents for all stages of the procurement process.

Finding

The EOI market document did not outline communication protocols. For instance, while details of two contact officers were published on the SA Tenders and Contracts website, the EOI market document did not contain these or explain that all communication must be through these nominated persons. Further, the EOI market document did not outline the processes for requesting and responding to queries and clarifications.

DPC procurement guidelines require all communication with potential proponents to be through contact persons nominated in market documents. The ITS market document informed shortlisted proponents that the only person authorised to provide information was the SA Government's contact person listed in the document. We noted a few instances during the ITS stage where the probity advisor and a DPC officer, who was not listed as the contact person, responded directly to a proponent to address their enquiries.

Where communication protocols are not established or followed the agency responsible for the procurement may not be able to demonstrate that the procurement process met appropriate probity standards (in terms of fairness, transparency and equity).

DEM response

DEM responded that protocols were in place and followed. However, there was one instance where a proponent was communicating with the Premier and the Minister, and DPC then responded directly to the proponent to give clarity and manage risk.

7.3.14 Records and minutes of several meetings with battery providers while the EOI was open could not be located

Recommendation

A record and minutes of all meetings and interactions with potential proponents should be maintained.

Finding

The chair of the EOI and ITS evaluation teams documented a number of probity matters in

an email to an officer from the Strategic Procurement Unit on 6 July 2017. This included that several meetings were held with battery providers while the EOI was open.

DEM and the Strategic Procurement Unit could not locate records and minutes of these meetings. DPC procurement guidelines state that meetings with potential respondents are not encouraged but where they are necessary discussions should be documented.

Not maintaining records of contact and interactions with potential proponents may reduce the fairness, transparency and equity of the procurement process.

DEM response

DEM responded that records and minutes were maintained, however it accepted that various IT and records management system issues have since limited access to relevant documents.

7.3.15 The planned approach for notifying unsuccessful proponents was not documented

Recommendation

During the procurement planning phase the planned approach for notifying unsuccessful proponents should be considered and documented. The circumstances of each procurement and associated risks should be considered in developing the planned approach.

Finding

The acquisition plan and EOI evaluation plan did not document a planned approach for notifying unsuccessful proponents.

All unsuccessful proponents were notified on 7 July 2017, the day after the contract was awarded to the preferred proponent. We noted a proponent raised concerns on 5 June 2017 about the status of the procurement process and that DPC had not provided any advice on the outcome of its EOI submission. DPC subsequently informed the proponent that it had not been shortlisted to proceed to the ITS stage.

In my view it is sound procurement practice for agencies to document, as part of procurement planning, their approach for notifying unsuccessful proponents. This is particularly important where procurements use a multi-stage market approach.

Without a planned approach, the risks associated with advising proponents the outcome(s) of the procurement process may not be identified, assessed and managed, resulting in unsuccessful proponents challenging the integrity of the process.

DEM response

DEM noted this finding.

7.3.16 A number of procurement documents could not be located

Recommendation

Documents that support the outcome of the procurement process should be retained and readily available for review.

Finding

DEM and the Strategic Procurement Unit could not locate documents to evidence that:

- the Project Governance Committee endorsed the ITS Evaluation Plan
- all Project Governance Committee members approved the evaluation team's recommended shortlist of ITS proponents to proceed to the detailed evaluation stage
- notes were maintained for meetings with battery providers while the EOI was open
- a delegate approved the acceptance of immaterial information submitted by a proponent shortly after the ITS closed.

The ITS evaluation report was approved by evaluation team members and endorsed by Project Governance Committee members by email. Members accessed each version of the draft report on a secure online workspace. However, as the online workspace was no longer accessible at the time of our review we could not verify whether the version of the report approved by each member was consistent with details documented in the final report.

DEM response

DEM responded that records and minutes were maintained, however it accepted that various IT and records management system issues have since limited access to relevant documents.

Records management systems and protocols are being revised.

7.3.17 A single record management file was not used to maintain a complete record of key procurement documents

Recommendation

For each procurement a single record management file should be used to maintain a complete record of all documents that support key processes and outcomes.

Finding

Key documents for the procurement process were not maintained in a single record management file. While the Strategic Procurement Unit established a project file to maintain key documents for the procurement process we were advised that not all documents generated by the project team were retained in this project file. The lack of a central records

management system may have contributed to instances where documents we requested either could not be located or were not easily accessible and required an extended period of time to be located.

We also noted instances where the emails of former DPC staff needed to be accessed to attempt to locate documents that were not included in the project file.

It is sound practice to maintain a single record management source that contains a complete record of all documents that support key processes and outcomes of the procurement process. This helps where there are staff movements and to demonstrate that established standards and processes have been followed should procurement activities be subsequently reviewed by external parties.

Where documents that support the outcome of the procurement process cannot be located the agency managing the procurement may not be able to demonstrate that established standards and processes have been met and followed during the procurement.

DEM response

DEM noted this finding.

8 Contract management

What we found

A contract management plan was not established at contract execution.

Contract management arrangements were still being finalised at the time of our review and had not been fully implemented.

Key elements of the arrangements established to manage the contract were not documented.

There was no contract manager with accountability for ensuring the key contractual obligations are being met and a clear understanding and line of sight of all key compliance and contract risks.

Matters discussed in most monthly meetings with HPR were not documented.

What we recommended

We recommended that:

- for future large and complex procurements, a contract management plan be developed before the contract is executed
- DEM finish establishing contract management arrangements as soon as practical
- DEM ensure that the arrangements it has established to manage the contract are documented, including details of the key strategies, activities and tasks required for it to effectively manage the contract
- DEM appoint a contract manager who is accountable for ensuring the key obligations of each party to the contract are met
- DEM ensure that matters discussed in its monthly meetings with HPR, including any agreed action items, are documented.

8.1 Introduction

The SA Government entered into a Project Agreement (contract) with HPR on 6 July 2017. This contract sets out the terms on which HPR will design, construct, commission, test, own, operate and maintain a battery storage facility to provide the State with power system security services over 10 years. For further details of this contract see section 2.4.

At the time of our review a Contract Administrator from the Strategic Procurement Unit (which moved from DPC to DTF on 1 July 2018) was responsible for completing contract management tasks for the HPR contract. Their primary role is to monitor the status of contract deliverables. The Contract Administrator relates with staff from DEM's Energy

Implementation Unit who discuss operational matters with HPR and identify and work through contract compliance matters.

8.2 Audit approach

We assessed whether DEM has established robust contract management arrangements to ensure that it and HPR are meeting key contractual requirements.

In completing this review, we considered the SPB's Contract Management Policy requirements, DPC guidelines and best practice contract management principles.

Section 9 includes findings from our more detailed review of the processes established by the SA Government to ensure the key objectives of the battery storage facility, as defined in the procurement process, have been delivered by HPR.

8.3 Findings

8.3.1 No contract management plan when the contract was executed

Recommendation

For future large and complex procurements, a contract management plan should be developed before the contract is executed.

Finding

We found that a contract management plan was not established at the time the contract with HPR was executed on 6 July 2017.

SPB guidelines require contract management plans to be developed, implemented and monitored for contracts valued at \$4.4 million or above and outline that they are normally developed before the contract is executed.

A contract management plan is an important internal document as it outlines the key strategies, activities and tasks required for managing a contract. This includes assigned roles and responsibilities, timelines, performance management and financial matters.

Not having a contract management plan at contract execution increases the risk of non-compliance with key contract provisions or contractor performance not being adequately monitored. Intended contract outcomes may also not be achieved.

DEM response

DEM noted this finding and advised that a contract management plan was set up as soon as possible.

8.3.2 Contract management arrangements are still being finalised

Recommendation

DEM should work with the Strategic Procurement Unit to finish establishing contract management arrangements as soon as practical. The impact of recent machinery of government changes should be considered in finalising these arrangements.

Finding

Contract management arrangements were still being finalised at the time of our review and had not been fully implemented. We also found that the database used to manage the contract was incomplete. For example, the database did not contain all actions required to ensure compliance with the Operating Protocol.

The arrangements for completing contract management tasks, including the responsibility to action them, were still being agreed between the Contract Administrator and the Energy Implementation Unit.

Officers from DEM and the Strategic Procurement Unit met at the end of June 2018 to discuss existing contract management arrangements. This identified a number of issues that needed to be addressed, including assigning responsibility for ensuring the technical requirements of the battery are being met in line with the contract now that the battery is operational.

Clarity of roles and responsibilities is critical in achieving efficient and effective contract management. For agencies to ensure that contracts are managed effectively responsibilities must be clearly agreed and understood and a mechanism established to document and monitor all tasks and processes needed to manage contract requirements.

DEM response

DEM responded that actions have been completed to address this matter including DEM recently appointing a dedicated contract manager for the HPR contract.

8.3.3 Key elements of the arrangements established to manage the contract were not documented

Recommendation

DEM should ensure the arrangements established to manage the contract are documented including details of the key strategies, activities and tasks required for it to effectively manage the contract. The arrangements should be reviewed periodically over the life of the contract to ensure they remain current and reflect any organisational changes and changes to the Operating Protocol.

Finding

The Strategic Procurement Unit has developed a contract management database and supporting processes, to satisfy the requirements of a contract management plan.

Information recorded in the database for this contract did not include key elements of a robust contract management plan such as details of:

- key individuals and their role in managing the contract
- the governance processes that are in place to monitor contract delivery
- key stakeholders and their information requirements
- key contract risks and how they will be managed
- ongoing monitoring and reporting arrangements for compliance/performance matters.

While the database contained details of the deliverables required under the contract it did not provide an overview of the arrangements established to manage the contract. We also noted that the arrangements were not documented by DEM outside of the database.

Where contract risks and the arrangements established by an agency to manage a contract have not been identified and clearly documented the contract risks may not be managed effectively.

DEM response

DEM noted this finding. It advised that the Energy Implementation Unit used a standard contract management process put in place by the Strategic Procurement Unit, but is now establishing a new process.

8.3.4 Lack of contract manager with single point of accountability

Recommendation

DEM should appoint a contract manager who is accountable for ensuring the key obligations of each party to the contract are met.

Finding

We identified the need for a contract manager to be appointed who is accountable for ensuring key contractual obligations are being met and has a clear understanding and line of sight over all key compliance and contract risks.

An officer from the Strategic Procurement Unit is listed in the contract management database as the contract manager for the HPR contract.

Our discussions with this officer revealed that their role is more closely aligned to a contract administration role. This is because their primary role is limited to monitoring the status of contract deliverables recorded in the database, with the Energy Implementation Unit responsible for relating with HPR about operational issues. The contract manager also

advised that where the Energy Implementation Unit identifies and works through contract compliance matters with HPR, she would not always be made aware of these matters.

It is sound contract management practice to create a single point of accountability by appointing a contract manager who is responsible and accountable for ensuring the key obligations of each party (including performance requirements) are being met and that contract risks have been identified, understood and managed.

Not formally assigning responsibility and accountability for contract management activities to an officer with a clear understanding of the contractual requirements may result in:

- contract risks not being managed effectively
- contractual compliance and performance not being adequately monitored
- contract outcomes not being achieved.

DEM response

DEM responded that standard Strategic Procurement Unit procedures were followed. An officer from DEM has since been appointed as contract manager for the HPR contract.

8.3.5 Contract management meetings were not documented

Recommendation

DEM should ensure that matters discussed in its monthly meetings with HPR, including any agreed action items, are documented. Both parties should confirm the accuracy of these records and evidence this confirmation.

Finding

The contract requires the SA Government and HPR to meet within 15 days of the end of each month to discuss the battery's performance. The purpose of these meetings is for the parties to review past performance and agree and implement any improvements.

While DEM advised that a number of monthly meetings had been held, we found that meeting minutes were only documented for the meeting held on 22 February 2018.

SPB guidelines outline that keeping records during the contract management phase is a crucial aspect of good contract management, in line with the requirements of the *State Records Act 1997*.

Not documenting matters discussed at meetings increases the risk of the parties having different views of what was discussed and agreed.

DEM response

DEM noted this finding.

9 Commissioning and ongoing monitoring of the battery

Commissioning of the battery

What we found

The processes and controls established by the SA Government to commission the battery were reasonable as they delivered the required certificates of performance and reliability provided for in the Project Agreement. The key processes included:

- documenting the governance arrangements for delivering the battery, setting out key roles and responsibilities
- establishing a high level committee to oversee the delivery of the battery
- incorporating the requirement for commissioning, functional, performance and reliability testing in the contractual arrangements
- obtaining performance validation and reliability test certificates from an independent engineer to confirm the battery met the performance and reliability requirements.

Engaging different engineers to provide independent certification and advisory services would have contributed to maintaining independence.

What we recommended

For future projects of this nature, consider using different resources for the engineering advisory services and independent engineering certifying services to:

- generate healthy tension between these engineering roles
- deliver a robust review and an independent assessment of the procurement and delivery processes.

Ongoing monitoring arrangements for the battery

What we found

There were delays in implementing the necessary processes and controls to ensure the battery is performing and operating in line with the SA Government's key objectives. Specifically, we found the following issues.

Reporting established by DEM to monitor the battery does not provide sufficient or reliable information to assess:

- compliance with contractual performance requirements
- whether the battery is performing and being operated in a manner that is consistent with the SA Government's key objectives.

Audits on the operation and performance of the battery have not been implemented to test the accuracy of the reports provided by HPR and ensure compliance with contractual requirements.

A process for carrying out proposed biannual audits on the operation of the battery has not been developed.

The availability, storage and access to high resolution battery performance data and real time data has not been tested.

A governance framework covering key aspects of monitoring the ongoing operation and performance of the battery was not in place.

There were delays in formally establishing the Operating Committee. Notably:

- the Operating Committee had not met
- the role, composition and decision-making authority of the committee were unclear and not consistent with other key documents.

A risk management plan for the operating phase of the battery has not been developed.

The SA Government has not implemented a formal process for rectifying compliance issues.

The first scheduled review of the Operating Protocol required under the Project Agreement had not been undertaken and processes for undertaking future annual reviews had not been developed.

HPR had not provided the SA Government with a maintenance schedule as required by the Project Agreement.

A resource plan for the SA Government's oversight role in the ongoing operation of the battery had not been developed.

A formal protocol for using specialist advisors to assist the SA Government in exercising its responsibilities and interests for the battery had not been developed.

What we recommended

We recommended that DEM:

- develop and document a governance framework for the operating phase of the battery
- formally establish the Operating Committee, finalise the draft terms of reference and address the inconsistencies between governance arrangements and the Project Agreement

- develop and implement a Risk Management Plan for the operating phase of the battery
- review the structure, required information and presentation format for the reports provided by HPR to enable the SA Government to effectively assess how the battery is performing and being operated
- develop and document a process for carrying out biannual performance audits and undertake performance audits as soon as practical
- confirm with HPR that it is storing data suitable for audit and investigation purposes
- review and update processes for escalating and rectifying compliance issues
- request a copy of the maintenance schedule from HPR and implement a timely review of the schedule in line with contractual arrangements
- develop a resource plan for the operating phase of the battery, including a gap analysis to confirm required resources
- develop a protocol setting out how and when specialist advice should be sought
- develop and document a process for required annual reviews.

9.1 Introduction

Our review included assessing the processes established by the SA Government to ensure the key objectives of the battery storage facility, as defined in the procurement process, have been delivered by HPR.

The SA Government's key objectives for the battery are described in the acquisition plan:

The overarching objective of this procurement and the implementation of battery storage and [the] Renewable Technology Fund is to provide South Australia with large-scale storage for renewable energy so power is available when it is needed, beginning the transformation to next-generation renewable technology.

The provision of 100 MW grid connected battery storage will contribute to the provision of energy services with the capability to prevent certain load shedding events in South Australia, but also have the ability to provide key services to maintain system integrity, particularly in the peak summer periods and times of loss of generation or interconnector capacity.

These objectives are reflected in the contract between the SA Government and HPR (the Project Agreement), which include Functional Specifications and an Operating Protocol.

9.2 Audit approach

We engaged an external specialist firm to assist us with this part of the review.

The specialist firm consulted with the key stakeholders involved in implementing and managing the battery including DEM staff (formerly part of DPC), the SA Government's technical advisor/independent engineer, staff from the Australian Energy Market Operator (AEMO) and HPR.

Our review separately considered the delivery phase (ie activities before operations started) and the operating phase of the project.

For both phases, we considered processes related to governance, resourcing, defining and managing the contracted requirements, monitoring and reporting against those requirements, and compliance.

9.2.1 Delivery phase

The delivery phase included processes that ensured the battery was delivered in line with the SA Government's key objectives and the Project Agreement. For this phase, we only assessed the **commissioning** of the battery as this was when its performance and reliability was tested.

9.2.2 Operating phase

The operating phase includes the processes to ensure that the battery is **operating and performing** in line with the SA Government's key objectives as specified in the Project Agreement.

9.3 Findings

9.3.1 The battery was commissioned in line with contractual requirements

Finding

The processes and controls designed by the SA Government to commission the battery were adequate and delivered the required certificates of performance and reliability as provided for in the Project Agreement. These processes and controls are summarised below.

Governance and resourcing

The governance arrangements for delivering the Energy Plan were documented and set out the key roles and responsibilities for the delivery phase of the battery. This included:

- the principles underlying the governance arrangements to ensure accountable officers had authority, resources and information required to achieve the program objectives

- the role of the committees established under the governance arrangements, their responsibilities and terms of reference
- the roles (in overview form) of the Energy Projects Leadership Team, the project managers, project sponsors and expert advisers.

The delivery of the battery was managed by the Energy Plan Implementation Taskforce, which at the time was part of DPC. Project delivery was overseen by the Energy Plan Implementation Committee (EPIC). Terms of reference for EPIC were established.

Further, under the Project Agreement, an SA Government representative was nominated to represent the Minister for Mineral Resources and Energy.

Contractual requirements

The SA Government's requirements for the battery are set out in the Project Agreement, including the Functional Specification and Operating Protocol.

We found the SA Government's key objectives were reflected in the commissioning and performance test requirements. Further, delivery required an independent engineer to witness and certify performance and reliability tests in line with the Project Agreement.

The Functional Specification required commissioning, functional, performance and reliability testing.

Certification by the independent engineer

The independent engineer engaged by the SA Government provided performance validation and reliability test certificates. The SA Government relied on these certificates. They evidence that the processes to ensure the battery met the performance and reliability requirements set out in the Functional Specification were applied.

At the time of performance validation, testing for Network Loading Control Ancillary Services (NLCAS) and System Integrity Protection Scheme was still under review by AEMO and ElectraNet.

The independent engineer identified some matters from the test results to be resolved between Tesla, AEMO and ElectraNet following performance validation. The independent engineer advised the SA Government that these issues did not restrict operation of the battery or the services provided under the Project Agreement.

DEM advised that the SA Government was within its rights under the Project Agreement to claim liquidated damages for a delay in HPR achieving performance validation. This is further discussed in section 2.5.3.

9.3.2 The same engineers were used for independent certification and advisory services

Recommendation

For future projects of this nature, consider using different resources for the engineering advisory services and independent engineering certifying services to:

- generate healthy tension between these engineering roles
- deliver a robust review and an independent assessment of the procurement and delivery processes.

Finding

The project was supported by the Energy Plan Implementation Taskforce. It was also supported by an independent engineer (Technical Advisor) engaged by the SA Government to:

- advise on the development of the Functional Specification and Operating Protocol
- assist in the evaluation of tender proposals.

We found that the engineer was also engaged to witness and certify performance and reliability tests in line with the Project Agreement. Although we did not identify any specific concerns for this procurement, ideally to be fully independent, the independent certifying engineer should be different to the advisory engineer. This has the benefit of generating a healthy tension between these engineering roles which can deliver robust review and independent assessment of the procurement and delivery process.

DEM response

DEM responded that the role of the independent engineer was to objectively confirm that performance validation and reliability tests were achieved. This is a clear evaluation against contractual performance criteria, and in no way is there a conflict between this role and other advisory services that the Technical Advisor provided to the SA Government. The SA Government manages all contracts using the mandated SA Government procurement processes. Under the terms of the agreement, the Technical Advisor was contractually obliged to report any actual or perceived conflict of interest and this has been conducted on a continual basis.

9.3.3 Governance framework does not cover operating phase

Recommendation

DEM should develop and document a governance framework for the operating phase of the battery. The framework should be appropriately approved and communicated to relevant parties.

Finding

We found the documented governance arrangements in place for the delivery phase of the battery did not consider the governance arrangements needed for the operating phase of the project. For example, the following is not documented:

- who can approve changes to the Operating Protocol
- how non-compliance with the Project Agreement, by either the SA Government or HPR, is prioritised and rectified
- what the precise role of the Operating Committee is and how that role fits in with broader SA Government governance arrangements.

Given the unique nature of the battery and the Project Agreement, we consider that specific governance arrangements are required for the operating phase. This will help to ensure the key objectives of the battery are delivered and manage the transition of resources and project responsibilities after the battery is commissioned.

The governance arrangements for the operating phase of the battery should be documented, setting out key roles and the decision-making responsibilities of the Operating Committee and any other committees or working groups, and the role of expert advisors (including both technical and market advisors). This includes:

- how and when specialist advice is sought
- key relationships and communication protocols
- department resources
- the chain of accountability and decision-making authorities (including who has authority to approve changes to the Operating Protocol).

Once the governance arrangements are documented they should be appropriately approved and communicated to all relevant staff.

DEM response

DEM responded that the governance arrangements in place have been adequate for the operations so far and have not impacted on operation or service delivery of the battery. The Battery Operations Steering Committee has met informally and its terms of reference agreed. Its first formal meeting will be held on 19 November 2018.

Contract management responsibilities have been transferred from the Strategic Procurement Unit (currently part of DTF) to DEM. DEM has engaged a dedicated contract manager with technical and commercial skills who is responsible for managing the Project Agreement. DEM has compiled an audit plan to document how it will monitor the ongoing operation of the battery and is also enhancing the contract management plan.

9.3.4 Delays in establishing the Operating Committee

Recommendations

DEM should formally establish the Operating Committee. In doing so, the draft terms of reference should be finalised and the inconsistencies with the governance arrangements addressed.

DEM should also address the inconsistencies between the Operating Committee's draft terms of reference and the Project Agreement (including the Operating Protocol).

Finding

There were delays in formally establishing the Operating Committee. At the time of our review the committee had not met. Further, its role, composition and decision-making authorities were unclear and were not consistent between its draft terms of reference and the Operating Protocol.

Under the Operating Protocol, the Operating Committee consists of the Executive Director, Energy Implementation (as the SA Party representative) and representatives from HPR. Its purpose is to 'review the performance of the reserved capacity and the effectiveness of the Operating Protocol and the provision of the power system security services'.⁵¹

The Operating Committee has an important role in:

- identifying performance and operational issues that may impact the battery's ability to deliver the SA Government's key objectives, including responding to system security events when required
- initiating and tracking rectification work
- escalating within government for decision-making, any performance deficiencies
- maintaining records of performance issues which may be required in any future investigations of the battery.

There are also several inconsistencies between the Project Agreement (including the Operating Protocol) and the draft terms of reference for the Operating Committee. They include:

- the Operating Protocol defines a role for a monthly meeting separate to the Operating Committee, whereas the draft terms of reference combine the role of the monthly meeting and the quarterly Operating Committee meetings
- the Operating Protocol states that the Operating Committee shall consist 'of the SA Party Representative', whereas the draft terms of reference do not specify a role for the SA Party representative

⁵¹ Project Agreement – Operating Protocol, version 1.1, 24 November 2017.

- the Operating Protocol states that the Operating Committee ‘shall not make any binding decisions’, whereas the draft terms of reference set out decision-making authority for the committee
- the Operating Protocol states that the Operating Committee is ‘outside of the Annual Review process that will determine the content of this Operating Protocol’ whereas the draft terms of reference set out a role for the Operating Committee to review the Operating Protocol.

The inconsistencies have yet to be addressed even though the battery has been operating for over 11 months. They can be addressed by revising either the draft terms of reference for the Operating Committee or the Operating Protocol.

It is also unclear how the Operating Committee fits into the overall governance arrangements. For example, it is not clear whether the Operating Committee has a review and oversight role, which would require senior representation and less frequent meetings, or whether its role is to deal with operational issues, in which case senior representatives may not need to regularly attend.

DEM response

DEM responded that the role of the Operating Committee seems well defined at a high level in the Project Agreement, and therefore disputed the statement that roles are unclear. The draft terms of reference have been updated to be in line with the Operating Protocol and circulated for review. They will be accepted at the Operating Committee meeting in November 2018. The Operating Committee will act in line with the terms of reference.

9.3.5 A risk management plan for the operating phase of the battery has not been developed

Recommendation

DEM should develop and implement a risk management plan for the operating phase of the battery.

Finding

A risk management plan for the operating phase of the battery has not been developed. As a result, ongoing operational risks have not been identified and assessed, and mitigation strategies have not been identified.

Risk management is important to the Government’s oversight of the operating phase of the battery, given it is critical that the battery is available to instantly respond when a major system security event occurs.

While the battery regularly responds to minor power system events, which generally do not risk power system security, it will be rare for the battery to be tested by major system security events. Without a robust risk management plan, some indicators providing advanced warning of potential performance and operational issues may not be available.

DEM response

DEM did not agree with this finding. It responded that HPR has a risk management plan for the operation of the battery. The SA Government does not have a role in the day-to-day operations management therefore does not require a risk management plan for the operation. The SA Government has a broader risk management plan for the energy implementation initiatives. Its energy implementation initiatives (including the acquisition of battery storage services) are the approach the SA Government is taking to reduce risks to the broader State's energy supply.

Audit comment

We recognise that HPR is responsible for the day-to-day operations of the battery and would expect it to develop and maintain a robust risk management plan for this. However, we consider it prudent for the SA Government to establish a risk management plan to help identify and manage the risks specific to the State.

9.3.6 No process to rectify compliance issues

Recommendation

DEM should review and update processes for escalating and rectifying compliance issues identified through the contract administration function.

DEM should incorporate an escalation and rectification process into monthly review and action follow-up processes.

Finding

The SA Government has not implemented a formal process for rectifying compliance issues identified through the contract administration function.

As mentioned in section 8.1, DTF's Strategic Procurement Unit performs a contract administration function for the battery. This role includes recordkeeping, document management and milestone tracking, and provides an independent check that Project Agreement milestones and reporting are not missed.

We noted that the officer performing that role (ie contract administrator) uses a contract management database to track issues and Project Agreement milestones. The contract administration function identified several Project Agreement compliance issues (including lack of a scheduled maintenance plan, no record of monthly meetings, no Operating Committee and initial review of Operating Protocol not undertaken). However, at the time of our review there was no formal process in place to escalate Project Agreement compliance issues for rectification.

DEM response

DEM responded that the SA Government has a services contract with HPR and has financial remedies under that contract for non-performance. HPR provides 10-minute availability

data, and self-reports on operations according to the Operating Protocol. This reporting was intended to receive auditing. Processes in place have been adequate in the context of the contract for services, however DEM is looking to implement ways to strengthen them.

9.3.7 HPR has not provided the SA Government with a maintenance schedule

Recommendation

DEM should request a copy of the maintenance schedule from HPR and implement a timely review of the schedule in line with the Project Agreement.

Finding

At the time of our review HPR had not provided the SA Government with a maintenance schedule as required by the Project Agreement.

The battery's maintenance schedule is important information which should be submitted to the SA Government for review, for monthly reporting and to meet scheduled maintenance obligations of the Project Agreement. We requested a copy of the maintenance schedule from DEM and were advised it did not exist.

DEM response

DEM responded that Tesla provided an asset management plan for the battery, which included assessment of failure modes, asset list of preventative maintenance activities, unscheduled maintenance response approach, spares strategy and list, and reference to the PowerPack O&M Manual. HPR has provided the maintenance schedule to the SA Government for review.

9.3.8 DEM has not developed a resource plan

Recommendation

DEM should develop a resource plan for the operating phase of the battery, including gap analysis to confirm required resources.

Finding

DEM has not developed a resource plan for the SA Government's oversight role in the ongoing operation of the battery. As a result, DEM could not provide documentation to demonstrate that current resourcing is adequate.

The SA Party representative is supported by resources from DEM's Energy Implementation Unit and also specialist support from the technical advisor and other specialist advisors as required.

DEM has not developed a resource plan setting out the:

- roles and responsibilities of key resources
- skills and capability requirements
- contingency plans for loss of key personnel.

DEM may need additional specialist resources during the transition to the operating phase while establishing new processes and controls. Identifying required resources will enable the battery, and Project Agreement, to be effectively monitored and controlled with an efficient level of resources.

The resource plan may cover other projects in the Energy Program initiatives that are also operational.

DEM response

DEM responded that we may be over-estimating the resource requirement. The SA Government is purchasing the services from an operating facility, not operating the facility. Therefore, the activity of the monthly steering committee (ie Operating Committee) is the primary requirement and is not resource intensive. Contract management responsibilities have been transferred from the Strategic Procurement Unit to DEM. DEM has engaged a dedicated contract manager with technical and commercial skills who is responsible for managing the HPR contract.

9.3.9 Lack of a formal protocol for using specialist advisors

Recommendation

DEM should develop a protocol setting out how and when specialist advice should be sought. This could potentially be covered in the Operating Committee's terms of reference or the governance arrangements established for the operating phase.

Finding

We found that there was no documentation of how the SA Government intends to use specialist advisors during the operating phase.

A documented protocol should be developed setting out when and how specialist advice should be sought for proposed changes to the Operating Protocol. Such a protocol would ensure that specialist advice is sought when a change to the Operating Protocol could materially impact the SA Government's interests. The protocol should:

- specify when specialist advice should be sought (ie define the types of proposed changes to the Operating Protocol that would automatically trigger the requirement for specialist advice)
- define the process for assessing whether a proposed change to the Operating Protocol requires specialist advice.

Specialist advisors will also be required to assist with battery performance analysis, operational reviews, evaluation of the potential for new services, and to witness and certify tests when required under the Project Agreement and annual test requirements.

DEM response

DEM responded that the SA Government has agreements in place with specialist advisors covering technical, commercial, finance and legal and market analysis for all energy implementation initiatives, which DEM can use when required for the battery project.

9.3.10 Required review of the Operating Protocol was not undertaken

Recommendation

DEM should complete the first review of the Operating Protocol and reserved capacity in line with the Project Agreement as soon as practical.

DEM should develop and document a process for annual reviews of the Operating Protocol and the battery reserved capacity.

Finding

The first scheduled review of the Operating Protocol required under the Project Agreement is overdue. Also, DEM has yet to establish a formal process for undertaking annual reviews of the Operating Protocol and the reserved capacity, which should include engagement of specialised advice to protect the SA Government's interests.

The Project Agreement provides the legal basis for the ongoing operation of the battery. It includes the Functional Specification and Operating Protocol. The purpose of the Operating Protocol is 'to ensure that operation of the battery is in line with the State's requirements'.

The Operating Protocol is subject to change following an annual review.

The Project Agreement requires an annual review of the Operating Protocol, the reserved power output capacity and the reserved energy storage capacity.

The first review of the Operating Protocol to examine the first six months of the battery's operations was due by June 2018. Its purpose was to ensure that the Operating Protocol appropriately reflects the actual battery operational environment, market context and SA Government requirements.

The review of the Operating Protocol was not undertaken. We were not provided with evidence of a formal decision to defer or cancel this review.

DEM advised that:

- a process for conducting the annual review of the Operating Protocol and the reserved capacity for the battery has not been developed

- the annual review of the Operating Protocol was scheduled for discussion at the first Operating Committee meeting in August 2018.

It is of some concern that the June 2018 review was not undertaken given inconsistencies between the Operating Protocol and the draft terms of reference for the Operating Committee.

The process for approving changes to the Operating Protocol should be defined in the governance arrangements for the operating phase of the battery. Over the Project Agreement's 10-year term, HPR may request changes to the Operating Protocol. It will be important for the SA Government to fully understand how proposed changes to the Operating Protocol impact the ability of the battery to meet its key objectives.

With ongoing operational experience, opportunities may be identified to improve the Operating Protocol to the benefit of both the SA Government and HPR. The consequence of not understanding the impact of a change to the Operating Protocol includes the potential for the battery to not deliver the key objectives in the future.

DEM response

DEM responded that the first review of the Operating Protocol will be conducted in November 2018.

9.3.11 Improvements required for monthly reporting on the operation of the battery

Recommendation

DEM should review, in consultation with the Operating Committee, the structure, required information and presentation format of the HPR monthly report to ensure that it provides sufficient assurance that the battery is performing and is being operated in a way that complies with the Project Agreement and is consistent with key objectives.

Finding

HPR's monthly reports do not provide the Operating Committee and the SA Government with sufficiently meaningful or reliable information to:

- assess compliance with performance requirements specified in the Project Agreement
- support the Operating Committee's assessment of whether the battery is performing and being operated in a manner that is consistent with its key objectives.

For instance, the monthly reports do not include meaningful metrics for availability, reserved output capacity or reserved energy storage capacity, which are critical to assessing fundamental performance requirements for the battery.

In addition, the monthly report relies too heavily on statements of compliance without supporting evidence, and further performance metrics are required to provide sufficient assurance that the key objectives are being delivered.

Insufficient information in the monthly reports may result in instances of non-compliance or performance issues not being identified and rectified. This may result in the key objectives not being achieved, including the battery not appropriately responding to a system security event.

We found the primary monitoring and reporting tool used by the SA Government to monitor performance is the monthly report prepared by HPR, which is reviewed at a monthly meeting. DEM has decided that the Operating Committee will meet monthly and will review the monthly reports as part of its role. The Operating Committee's responsibilities include reviewing the performance of the reserved capacity, the effectiveness of the Operating Protocol and the provision of the system security services.⁵²

The monthly report template was developed by the Technical Advisor. The SA Government has not formally assessed the extent to which the monthly report template provides sufficient information to give assurance that the battery is performing and is being operated consistent with the Project Agreement and key objectives.

We identified a number of concerns including inadequate reporting on reserved capacity availability,⁵³ reserved energy storage capacity availability⁵⁴ and total availability⁵⁵ for the battery. These metrics should be based on real-time shortfalls on guaranteed capacity over the reporting period. This combined with other simple metrics will provide a snapshot of how the battery is performing and will help to identify performance and operational concerns requiring closer investigation. Availability is currently reported on a 10-minute basis, which can potentially mask shorter term performance and operational anomalies.

Given the battery is expected to respond to power system events in milliseconds, it is important to be able to assess the extent to which the battery meets the availability requirements at all times.

We recognise that in modifying the design of the monthly report, the Operating Committee will need to obtain advice from HPR on data and metrics that can efficiently be provided. But ultimately the SA Government must ensure that the monthly reports are providing sufficient information to provide reasonable assurance that the battery is performing and is being operated in a manner that is consistent with the key objectives.

We also noted that the monthly report is not signed by HPR to verify the accuracy of the information. It should be signed by a manager who can verify the:

- battery's operational performance
- battery has been bid into the NEM in line with the Bid Strategy.

Further, we identified a number of other potential improvements to the monthly report, and communicated them to DEM for consideration.

⁵² Project Agreement – Operating Protocol, version 1.1, 24 November 2017.

⁵³ This refers to the availability of the 70 MW reserved power output capacity.

⁵⁴ This refers to the availability of the 10 MWh reserved energy storage capacity.

⁵⁵ This refers to the full capacity of the battery.

DEM response

DEM responded that currently, the performance data is provided with an invoice which is reviewed using an assessment tool developed by a third party (the Technical Advisor). A process is underway to provide additional verification of reported values. Maintaining reserved power and energy relies on self-reporting by HPR that the battery is operating in line with the Operating Protocol, with any identified issues to be subject to further review. The process will be documented as part of the audit plan.

9.3.12 Auditing of HPR's reporting on performance had not been developed

Recommendation

DEM should develop and document a process for carrying out biannual performance audits and undertake performance audits as soon as practical.

Finding

Audits on the battery operation and performance have not been implemented to test the accuracy of HPR's monthly reports and ensure compliance with the Project Agreement. Further, a process for carrying out such audits has not been developed.

We recognise it is not cost effective to provide large data files to the Operating Committee monthly to assess battery performance and operation. However, without such data it is not possible to assess with reasonable confidence how the battery is responding to power system events, and whether it is being bid into the market consistent with the Operating Protocol.

DEM advised us that it intends to implement a regime of biannual audits of HPR's performance and operation. We support this, as an effective audit program is a cost-effective approach to assessing whether HPR's response to power system events and its bidding behaviour is consistent with the Operating Protocol. We consider that a process should be developed and an audit carried out under this process as a matter of priority.

The proposed biannual audits should include:

- investigating the battery's response to power system events using high resolution data⁵⁶ to assess compliance with the Operating Protocol. The audit process should define how events are selected for review, but we would expect the largest events over the past six months be included for review
- investigating HPR's bidding behaviour to ensure it complies with the Operating Protocol, particularly the requirements for the reserved capacity
- support from specialist advisors with experience in analysing and interpreting market and power system data, particularly for the first audit and in developing the audit process

⁵⁶ Data recorded at intervals of no more than 4 seconds, consistent with NEM SCADA systems.

- considering investigations carried out by other NEM institutions, to reduce the cost and complexity of the audits. This could include:
 - AEMO power system incident reports
 - AEMO operation reports
 - Australian Energy Regulator compliance reports.

DEM response

DEM responded that it is developing an audit plan to document how it will monitor the ongoing operation of the battery. It is also enhancing the contract management plan.

9.3.13 Access to battery performance data had not been tested

Recommendation

DEM should confirm with HPR that it is storing high resolution data suitable for audit and investigation purposes.

Finding

The availability, storage and access to high resolution battery performance data and real time data necessary for audit and investigation purposes has not been tested.

The Project Agreement allows the SA Government to request 'real-time data relating to the battery including information on the state of charge, storage and discharge of the battery and any bids or offers submitted to AEMO in the operation of the battery in the NEM'. We would expect that this should also apply to historical data for analysis purposes.

DEM response

DEM responded that the SA Government can request the data from Neoen when required. This is being investigated by DEM and HPR, however DEM suggested that the need to provide real time data would not be a normal requirement for this type of facility.

Appendix 1 – Chronology of events

Date	Event
8 March 2017	SPB provides approval for DPC to approach the market for goods and/or services related to creating greater certainty in South Australia's electricity supply before establishing an acquisition plan. SPB directed that DPC may carry out an alternative procurement process, whereby required planning documentation could be developed concurrently with the market approach
9 March 2017	The Energy Plan is approved by the SA Government
14 March 2017	The Energy Plan is publicly released
16 March 2017	EOI for the 100 MW battery storage procurement is released to the market
23 March 2017	DPC requests legal advice on compliance of the EOI market approach with its free trade agreement obligations
27 March 2017	DPC receives legal advice on its EOI market approach
31 March 2017	EOI closes. DPC receives submissions from 79 proponents
1 April 2017	Probity advisor engaged for Energy Plan procurements
5 April 2017	EOI evaluation plan approved by DPC Accredited Purchasing Unit Acquisition plan endorsed by the former Chief Executive, DPC
10 April 2017	Acquisition plan approved by the SPB
28 April 2017	EOI evaluation report approved by DPC Accredited Purchasing Unit
8 May 2017	Enquiries register is established to maintain a record of contact and interactions with proponents from this date onwards
17 May 2017	ITS documents released to 14 proponents shortlisted from the EOI stage
24 May 2017	Probity Plan and Communications Protocols for the Energy Plan approved by the Executive Director, Energy Plan Implementation Taskforce
30 May 2017	Procurement risks identified and documented in a risk register for the battery storage project
7 June 2017	ITS evaluation plan approved by DPC Accredited Purchasing Unit ITS closes. DPC receives submissions from 12 of the shortlisted proponents
16 June 2017	Project Governance Committee approves the evaluation team's shortlist of five ITS proponents to proceed to detailed evaluation

Date	Event
21 June 2017	SA Energy Plan Program Governance Arrangements issued
29 June 2017	ITS evaluation report approved by DPC Accredited Purchasing Unit
	Negotiation plan approved by the DPC Accredited Purchasing Unit
	The SA Government approves final negotiations to proceed with preferred proponent and finalisation of an agreement between the SA Government and the successful proponent to be entered into and executed by the Minister for Mineral Resources and Energy
30 June 2017	The SA Government invites HPR to enter into exclusive negotiations
4 July 2017	Negotiation session held between the SA Government and HPR
6 July 2017	Purchase recommendation endorsed by the evaluation team and approved by the DPC Chief Procurement Officer
	Project Agreement between HPR, Tesla and the SA Government is executed
July 2017	Energy Plan Implementation Committee terms of reference authorised
29 September 2017	Network connection agreement between HPR and ElectraNet signed
16 December 2017	Performance validation achieved
20 January 2018	Reliability tests passed
1 July 2018	Responsibility for the ongoing management of the Project Agreement is moved from DPC to DEM as part of machinery of government changes

Appendix 2 – How frequency control ancillary services contribute to power system security

The NEM power system operates at a frequency range as close to 50 hertz (Hz) as possible.⁵⁷ To avoid failure of, or damage to, the power system, the frequency may only deviate within a narrow range below or above 50 Hz. If frequency deviates too far from 50 Hz, generators and loads may disconnect from the power system to protect equipment from damage and push the frequency further away from 50 Hz. This can ultimately lead to a complete frequency collapse and a large-scale blackout of the system (as South Australia experienced on 28 September 2016).⁵⁸ FCAS, including from fast responding batteries, are designed to arrest frequency deviation so that such events do not occur.

Power system frequency naturally tends to deviate from 50 Hz as imbalances arise between electricity supply and demand. This occurs constantly as customers turn loads on and off. Controlling power system frequency therefore requires the constant balancing of electricity supply and demand. The frequency can also change if sudden disturbances occur. For example, the unexpected loss of a generating unit due to a technical failure will cause the frequency to fall, while the loss of a large load will cause the frequency to rise.⁵⁹

FCAS are designed to raise or lower the system frequency to maintain or restore the frequency, at any point in time, close to 50 Hz as required by NEM frequency standards.⁶⁰ This is achieved by FCAS providers rapidly injecting power into, or withdrawing power from, the grid.⁶¹ Generating units regularly fail across the NEM and in most cases the response from FCAS providers is sufficient to prevent any noticeable impact to customers.

There are different ways to control frequency levels depending on the size of the deviation. The two types of services that the 100 MW battery and other market participants provide to help manage these deviations are regulation FCAS and contingency FCAS.⁶²

Regulation FCAS

In most situations, the changes in electricity supply and demand are such that the corresponding variations in frequency are very small.⁶³ Regulation FCAS is used to correct these minor deviations in power system frequency away from 50 Hz.⁶⁴

⁵⁷ Australian Energy Market Operator, Fact Sheet: Frequency Control.

⁵⁸ Power System Frequency Risk Review Report, June 2018, Australian Energy Market Operator.

⁵⁹ Australian Energy Market Commission 2017, New rules for emergency frequency control schemes, Information sheet.

⁶⁰ Australian Energy Market Operator 2015, Guide to Ancillary Services in the National Electricity Market.

⁶¹ Australian Energy Market Operator 2018, Power System Requirements, Reference Paper.

⁶² Australian Energy Market Operator, Fact Sheet: Frequency Control.

⁶³ Australian Energy Market Commission 2017, Frequency Control Frameworks Review, Issues Paper.

⁶⁴ Australian Energy Market Operator 2015, Guide to Ancillary Services in the National Electricity Market.

Contingency FCAS

A secure power system must be able to absorb and recover from significant disturbances that may occur. These disturbances result in the temporary and unexpected imbalance of supply and demand and are known as contingency events.⁶⁵

Contingency FCAS responds to larger deviations in power system frequency that are usually the result of contingency events, such as when a large generator suddenly and unexpectedly disconnects from the network. These events are not expected to happen often and have more significant impacts on the safety and reliability of the power system.⁶⁶ See Appendix 3 for an example of how a battery responds to a large deviation in power system frequency.

Contingency services are enabled in all periods to cover contingency events, but are only occasionally used (if an event actually occurs). The 100 MW battery is configured to provide a contingency FCAS response at all times, regardless of FCAS market outcomes, using the full technical operating range of the battery.⁶⁷

⁶⁵ Frequency Control Frameworks Review, Final Report, 26 July 2018, Australian Energy Market Commission.

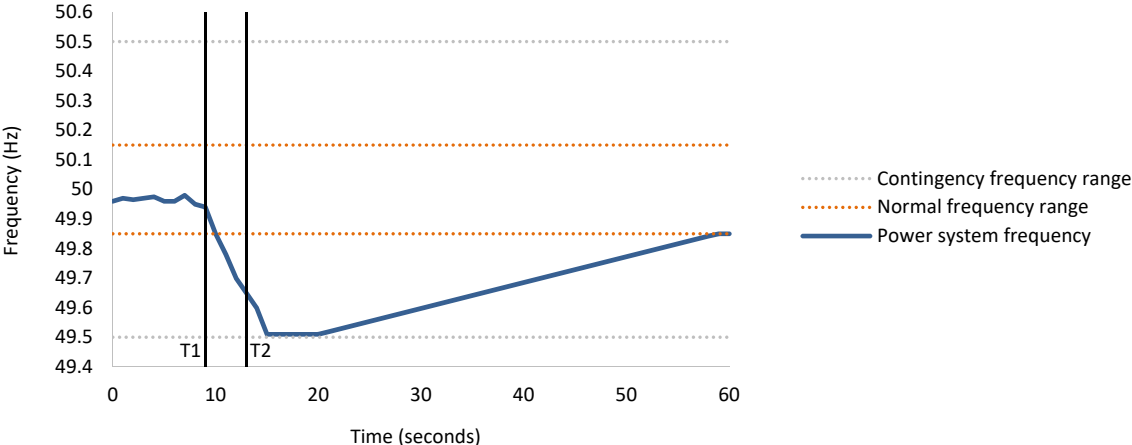
⁶⁶ Australian Energy Market Commission 2017, Frequency Control Frameworks Review, Issues Paper.

⁶⁷ Initial Operation of the Hornsdale Power Reserve Battery Energy Storage System, April 2018, Australian Energy Market Operator, viewed 15 October 2018, <https://www.aemo.com.au>.

Appendix 3 – Example of how a battery responds to a large deviation in power system frequency

The scenario shown in figure A3.1 demonstrates how a battery responds to a large deviation in power system frequency. For example, after a sudden unplanned network outage or when a large generator suddenly disconnects from the network. These situations are not expected to happen often but are possible and could occur due to extreme weather or other factors.

Figure A3.1: An example of the frequency deviation following the loss of a large generator



Source: ‘Fact Sheet: Frequency Control’, Australian Energy Market Operator.

Figure A3.1 shows frequency control in the NEM during normal operation (ie to the left of T1) and after the loss of a large generator that causes the frequency to fall due to demand for electricity being greater than the supply of electricity.

The loss of the generator (eg due to a technical failure) at the time shown as T1 causes a sharp drop in frequency which almost instantly falls outside the normal frequency range (ie below 49.85 Hz) and continues to drop. If the frequency moves too far below 50 Hz, it could lead to a complete frequency collapse and a large-scale blackout of the power system.

In this example, contingency FCAS is supplied by the battery (and other market participants) within seconds after T2 to stop the fall in frequency and restore it to the normal range in less than one minute. By providing these services, the battery has in this scenario helped prevent damage to electricity infrastructure and ensure consumers electricity supply is not disrupted.

As a large generator disconnected, contingency FCAS is also supplied by other market participants in addition to the battery to restore the system frequency. This is due to the smaller capacity of the battery relative to the loss of the large generator’s capacity.

Appendix 4 – Glossary

Abbreviation/Term	Description
AEMC	Australian Energy Market Commission – The rule maker for Australian electricity and gas markets. They make and amend the National Electricity Rules, National Gas Rules and National Energy Retail Rules
AEMO	Australian Energy Market Operator – responsible for the administration and operation of the wholesale national electricity market in accordance with the National Electricity Code
DEM	Department for Energy and Mining
DPC	Department for the Premier and Cabinet
DTF	Department of Treasury and Finance
Energy Plan	Our Energy Plan
EOI	Expression of interest.
EPIC	Energy Plan Implementation Committee
EPLT	Energy Projects Leadership Team
ESCOSA	Essential Services Commission of South Australia
FCAS	Frequency control ancillary services – used to raise system frequency if it has fallen (by increasing generation or reducing load) and to lower system frequency if it has risen (by decreasing generation or increasing load)
FTA	Free trade agreement
HPR	Hornsedale Power Reserve.
Hz	Hertz
ITS	Invitation to Supply.
MW	Megawatt
MWh	Megawatt hour
NEM	National Electricity Market – the wholesale market for the supply of electricity in all states of Australia except Western Australia and the Northern Territory.
NER	National Electricity Rules
NLCAS	Network loading control ancillary services
PACE	Plan for Accelerating Exploration
SPB	State Procurement Board
TI 17	Treasurer’s Instruction 17 ‘Evaluation of and approvals to proceed with public sector initiatives’

