GOVERNMENT OF WESTERN AUSTRALIA

Infrastructure Western Australia

Major Infrastructure Proposal Assessment

Water Corporation

Energy Procurement Plan - Battery Storage

Summary Assessment Report

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Acknowledgment of Country

Infrastructure WA acknowledges the Traditional Custodians of Western Australia and their continuing connection to the land, waters and community. We pay our respects to all members of the Aboriginal communities and their cultures; and to Elders both past and present.

Major Infrastructure Proposal Assessment Summary Report

Purpose

This assessment report has been prepared in carrying out Infrastructure WA's (IWA) legislative function to assess and report to the Premier on major infrastructure proposals. The assessment is of the Water Corporation's Energy Procurement Plan Battery Storage (EPPBS) business case (January 2023). Additional supporting information received, and consultation undertaken by IWA were also used to support the analysis.

1. IWA observations

The Water Corporation (WC) faces growing energy consumption needs as their business transitions from water gathering to water manufacturing (desalination plants). As a large consumer of energy to facilitate the manufacture, treatment and distribution of water, WC proposes the EPPBS project will assist them to manage the risk of increasing energy costs. It may also provide some complementary grid reliability and stability benefits across the South West Interconnected System (SWIS), although this is not a primary benefit of the proposal when compared with other proposed government investments.

As an early adopter the proposal has some inherent risk given whole of government coordination and strategies are still developing, and that WC's primary business is in water and not energy. As such WC needs to ensure ongoing proactive engagement with the energy Government Trading Enterprises (GTE's), in particular Synergy and Western Power, to guarantee sufficient coordination of energy related project proposals and ensure that benefits to the state are achieved without duplication of effort. It is also important for Government to consider the potential precedent this proposal could establish, with agencies/GTE's other than the traditional energy GTE's effectively competing in the energy market.

There is also possible cost escalation and deliverability risk exposure, particularly given current market conditions and global activity in comparable energy transition projects. These issues will need further consideration and management during the next stages of planning and ultimately delivery should the project proceed.

IWA considers that the proposal contains insufficient information to inform a government investment decision based on whole-of-state costs and benefits, and whether the provision of battery storage by WC represents competition to the energy GTEs. However, IWA observes that there is sufficient information to make a government investment decision as a standalone project, if considered in the context of WC seeking to optimise its operations and commercial position.

2. Context

2.1 Project background

Battery storage represents a new element in a portfolio of operational tools that can help WC ensure continuity of water and wastewater services across the SWIS during a period of rapid energy transition. While already utilising battery technology in some remote and regional locations to ensure continuity of supply to a specific asset, this is the first time the technology has been proposed by WC to help manage broader energy needs and costs.

The EPPBS project forms part of a program of proposed works articulated in WC's ten-year Energy Procurement Plan (EPP), which is aimed at securing energy in the most cost-effective manner as the organisation moves towards net zero emissions by 2035, consistent with their *Thrive2035* strategy. The EPPBS project covers their short-term battery storage requirements.

3. Strategic merit

3.1 Alignment

The overarching program of works in the EPP has strategic merit, and is aligned to government strategies, including the *WA Climate Change Policy* and recently announced whole of government greenhouse gas emission (GHG) reduction targets of 80 per cent below 2020 levels and ultimately state-wide net zero emissions by 2050. It is also aligned with the *State Infrastructure Strategy* and WC's legislated obligation to discharge its fiduciary duties and act commercially under the *Water Corporations Act 1995*.

The EPPBS project relies on and supports the strategic alignment of the broader program of works from the EPP. However, the proposal will still provide benefits to WC should other program elements change, principally in regard to cost savings, but could potentially compete with Synergy's larger battery storage projects for cost offsets / revenue derived from grid reliability and stability associated with the introduction of more renewable energy sources.

3.2 Problems and opportunities

The business case identifies that over the last 15 years, WC has transitioned from predominantly gathering, collecting, and extracting naturally available surface water (via dams) and groundwater, to significant manufacture of drinking water by desalinating sea water. This has largely been attributed to a drying climate, which is impacting rainfall and groundwater availability. At present, approximately 50% of Perth's drinking water is produced through desalination.

WC currently consumes 1TWh[1] of electricity a year (about 5 per cent of total SWIS demand), and this is expected to grow significantly as more desalination plants are built to offset reductions in other available water sources and accommodate future population growth.

Approximately 60% of WC's energy needs are currently supplied by coal powered generation sources. Their preferred energy procurement and supply solution is for a combination of wind power generation and behind the meter battery storage to manage energy cost risks, with batteries also helping to manage grid stability. IWA has liaised with Western Power to confirm no significant issues exist from a grid perspective with respect to this proposal.

4. Options assessment

The EPPBS business case outlines a long list of eight battery storage solutions, and a variety of project participation models.

Various locations for the batteries were considered with the preferred sites selected based on proximity to areas with high value for supporting grid stability, suitability of existing electrical assets at the site, and availability of physical space to accommodate the batteries.

IWA notes that the business case does not assess the option of one of the energy GTE's, presumably Synergy, delivering battery storage on WC's behalf. As a result, it is not possible to determine if this may present a more holistic outcome for government.

[1] TWh = Terawatt hour, being a unit of energy used for expressing the amount of produced energy/electricity

5. Societal impacts

5.1 Economic and financial assessment

The recommended option has an estimated up front capital cost of $255 million, and operating costs over approximately 20 years of $9.5 million, equating to a total estimated project cost of $264.5 million. WC advise that they have used market sounding, third party consultant advice and benchmarking to support the estimated project costs. IWA anticipates that as further project planning is undertaken these costs may change.

WC's analysis indicates that the recommended option has a positive impact on their net present costs over the estimated useful life of the batteries (20 years). The financial aspects of the project are marginal and if costs significantly exceed current estimates, it is likely the project could not be justified on a financial basis alone. This doesn't account for broader social and environmental benefits (discussed below).

The assessment is also focussed on the direct financial implications for WC, demonstrating a positive commercial outcome to their business. However, it does not include broader analysis considering potential outcomes from a whole of government perspective should the battery technology be developed on their behalf by one of the energy GTE's. This presents some risk as it is not clear whether or not the overall economic and/or financial position for the state would benefit from the proposal.

5.2 Social assessment

While various sites are identified for the battery storage installation, social considerations for each site are not explored in the business case. WC indicate that 150 jobs will be created during construction and 15 jobs during the operational phase for this project.

WC are intending to establish a stakeholder engagement plan to manage ongoing consultation for the project should it proceed. IWA suggests identification and consultation with external Aboriginal community stakeholders and other government Aboriginal cultural advice groups in the next phase.

5.3 Environmental assessment

WC's *Thrive2035* strategy has corporate targets to achieve net zero for Scope 1 and Scope 2 GHG emissions by 2035, with their EPP program proposed to help achieve these targets.

There is limited information in the business case on quantifiable environmental benefits or impacts for the procurement and installation of the battery storage assets. WC advise that the investment will support other projects with direct environmental benefits by providing grid stability during a period of rapid energy transition, although based on IWA's assessment and engagement this is not considered to be a primary driver for the project.

6. Recommended option and project definition

The recommended option is for procurement and installation of 100MW[2] (400MWh[2]) of lithium iron phosphate battery storage at various WC sites (mix of desalination, water treatment and wastewater treatment plants), undertaken with the support of the battery manufacturers/suppliers and their local partners, with an estimated capital cost of $255 million.

The project is intended to be delivered in two tranches, with Tranche 1 (20MW / 80MWh) proposed to be operational by mid-2025 and Tranche 2 (80MW / 320MWh) by mid-2026.

[2] MW = Megawatt / MWh = Megawatt hours

The three sites selected for Tranche 1 are in and around Mandurah. The Tranche 2 proposed sites are subject to change once lessons learned for Tranche 1 are considered.

7. Deliverability

The business case outlines that the priority next steps for project planning includes final agreement on site locations; release of the request for proposal (RFP) to targeted battery suppliers; and Western Power approval and grid connection agreements for Tranche 1. While there is a high-level program provided, a more detailed schedule will be required as part of the next stage of project planning to provide assurance that proposed timelines can be met.

WC recognises that it currently does not develop, own, or maintain battery storage assets as part of its business-as-usual activities, proposing to procure the necessary expertise to deliver the project. The project may face construction market capacity constraints currently impacting the broader market and competing energy projects, which should be managed wherever possible.