GOVERNMENT OF WESTERN AUSTRALIA

Infrastructure Western Australia

Major Infrastructure Proposal Assessment

Synergy

Battery Energy Storage Systems (BESS) – Kwinana and Collie

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 has been carried out on Synergy's Battery Energy Storage Systems (BESS) – Kwinana and Collie business case. Additional supporting information received, consultation and further research undertaken by IWA was also used to support the analysis.

1. IWA observations

IWA notes previous Government announced commitments to implement the proposal and the allocation of $2.7 billion of provisional funding to Synergy in the 2023/24 State budget, a significant proportion of which supports delivery of the Kwinana Stage 2 and Collie BESS projects. As a result IWA considers that an investment decision on the proposal has already been made, informed by work undertaken as part of governments previous Decarbonisation Taskforce.

Given the above, IWA's advice relating to this business case has focused on its strategic alignment with government policies, compliance with the Strategic Asset Management Framework (SAMF) business case guidelines and highlighting any significant risks to Government in proceeding with the proposal, rather than to support an investment decision.

While IWA's advice is that the business case alone does not provide sufficient justification for the project to proceed to the next phase, based on further consultation, research undertaken and additional evidence received, IWA considers that there is sufficient justification to support a Government decision to proceed. This is largely based on the proposal having clear commercial benefits to Synergy and complementary benefits to Government through expected future reductions in Synergy's operating subsidies compared to the status quo. Beyond these financial results, broader economic benefits are also forecast including job creation, and environmental benefits including carbon emissions avoided.

There are key risks to the project including procurement of long lead items; delivery planning and project management, including resourcing needs and skills; and community/stakeholder consultation, which is still at a preliminary stage. These elements will need particular attention in the next phase of project development.

2. Context

2.1 Project background

In August 2019, the State Government announced an aspiration for Western Australia (WA) to achieve net zero carbon emissions by 2050. The announcement followed the launch of the State's Energy Transformation Strategy in March 2019.

Government released the WA Climate Policy in November 2020 which set out an action for Energy Policy WA (EPWA) to ensure that future planning scenarios for renewable energy and storage were consistent with emissions reduction goals and to map out the ideal renewable generation and storage investments.

In 2022, following work and subsequent recommendations made by the then Decarbonisation Taskforce, the State Government announced its decarbonisation agenda, with a focus on reducing greenhouse gas emissions and a commitment to retire state-owned coal power stations by 2030. To replace these assets and support increased reliance on renewable energy generation the Government also announced its intention to underwrite 810 megawatts (MW) in renewable wind energy (RWE) and 1,100 MW / 4,400 megawatt hours (MWh) in battery storage by 2030. RWE will

be relied on to provide energy, while battery storage will be relied on for capacity, energy shifting and provision of essential system services (ESS).

Synergy is currently in the final stages of commissioning a precursor project at Kwinana for 100 MW of 2-hour energy battery storage (200 MWh), which has been delivered under an Engineering Procurement Construction (EPC) contract. Synergy is applying lessons learned from the delivery of this project into planning for the battery storage projects within this proposal.

3. Strategic merit

3.1 Alignment

The BESS projects in this proposal have strategic merit and are consistent with the Government's decision for delivery of new energy generation, storage, and network requirements and Synergy's own evolved corporate strategy outlined in its 2023/24 Statement of Corporate Intent (SCI), which includes initiatives to "identify and develop renewable energy generation opportunities and energy storage solutions".

The proposal is aligned with Government's strategic policy decision to install BESS infrastructure to absorb excess rooftop solar capacity procured through its Renewable Energy Buyback Scheme (REBS) and to utilise this energy more efficiently during periods of peak demand. It is also aligned with the State Infrastructure Strategy (SIS), particularly recommendation 45, which recommends that a dedicated program of works should be pursued to support the transition of the South West Interconnected System (SWIS) to a renewable energy system, including energy storage, microgrids, virtual power plants, and standalone power systems.

3.2 Problems and opportunities

Synergy has outlined the following problems that the proposal will address:

- The Australian Energy Market Operator (AEMO) identified a possible capacity shortfall of 21MW in the SWIS from October 2025, growing to 190MW by 2030, based on no new projects being developed.
- AEMO also identified additional material risk to the security and reliability of the operation of the SWIS under peak demand and minimum demand operating conditions from October 2024.
- AEMO released its non-co-optimized essential system services (NCESS) requirements, which require an extra 830 MW capacity for peak demand services by October 2024.

AEMO capacity forecasts are based on Government's planned coal plant retirement timeframes, being Muja C6 in October 2024, Collie in October 2027, and Muja D in October 2029.

While the Government's decarbonisation program of works is briefly mentioned in the business case, it would have benefited from greater detail on the timeframes and impact that decommissioning coal generation assets at Collie and Muja will have on the SWIS.

While not specifically outlined in the business case, Synergy has also confirmed to IWA that a significant driver for the proposal relates to improving Synergy's financial position due to the REBS, given the high uptake of rooftop solar. IWA has recommended that Synergy establish robust investment logic mapping practices to inform future business cases to ensure that all problems that a proposal is attempting to address are clearly outlined in proposal documentation.

4. Options assessment

IWA has not focused on the policy options assessment, with previous options analysis and recommendations by the Decarbonisation Taskforce informing Government's subsequent strategic policy decision to focus on batteries delivered and operated by Synergy.

While the business case did not comprehensively outline the options assessment undertaken, IWA did receive additional information from Synergy about the processes it undertook during earlier project planning. IWA was advised that shorter duration storage options were considered insufficient by Synergy to meet peak demand and essential system services (ESS) requirements.

Synergy also advised that their approaches to market focused on proven storage technology (proven for the facility size and application), which is limited to lithium-ion batteries. Synergy did invite non-conforming bids for alternate technologies, however, none progressed to the shortlist following the assessment of technology risk and ability to supply within the timeframes required. It is anticipated that as technology evolves, further options may become viable in future.

5. Societal impacts

5.1 Economic and financial assessment

The recommended option (for the two BESS projects) has an estimated investment project payback period of approximately 11 years.

The assumptions informing the financial model were not outlined in the business case, however, have subsequently been provided to IWA. They appear to be defensible, although some could vary the results when considered in insolation. However, IWA considers that they are likely to have more upside than downside when considered as a collective, minimising the financial risks to Government.

The business case presents a table of stakeholders that Synergy has engaged and concludes that stakeholder feedback has been supportive of progressing storage projects in general. It appears from the list that Synergy has engaged with the companies and government bodies that would generally be expected to be engaged for these types of developments.

There is insufficient information to comment on whether the developments have been and will continue to be endorsed by stakeholders. It is noted that a full Community and Stakeholder Engagement Plan is yet to be established. Synergy reports that community engagement has occurred for KBESS2 through development approval processes, with ongoing community engagement activities planned leading up to the construction phase.

There is insufficient information in the business case to ascertain Synergy's consideration of Traditional Owners and local Aboriginal stakeholders/community in the project development process. However, Synergy has advised that it is actively engaging with the South West Aboriginal Land and Sea Council (SWALSC) and the Gnaala Karla Boodja Regional Corporation (GKBRC) regarding CBESS.

5.2 Environmental assessment

Synergy's Environmental Strategic Plan (2022-25) outlines its commitment to achieving an 80 percent reduction in carbon emissions by 2030 and net zero by 2050.

Whilst battery storage is a key enabler of low-carbon energy, some sustainability considerations have not been addressed in the business case, such as end of life solutions for the batteries. The deployment of batteries at this scale is a relatively new phenomenon, with the first Big Battery deployed in 2017. Therefore, suitable local battery recycling and reprocessing facilities do not yet exist simply because there is insufficient feedstock for processing at an industrial scale.

The KBESS2 project is located on rehabilitated brownfield land within the Kwinana Power Station precinct. The CBESS project is located on cleared buffer land adjacent to the Collie Power Station, which is likely to result in minimal disturbance (if any) to nearby natural vegetation.

6. Recommended option and project definition

The business case recommends an estimated $2.4 billion investment in a program of work to build:

a. KBESS2, which will deliver 200 MW / 800 MWh at the Kwinana Power Station

b. CBESS, which will deliver 500 MW / 2,000MWh at the Collie Power Station

Together they will provide sixty-four percent of the new storage capacity announced by the Government in June 2022 as part of Synergy's decarbonisation program of works. Both sites are owned by Synergy.

7. Deliverability

The deliverability information contained in the business case is at a very summarised level. Greater detail was requested and provided by Synergy to inform IWA's assessment. The two BESS projects are at different stages of project planning and scheduled delivery.

The CBESS project is at the concept planning phase, with several associated risks including environmental approvals not yet achieved, design for Western Power transmission network connections not yet developed and costed, and stakeholder and community consultation still to commence.

Cost estimates for some elements of the project are at P50 level (the probability that the cost will not be exceeded fifty percent of the time), with some elements still containing a 50 percent contingency included in the project cost. The commercial operation timeline of October 2025 is ambitious but at this stage appears achievable considering Synergy's proactiveness in placing orders for long lead items. IWA has recommended that Synergy ensure delivery of the project and access to contingency provisions is managed with the highest level of governance and operational oversight.

In comparison, planning for KBESS2 is further advanced, and Synergy is intending to immediately redeploy the project team that has delivered the KBESS1 project to commence early civil works and delivery of the KBESS2 project.

Synergy is aware of market capacity limitations amongst skilled electrical trades, engineering and civil works contractors due to the volume of renewable generation and network construction work occurring in the local, national and international markets. Such factors mean that careful monitoring of the proposed timeline will be required to deliver the project as scheduled to meet Government's announced timeframes for the decommissioning of coal generation facilities.

IWA also notes that Kwinana is set to be a significant infrastructure development zone over the next few years. Construction 'congestion' is a potential risk which could affect the KBESS2 construction program. This risk should be reviewed regularly by the project management team.

Synergy appears to have a robust approach to risk management. The risk registers provided for KBESS2 and CBESS are of good quality and cover the types of risks that would be expected for projects of this nature and at this stage of development.

IWA notes and commends Synergy for its newly created Future Energy business unit and independent health check review, which has led to development of a two-stage approach to lift Synergy's project delivery capabilities and developed tools and processes to help successfully deliver their portfolio of renewable energy projects.