GENEX MEET BESS CHALLENGES AND OPPORTUNITIES

The stand-alone 50MW/100MWh lithium-ion Bouldercombe Battery Energy Storage System developed by ASX-listed renewables developer Genex Power achieved financial close on February 28 2022. It is understood to be the first utility-scale BESS in Australia to be supported by long-tenor project financing on a split procurement basis By **ELIZABETH CHARLESWORTH**, *partner,* **PETER DAVIS**, *partner,* **KRISTEN PERCY**, *partner, and* **ANTONIA XU**, *solicitor,* **HERBERT SMITH FREEHILLS**.

The rise of the utility-scale battery storage sector in Australia is now well under way. At the end of 2020 there were 16 utility-scale batteries under construction in Australia and by the end of 2021 that had almost doubled, rising to 30[1]. This increase in the number of battery energy storage system (BESS) projects and the resulting competition has started to bring forward innovation in the structuring and financing of such projects.

The stand-alone 50MW/100MWh lithium-ion Bouldercombe Battery Energy Storage System (Bouldercombe BESS) developed by ASX-listed renewables developer Genex Power Ltd (Genex) achieved financial close on February 28 2022. It is understood to be the first utility-scale BESS in Australia to be supported by long-tenor project financing on a split procurement basis, and after the Wandoan South BESS is one of the first to be privately developed in the State of Queensland. Genex is expecting construction to be completed in the second half of 2023.

The National Electricity Market (NEM) has seen a significant surge in the volume of renewable generation capacity connecting to the grid over the past five years. This trend, coupled with the accelerating withdrawal of dispatchable coal power plants, has driven a need for new energy solutions to support reliability of generation and the stability of the system.

Renewable energy generation such as wind and solar are characterised by their variable generation and are limited, in comparison with large rotating plant, in their ability to contribute to system stability. Utility-scale BESSs are complementary to renewable generators given their ability to dispatch stored energy at times of greatest system need and to respond quickly in the event of system stability issues. Since the development of t he market-leading Hornsdale Power Reserve, Australia has become one of the leaders in global BESS deployment, with more than 2,000MW of battery storage projects announced in 2020[2].

The Bouldercombe BESS is one such significant project for Queensland, as it will provide important frequency control ancillary services required for the transition to renewable energies from coal and gas which, to-date, have been heavily relied upon as part of the electricity mix in Queensland[3].

Until recently BESS projects in Australia have been predominately funded by equity investments alongside government grant funding and other government or quasi-government concessional funding arrangements. This includes novel financing provided by the Clean Energy Finance Corporation (CEFC) and/or the Australian Renewable Energy Agency (ARENA), such as is the case with the Hornsdale Power Reserve and the Victorian Big Battery, as well as other state and territory-backed support. Their ability to attract commercial debt project financing in Australia has certainly had some high hurdles to jump; primarily relating to overall cost of the projects coupled with securing sufficient long-term revenue certainty.

That long-term revenue certainty is challenging because an optimally structured BESS project will access revenues from a number of different sources. These include energy price arbitrage, which takes advantage of price volatility, selling ancillary services, eg Frequency Control Ancillary Services, to the market, negotiated ancillary services, eg AEMO's recent System Impact Support Scheme, and even selling derivative products such as caps or swaptions.

This combination of cost challenges and revenue complexity has meant each project needs to be very carefully structured since project location, procurement strategy and management of regulatory risk all play a part in achieving "bankability".

Against this landscape we present below some key challenges and successes of the Bouldercombe BESS, which we expect will be of interest to stakeholders, as private and public attention continues to focus on Australia's battery storage capacity.

PROJECT CHALLENGES AND SUCCESSES

- *Project summary* – The Bouldercombe BESS will be located in Rockhampton, Queensland, adjacent to Powerlink's substation (Powerlink is a Queensland government-owned transmission system operator). It will initially have a capacity of 50MW/100MWh, meaning it can produce power at its maximum output of 50MW for up to two hours[4]. The Bouldercombe BESS is Genex's first BESS project in Australia, adding to its portfolio of wind, hydro and solar projects, comprising more than A$1bn worth of developments[5]. The Bouldercombe BESS is currently scheduled to begin construction in July 2022. Tesla will deliver 40 Megapacks with commissioning currently expected by mid-2023[6].
- *Contractual structure diagram* – Figure 1 sets out the key contracts and counterparties on the Bouldercombe BESS project.

• *Long-tenor project financing* – The debt funding for the Bouldercombe BESS project comprised an A$35m senior debt facility from Infradebt[7], a specialist infrastructure fund financier. Part of this facility was delivered through Infradebt's Ethical Fund, being the first infrastructure debt fund in Australia with a focus on renewable energy and social infrastructure projects[8]. Importantly Genex and Infradebt have also agreed to work together on future battery projects that Genex develops on a merchant basis, which will bring more innovation to their financing structure. Genex raised the remaining equity funds for the project through commitments from a range of existing and new domestic and international sophisticated, professional, and institutional investors[9].

The primary debt financing agreement to the SPV comprises a construction facility that converts to a term facility with a 12-year tenor, and consistent with Infradebt's fixed interest profile, applies a fixed interest rate across both facilities. The term facility will be repaid according to an amortising repayment schedule, eliminating refinancing risk. A typical project financing security package was adopted together with tripartite arrangements for the key project documents in favour of Infradebt.

• *Grid connection* – Grid connection is to be provided by Powerlink allowing the Bouldercombe BESS to connect as a bi-directional service provider to the NEM[10]. The physical location of the Bouldercombe BESS, being adjacent to Powerlink's existing 132kV/275kV Bouldercombe Substation helped to keep total project costs down as well as reduce energy losses[11].

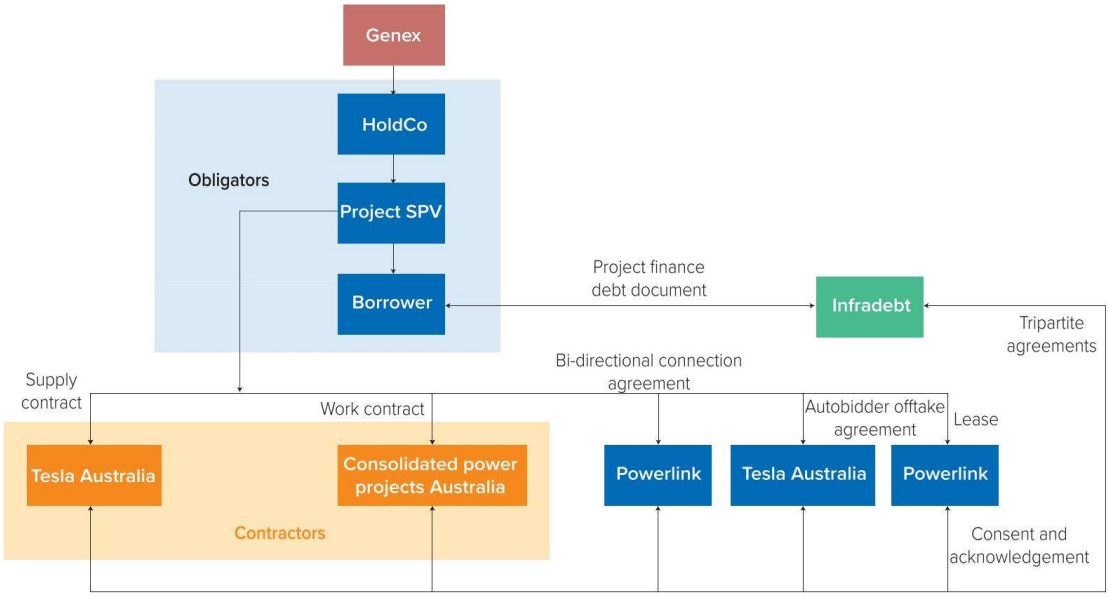
• *Procurement strategy* – Project financiers in Australia typically prefer and adopt an EPC wrap structure whereby the project faces a single contractor and that contractor takes responsibility for and wraps the various suppliers and subcontractors needed on all aspects during the construction phase of the project. This structure eliminates interface risk between contractors and suppliers vis-a-vis the project but is of course more costly as the single contractor bears that risk.

On the Bouldercombe BESS project a split procurement strategy was adopted whereby Tesla Motors Australia (Tesla) will manufacture, supply, deliver and commission the BESS, and Consolidated Power Projects Australia will perform the balance of plant works and install the BESS. In order for this split procurement structure to be bankable, it was necessary to consider, interrogate and ultimately incorporate various contractual mechanisms to manage the interface risk. The integrated design of the Megapack architecture is particularly suitable to this procurement model. Which also delivered cost savings to the project compared with an EPC wrap.

• *Revenue certainty* – A key risk for project-financed BESS developments has been securing a long-term revenue source. One of the features of this project that helped make it bankable was the Autobidder Offtake Agreement (AOA) with Tesla. Under the AOA Tesla guarantees the project a minimum contracted revenue for the first eight years. It is this minimum contracted revenue that debt financiers can rely upon when considering the project's ability to meet their repayment obligations over the debt tenor.

Another challenge in trying to project-finance BESS projects is balancing the tension between debt and equity. Equity investors will be focused on ensuring that profit can be maximised so that equity distributions can be made as quickly as possible following commencement of operations. They are incentivised, and will seek, to implement the operation of a BESS in a way that optimises and expands revenue opportunities both now and into the future, whereas debt financiers are less interested in "upside" as they are simply looking for stable and certain revenue to ensure bankability.

FIGURE 1 - BOULDERCOMBE BESS CONTRACTUAL STRUCTURE



(Source: Herbert Smithfields Freehills)

The AOA arrangement with Tesla in the Bouldercombe BESS provided a simple yet innovative solution to both bankability and revenue concerns. "Autobidder" is Tesla's proprietary and real-time trading and control platform, which employs a machine learning algorithm to optimise bids from the BESS into the NEM to maximise revenue and operating efficiency[12].

Through this arrangement the project has retained access to significant merchant upside in respect of potential revenue above that minimum guaranteed amount, which are the subject of sharing arrangements between Tesla and Genex [13]. This was seen as a successful and attractive arrangement for both debt and equity investors that addresses some of the existing market and historical tensions evident in limited recourse financing of BESS projects.

• *Regulatory ambiguity* – One of the challenges faced by BESS project developers in Australia has been regulatory uncertainty. The National Electricity Rules (NER) that govern the operation of the NEM were not drafted with batteries in mind. The regulation of market participants by reference to categories such as Market Customers and Generators does not neatly fit BESS projects that both export and import power to and from the grid. The Australian Energy Market Operator (AEMO) made interim arrangements for registration of utility-scale batteries in March 2018 and since then BESS projects have been registered as both scheduled generators and market customers.

One of the implications of registration as a market customer is generally that the registered participant must share the cost of providing the transmission network. These costs are recovered by transmission network service providers such as Powerlink through a variety of regulated charges that include transmission use of system (TUOS) charges. These charges for prescribed TUOS services are generally not imposed on generators.

Given that BESS projects are, under the current AEMO registration guidelines, both generators and market customers there has been uncertainty about whether or not they should be required to pay TUOS charges. As a matter of market practice, TUOS charges have not generally been imposed on BESS projects but many developers have been concerned about the risk that such charges could be imposed in future. TUOS charges can be very substantial, to the point that if a BESS connected to a transmission network was required to pay TUOS charges it could have a material impact on the project's commercial viability.

This risk was also faced by the Bouldercombe BESS project. Given the potential significance of any such TUOS charges being imposed, and in the absence of a clear regulatory regime, it was critical for the bankability of the Bouldercombe BESS project to ensure that its connection arrangements were appropriately customised so as to limit the risk of exposure to any such future costs.

During the final stages of development of the Bouldercombe BESS project the Australian Energy Market Commission (AEMC) published the National Electricity Amendment (Integrating Energy Storage Systems in the NEM) Rule 2021 (Final Determination). The Final Determination takes effect from June 3 2024 with transitional provisions applying from 2023 onwards and creates a new category of registration titled "Integrated Resource Provider" (IRP). IRPs will include BESS and other storage and hybrid storage facilities including generation facilities with bi-directional energy flows.

The new IRP category allows BESSs to register under one category rather than two, and allows standalone batteries to classify as a scheduled bi-directional unit, providing a single dispatch bid rather than needing to provide two separate bids under each registration category. The AEMC stated in its final determination that its intent is that AEMO would not, in the transition of existing projects to IRP classification, charge fees or reopen existing performance standard or re-examine an existing unit's compliance with its performance standards. This is a notable step in promoting regulatory certainty for BESS project sponsors and financiers.

The AEMC did not, however, use the Final Determination to rule out the possibility that IRPs may be required to pay TUOS charges but did clarify that in its view it was unlikely that such charges would ever be payable. The Final Determination explained that whether or not TUOS charges would be payable by an IRP would be determined by the nature of the services it received from its Transmission Network Service Provider. If those services were classified as "negotiated services" under the NER (which is typical) then no TUOS would be payable, however if the services were classified as "prescribed services" then TUOS charges may be payable.

Despite fast-paced changes to the regulatory frameworks to address uncertainty, it will remain important for projects to clarify on a case-by-case basis their regulatory risks with the relevant network provider. This should be sought as early as possible, and in as much certainty as possible, to cement the network provider's position on certain regulatory categorisations, including for example, the imposition of TUOS charges, which can have significant impacts on a project's viability and operation.

CONCLUSION

Interest in developing BESS projects in Australia has proliferated among private and public bodies as the cost of technology reduces[14]. BESS project development is also being supported by federal government funding, for example ARENA is conducting a A$100m competitive funding round for large-scale batteries with advanced inverter capability (eg, grid-forming inverters)[15]. Expressions of interest in the ARENA funding round closed at the end of March 2021 with the successful funding recipients of such funding expected to achieve commissioning of their battery projects before the end of 2025. With further and continued regulatory reform to promote renewable and "clean" energy investment, Australia is well placed to continue its international leadership in BESS and other low-carbon technology energy solutions.

As the first long-term project financed BESS in Australia using a split procurement model, Genex, Infradebt and Tesla have made successful headway in the development of energy storage projects in Australia, especially during a time of regulatory ambiguity. The innovative solutions and arrangements employed in this project to address the risks and tensions in limited recourse financing demonstrate the motivation and interest that private and public stakeholders have in promulgating these developments.

Professional advisers to Genex included: Herbert Smith Freehills (legal), EY (tax), Aon Risk Services Australia (insurance), Baringa Partners (market), Nord/LB (structuring bank) and RINA Tech Renewables Australia (technical). Professional advisers to Infradebt included: HWL Ebsworth (legal). ■

FOOTNOTES

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