Arundel BESS – Frequently Asked Questions

BACKGROUND

Who is Eku Energy?

Eku Energy is a specialist in energy storage projects and technology: this is what we do. What sets us apart is our technology enabled business paired with our curiosity and outcomes focused mindset to deliver innovative solutions around design, contracting structures and financing to achieve the most cost-effective clean energy solution to energy users.

Eku Energy operates across the entire project lifecycle from origination and development through to construction and ongoing management. The company's global presence across Australia, Japan, Italy and the UK allows us to bring together a wealth of experience in navigating complex regulatory, financial and market environments. We want to pave the way for a greener and just future for all, by securing tomorrow's energy today.

Eku Energy is deeply committed to our mission of accelerating the global energy transition by delivering safe, secure and reliable energy storage solutions that provide cost-effective clean energy to existing and future generations. Our vision is to be recognized as the world's best creator of energy storage investment products. For more information, please visit ekuenergy.com.

Where does Eku Energy operate?

Eku Energy is headquartered in London with further offices in Sydney, Melbourne, Milan, Singapore and Tokyo.

What is Eku Energy's pipeline?

We currently have 8 assets under either construction or in operations with a further 50+ projects in the pipeline across the markets we operate in.

What is a Battery Energy Storage System (BESS)?

A Battery Energy Storage System (BESS) is a large-scale energy storage facility that stores and releases energy to the electricity grid. A BESS comprises several "enclosures" or battery units (broadly resembling a shipping container), inverters, transformers and other electrical equipment. A BESS site usually also includes access tracks, water tanks, site offices, amenities and screening.

Why do we need Battery Energy Storage Systems?

Energy storage is essential in supporting the safe, secure and reliable operation of Australia's National Electricity Market. A BESS provides fast responding, dispatchable energy to the grid to ensure that electricity supply remains reliable and stable. At times of excess supply in the grid, such as during the middle of a sunny day, the BESS will charge by importing electricity from the

grid. During times of lower supply and higher demand, such as the early evening, the BESS will discharge, exporting electricity into and stabilising the grid.

A BESS makes electricity generated from intermittent sources like wind and solar dispatchable and can help to balance the grid. It also enables the grid to absorb more renewable energy generation such as household rooftop solar. A BESS also provides a range of essential system services, such as frequency and voltage support which ensure the grid operates securely and reliably.

ABOUT THE PROJECT

What is the size of Arundel BESS and where will it be located?

Arundel BESS is a proposed utility-scale 300MW 4-hour lithium-ion battery energy storage system. The Project would be located within the Wagga Wagga City Council (WWCC) Local Government Area (LGA) in the suburb of Gregadoo, located approximately 14km south of the centre of the inland city of Wagga Wagga and 800 metres from the Wagga Wagga 330kV substation. The project would operate in the National Electricity Market (NEM) with a proposed operational life of 20 years.

The project is currently in development with planning and environmental studies underway. We are keen to receive feedback from local residents and the community about the proposed project.

Where is the Project up to?

The proposed Arundel BESS Project is in the initial Scoping Phase of the NSW Department of Planning, Housing and Infrastructure's (DPHI) approval process. The Scoping Report is developed in the early stages of the process and is used to determine the technical assessments that will be included within the Environment Impact Statement (EIS).

Why is this Project needed?

BESS's are vital for maintaining the safe, reliable and secure operation of Australia's National Electricity Market (NEM). They provide fast-responding, dispatchable energy that helps keep the grid stable.

A BESS stores electricity when there is excess supply in the grid, such as during the middle of a sunny day, and discharges it during periods of lower supply and higher demand, such as in the early evening. This makes renewable energy sources like wind and solar more consistent and dependable. It also allows the grid to accept more renewable generation, including energy from rooftop solar systems.

One way to think about a BESS is like a detour on a busy road. If part of the network is unexpectedly blocked, such as a substation going offline, a BESS can quickly send electricity where it is needed to keep homes and businesses powered.

NSW has a roadmap to reduce emissions by 70% by 2035 compared to 2005 levels and increase NSW's update in renewable energy generation. This statewide initiative will create 6,300 construction and 2,800 ongoing jobs in regional Australia and will reduce electricity prices in the state by $130 per year for households, $430 for small businesses and reduce NSW's carbon emissions by approx. 90 million tonnes (NSW Government 2020). Currently, the renewable energy penetration in NSW is 53% (Energy NSW 2024), which includes large scale solar, rooftop solar, hydro power stations, wind, and biomass power stations.

As we move away from coal fired power stations to renewable energy, this kind of technology is an important part of helping stabilise the grid as our state and national energy infrastructure undergoes significant change.

Why did Eku Energy choose this site for the potential BESS?

The proposed Arundel BESS is adjacent to the Wagga Wagga Substation, a strategically important node within the NSW electricity system. Wagga Wagga Substation sits at the convergence between two transformational transmission infrastructure projects: Project Energy Connect to the west and Humelink to the south-east.

Hosting a battery energy storage system at this site will

- support system security by delivering local system strength and voltage regulation
- firm existing and new energy generation
- support electricity transfers between local and regional areas, as well as South Australia, NSW and Victoria to help put downward pressure on electricity prices

Who approves the Project?

As a state-significant project, the project will be reviewed by DPHI.

When will construction commence and how long will construction take?

The construction start date is dependent on a variety of factors, including development approval, selecting a construction company, and receiving grid connection approvals, negotiation of a Power Purchase Agreement (PPA) and completion of the Financial Close process. Currently construction is estimated to commence no earlier than 2027. Once construction contractors are appointed, works on site are to take approximately 27 months to complete.

How do you plan to manage traffic during the construction period so that it does not impact residents?

Appropriate traffic management plans will be in place during the construction period and residents will be notified ahead of time should there be any essential works/periods where access may impact traffic flow.

How do you plan to manage any waste including construction waste that is generated?

A Construction Environment Management Plan (CEMP) will be developed by the Balance of Plant Contractor to ensure appropriate measures are in place to protect flora and fauna. A site manager will be appointed to ensure that all waste will be stored, transferred, and collected onsite by a commercial contractor, that all building waste is to be stored on the site in suitable receptacles/containers and collected regularly and that the lessee is to take all reasonable steps to ensure that waste, particularly wind-borne litter, does not affect adjoining or adjacent properties. Methods for waste management and minimisation are identified and planned for at the planning stage of the project using the Waste Management and Minimisation Assessment.

All wastes from this project will be tracked using a waste disposal register. This register will identify the following as a minimum:

- Date and time that loads departed site
- Who inspected the load and type of waste
- Vehicle rego and load quantity
- Disposal point
- Disposal Certificates
- Quantity of material recycled or reused

In addition, a waste management and minimisation assessment will also be undertaken to determine the requirements for contaminated materials and waste.

How long will this Project operate for? What happens after that?

The operational life of the Project is expected to be 20-30 years. Once the BESS reaches its end of life, it will be decommissioned, and the land will return to its original condition, or reenergised. This will involve removing the BESS and related infrastructure and restoring the site. The decommissioning requirements will be set out within contracts with the landowner and within the approvals process.

Please see the ‘Decommissioning’ section for more information.

What will happen to the residual land?

The residual land will continue to be used by the landowner.

DESIGN CONSIDERATIONS

What does a BESS look like?

BESS's are container-like modular systems grouped with multiple inverter stations that are configured based on site and capacity obligations and can be compared to shipping container-like objects. The containerised form of the BESS will decrease installation and maintenance duration, enhance the electrical and environmental safety of the entire plant, and minimise the impact on the original landscape. As technology improves, the systems are becoming increasingly efficient and more compact.

The Project would include the following key built form features:

- BESS including battery enclosures, inverters, transformers, switchgear and control room
- Onsite substation including transformer switch bays and switchgear housed in portable substation containers
- Connection from the onsite substation to the existing overhead 132kv transmission network
- Permanent office, operation and maintenance (O&M) buildings, hardstands and Project signage
- Site access to the BESS from Holbrook Road, internal site access tracks and parking
- Stormwater management infrastructure, lighting, fencing and security.

Will there be any visual impact?

Inevitably, the installation of a BESS will have some effect on the current look of the landscape, though the BESS cubicles are unlikely to emit glare or reflection. The SSD process consists of independent technical assessments, and visual impact will be assessed as part of this. If required, BESS facilities can be screened (by either vegetative or artificial means) to minimise any potential visual impacts.

Eku Energy is committed to working closely with the local community to address any concerns and encourages the community to approach them with any issues that may arise.

Will the Arundel BESS be lit up at night?

No, the Arundel BESS will not be brightly lit at night. Lighting will be limited to essential safety and security purposes, with no continuous or high-intensity illumination planned.

In general, BESS facilities are designed to minimise light pollution. They typically use shielded, downward-facing fixtures along with motion sensors and timers to reduce unnecessary lighting. Higher levels of lighting are only used in response to security incidents or in remote locations where there is no impact on nearby residents. These design measures help protect the night-time environment and limit disturbance.

Do batteries emit noise and how will that impact residents?

During construction, the potential impacts of the project on the surrounding area residents may include noise and increased traffic movements to support the safe delivery of plant to site.

During operations, batteries do emit some noise during their operations depending on their operating mode and ambient air temperature. However, the design of the BESS will minimise operational noise and mitigate noise through attenuation measures (such as acoustic walls) to ensure alignment with local regulations and community expectations.

COMMUNITY

What benefits will the community receive?

As the project is expected to operate for 20+ years, Eku Energy is dedicated to delivering long-term investment in the regions and communities where we work. Community engagement is a priority for us, ensuring the project creates meaningful economic and social benefits for all involved.

Eku Energy is adhering to the NSW Government's Benefit Sharing Guidelines (2024) and encourages community members to review these guidelines for more information. Eku Energy are committed to ongoing engagement with all stakeholders who have an interest in, or may be affected by, the project. Feedback collected through these interactions will inform the development of a tailored community benefit program designed to foster positive outcomes and deliver real value to the local area.

Eku Energy welcomes and encourages continued community input, particularly ideas and opportunities for initiatives that they can support to further benefit the region.

Has the community been consulted on this project and how did this consultation occur?

Eku Energy are committed to transparent, open and proactive consultation with Wagga Wagga Regional Council, local stakeholders and community members to share information about the proposed project. The project is currently in the scoping phase in preparation for the Development Application. We value all and any constructive feedback as it informs our application.

While we have broadly advertised our public engagement events via local media, we want to ensure that those members of the community in closest proximity to the project were informed first. On July 1st our team door knocked near neighbours just a day after they had received information via a letterbox drop to properties within a 2km distance of the proposed project site. During these conversations, our team discussed concerns raised by residents such as potential visual impacts, fire management and noise. We have since been meeting with neighbours to hear their concerns in further detail, answer questions and discuss the status of the project. Our community engagement sessions this week on July 22 and 23 are the first introductions of the proposed project and the team to the broader community. We will be engaging with the Wagga Wagga community, Council and stakeholders throughout the process.

The project team will be in the local area on a regular basis, yet everyone can reach out to us at any time via arundel@ekuenergy.com, calling 1800 989 687 or visiting ekuenergy.com/Arundel.

Eku Energy maintains strong commitments to engagement, consultation and benefits sharing with First Nations people. In line with the delivery of our 'Reflect' Reconciliation Action Plan. These initiatives will include meaningfully engaging and consulting with the Wiradjuri people; commitments to identifying and establishing partnership opportunities for the supply of services or goods in support of the proposed project; delivering a benefit sharing scheme that provide long-lasting and positive impacts for the local First Nations community.

How will the local community benefit from this project?

Eku Energy are committed to employing local workers, sourcing from local suppliers and sharing benefits of the projects with the communities in which we operate. The Arundel BESS welcomes interested suppliers, contractors and interested workers to get in contact with the project team via arundel@ekuenergy.com to express their interest.

Eku Energy will also establish a community grants program to support local not-for profits and fund projects or initiatives of importance and value to the broader community. We welcome the community's input on the scope and priorities to co-create benefits, that align with the values of having a positive impact on the **environment, social connectedness** as well as **employment and education**. We welcome ongoing suggestions on ways that Arundel BESS can share benefits with the community.

In due course, Eku Energy will invite eligible local non-for profits and community organisations to contribute to the program design by getting in touch and applying via the project website.

How many jobs will be created through the project?

During the peak of the construction, we estimate approximately 100-150 jobs will support the project.

TECHNICAL

What type of BESS units will be used?

The design is still to be finalised; but lithium-ion is the preferred electrical storage technology because it is a proven technology which is readily available for broad scale deployment at the site. During detailed design, the Original Equipment Manufacturer (battery supplier) will be confirmed through commercial tendering and procurement processes to ensure the Project is optimised in terms of yield and efficiency, within the parameters of the approval.

Can we rely on these new technologies?

Utility-scale batteries are specifically engineered for long-term safety and reliability. Unlike mobile device batteries, which are designed to be lightweight and compact, utility-scale batteries are built for stability and long life.

In comparison, phone and tablet batteries are typically designed to last 2 to 3 years, or around 300 to 500 full charge cycles, before their performance starts to noticeably drop. This is because they're built for portability, not long-term use. They are also more likely to wear out quickly due to constant use, frequent fast charging, and exposure to changing temperatures and humidity.

Unlike utility-scale systems, these devices don't have active systems to manage their environment, so the batteries are more affected by everyday conditions like heat, cold, and moisture. All of this shortens their life considerably.

The Arundel BESS, in comparison, is proposed for 20+years. The batteries are housed in secure, climate-controlled containers and are monitored constantly by systems that regulate heat, voltage, and other conditions to ensure safe operation.

These safety measures significantly reduce the risk of overheating or fire. They are widely recognised for being one of the safest and most stable types of battery technology available.

How high will the units be?

BESS units will be installed on low-lying structures and are expected to not exceed 5.5m above the natural ground level. It is expected that the project area will be at the same height or lower than other existing features in the landscape.

Will there be outages during construction?

There will be no outages expected during the construction phase. Once the BESS is built and operational, it will help to increase the grid stability.

MANAGING RISKS

Do batteries increase fire risk?

Energy storage solutions that are available in the market are specifically designed to manage and mitigate fire risk and they operate with comprehensive safety features in both the hardware and software technology. Utility scale batteries that are being constructed in Australia are designed to meet industry-leading safety standards, such as UL9540, UL9540A, and IEC compliance.

Fire safety will be a central consideration in the design of the Project. Key safety features include adequate spacing between units and installation on gravel surfaces to reduce fuel loads and minimise the risk of fire spread.

Lithium-Ion batteries, if damaged or faulty, can experience a thermal runaway event which may result in a fire. Put in the simplest of terms, thermal runaway in lithium-ion batteries is an overheating of the battery cell which results in a chemical reaction. This process occurs when the temperature within the battery cell exceeds a certain point - that is, the heat generated is greater than the heat that is dispersed. Battery energy storage systems include a range of measures to mitigate a fire from starting (monitors, sensors, alerts, HVAC controls) to ensure that the batter is operated within its safe limits. Although the likelihood of Arundel BESS experiencing a thermal runaway event is extremely low, the project is designed to manage such an event by isolating the container with the overheating module and, in the case of fire, ensure the fire does not spread to the adjoining containers or equipment.

Equipment such as heating ventilation and air conditioning will safely maintain temperature conditions within BESS enclosures, including during high temperature conditions. Continuous remote monitoring of the battery performance will detect and respond to any abnormal conditions, with the ability to isolate and shutdown any batteries well before the risk of fire.

Asset protection zones and perimeter roads, in accordance with Fire and Rescue NSW (FRNSW) and Rural Fire Service (RFS) requirements, will be incorporated into the design. These and other mitigation measures aim to reduce the potential for fires to enter or leave the development.

In line with best practice for fire management relating to a BESS, the recommended response in the highly unlikely event of a battery fire is a controlled, non-intervention approach. Emergency service personnel will be on-site and on standby during this event, allowing the affected unit to burn out under supervision while ensuring the fire does not spread to adjacent equipment (including adjoining batteries) or surroundings.

It is important to note that such scenarios are extremely rare, and the Project incorporates multiple layers of safety to prevent and contain any such event. The likelihood of fires starting from other development types within the region (such as residential, commercial, agriculture, fuel and transport) far exceeds the potential associated with a BESS development.

Eku Energy will work closely with the FRNSW and other relevant authorities, who are central to the review and approval of the Fire Safety Study and emergency response plans.

What happens in the case of a chemical spill?

BESS's are engineered with multiple layers of protection to prevent and manage chemical spills. Each unit includes internal bunding (a built-in containment system) designed to capture and isolate any potential leaks. Containers are sealed at the base, and many systems include liquid-cooled bottom plates to further reduce the risk of leaks.

In the unlikely event of a fire, BESS are equipped with advanced detection systems (such as heat and gas sensors) that can automatically shut down the system before ignition occurs. The FRNSW and RFS do not use water to extinguish battery fires, helping prevent contaminated runoff from entering nearby soil or waterways.

In addition to physical design features, BESS operations are monitored and controlled by systems such as SCADA (Supervisory Control and Data Acquisition) and BMS (Battery Management System), which play a key role in identifying and managing chemical hazards. An Environmental Management Strategy will also be in place to guide safe handling, containment, and emergency response procedures.

Site-specific design measures, such as appropriate drainage systems and hydrology reviews, will ensure any accidental release is contained and does not leave the site.

Is the site affected by flooding?

Comprehensive assessments will be undertaken to evaluate whether the site is susceptible to flooding. These assessments include traffic and hydrology investigations as part of the EIS process, which will confirm the suitability of the access road under heavy rainfall conditions.

Eku Energy is collaborating closely with technical experts to ensure that any potential impacts on neighbouring properties are minimised. While the likelihood of significant stormwater flooding is low, the design of the BESS will incorporate measures to ensure its infrastructure remains stable and secure.

Will there be impacts to air quality?

A known concern for many surrounds air quality, particularly the potential release of toxic pollutants during a battery fire and the possible health impacts on nearby residents and first responders.

A well-known example is the 2021 fire at the Victorian Big Battery in Geelong. The fire began in one Tesla Megapack (MP1) containing lithium-ion cells and spread to a neighbouring unit (MP2) during installation and commissioning. MP1 had been manually shut down earlier that morning with no abnormal signs. Smoke was later observed, prompting the isolation of all Megapacks and a call to emergency services. The fire was contained to the two units and burned out over six hours without any injuries or explosions.

To assess any community impact, EPA Victoria deployed two mobile air quality monitors within 2 km of the site in locations where community exposure was most likely. Key pollutants measured included hydrogen fluoride, carbon monoxide, particulate matter, and volatile organic compounds. These substances can pose health risks under certain conditions. However, the EPA confirmed that air quality in the local area remained good throughout the incident, and there were no lasting environmental impacts or health issues reported (Fisher Engineering, 2022).

These findings indicate that, even in the rare event of a battery fire, the impact on air quality is unlikely to pose a significant risk to the health of the community or emergency responders, provided the incident is managed properly. Insights gained from this event have been incorporated into the PHA report.

Nevertheless, despite the very low fire risk, any potential effects from smoke or fumes will be thoroughly assessed in a Fire Safety Study during the post-approval phase. This study will include the identification and application of mitigation measures to manage any potential impacts.

Are there health risks associated with EMF's and living near a BESS?

EMFs (electro-magnetic fields) are naturally present in the environment. They are present in the earth's atmosphere as electric fields, while static magnetic fields are created by the earth's core. EMF are also produced wherever electricity or electrical equipment is in use (e.g. household appliances like fridges, and powerlines).

The use of electricity in daily life exposes us to low frequency EMF and are not considered a risk to human health (ARPANSA, n.d). A kitchen stove has an EMF range of 2-30 milligauss (mG) and a hairdryer 1-70mG. Standing at the edge of a transmission powerline easement would be in the range of 10-50mG, and under a transmission powerline 20-200mG.

The current international standard for human exposure to limit EMF set up the International Commission of Non-Ionizing Radiation Protection (ICNIRP) is 2000mG (EnergyCo, 2022).

EMFs from a BESS are typically less than household appliances and are not distinguishable from background levels at the site boundary.

Technical and engineering experts, including the Australian Radiation Protection and the Nuclear Safety Agency (ARPANSA) have found no known or documented electromagnetic radiation impacts associated with big batteries.

SOCIAL AND ECONOMIC

Why here? Why not a Renewable Energy Zone (REZ)?

In New South Wales, a REZ is a designated area identified by the government as a zone that requires transmission infrastructure upgrades and would be suitable for hosting renewable energy infrastructure, such as solar and wind farms. Utility-scale BESS's are crucial outside of these REZs to enhance grid stability and reliability.

They provide backup power during outages, balance supply and demand, and support peak shaving and load management, which is particularly important in areas with less concentrated renewable energy sources. Additionally, BESS facilitate the integration of distributed energy resources like rooftop solar panels, especially in remote and rural regions, reducing dependence on diesel generators and enhancing energy security.

The development of a BESS outside REZs can stimulate local economies by attracting investments, creating jobs, and supporting the development of renewable energy projects. This approach ensures a resilient, efficient, and sustainable energy system across Australia, benefiting both urban and rural communities.

Will neighbouring insurance premiums be impacted by the development?

Based on available information, there is no indication that the development of energy infrastructure will have a direct impact on neighbouring insurance premiums. As confirmed by the Insurance Council (May 2024), there have been no reported cases where their members have denied coverage or increased premiums solely due to the presence of energy infrastructure on a property or nearby.

The Clean Energy Council similarly highlights that any adjustments to insurance premiums are unlikely to be directly tied to clean energy developments. Instead, rising insurance costs are largely driven by broader factors, including the escalating frequency and costs of natural disasters, inflation affecting building and vehicle repair expenses, the increasing value of homes and vehicles, and higher operational costs for insurers.

Will my house be devalued?

As grid-scale battery Projects are relatively new in Australia, there is limited evidence to suggest any changes to property values or impacts on future land use opportunities.

The Project will be designed to align with the mitigation measures recommended by various technical assessments, such as the Landscape and Visual Impact Assessment (LVIA) and Noise Impact Assessment (NIA).

The LVIA developed for the Project will assess visual impacts to private receivers and public viewpoint in accordance with relevant NSW visual impact guidelines. Similarly, the NIA will include construction and operational noise modelling to estimate potential noise impacts associated with the Project. Construction and operational noise are predicted to comply with all relevant noise criteria, due to the scale of the Project and distance from receivers.

Nonetheless, the Proponent remains committed to minimising potential impacts that could influence property perceptions.

Will there be always a contact onsite in case of emergency?

The BESS would operate 24 hours a day, seven days a week and be monitored remotely (including CCTV), with infrastructure maintenance undertaken on-site. An operational and maintenance (O&M) contractor would be employed to operate the Project (including maintenance, repair, troubleshooting, and monitoring).

DECOMMISSIONING

How long will this Project operate for?

The operational life of the Project is expected to be 20+ years. Once the BESS reaches its end of life, it will be decommissioned, and the land will return to its original condition, or reenergised. This will involve removing the BESS and related infrastructure and restoring the site. The decommissioning requirements will be set out within contracts with the landowner and within the approvals process.

What are Eku Energy's plans for decommissioning?

At the end of the BESS's useful life, the project will be fully decommissioned. This will include:

- Removal of all above-ground, non-operational equipment.
- Removal of any underground equipment buried at a depth shallower than 0.5 meters; and
- Cleanup of any residual contamination.

During decommissioning, Eku Energy will assess options for repurposing the facility, re-using equipment, and recycling materials wherever possible. Any materials that cannot be re-used or recycled will be classified according to relevant guidelines and disposed of at an appropriate facility.

What happens to batteries at the end of their life, and can they be recycled?

Yes, lithium-ion batteries used in BESS's are highly recyclable. Up to 95% of valuable materials such as lithium, nickel, cobalt, copper, aluminium, and iron can be recovered through specialised recycling processes.

In Australia, the battery recycling industry is growing rapidly. While current national recycling rates for lithium-ion batteries are still low (around 10%), this figure includes smaller consumer batteries. Larger BESS units offer significantly greater recycling value due to their size, concentrated material content, and ease of disassembly.

Organisations like CSIRO are leading research into battery recycling technologies, and government-backed programs such as B-cycle are supporting safe collection and processing. As of 2024, ten accredited and EPA-licensed recyclers are actively handling mixed battery waste across the country.

Manufacturers, including Tesla, are also adopting take-back schemes for end-of-life systems, helping close the loop and reduce waste. With more utility-scale BESS expected to reach the end of life in coming years, continued investment in recycling infrastructure will be key to building a more sustainable and circular battery economy in Australia.

How can I get in contact?

We operate a dedicated toll-free number 1800 989 687 and our email is arundel@ekuenergy.com. You can also find information on www.ekuenergy.com/arundel.