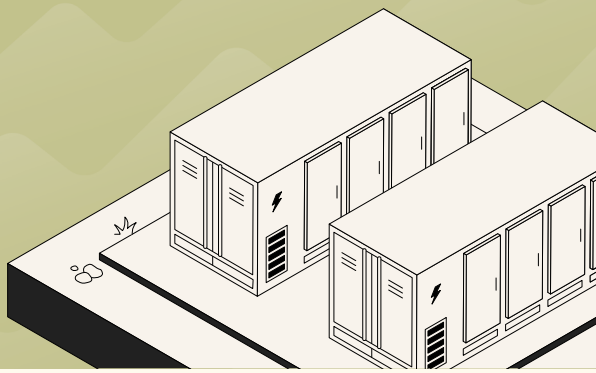
avenis energy

FAQS

Karangi Battery Energy Storage System (BESS)



General FAQs

What is proposed?

Avenis Energy is proposing to construct and operate a 240MW Battery Energy Storage System (BESS) located 11 km northwest of Coffs Harbour Town Centre, in Karangi, NSW. The Project will connect into the adjacent Transgrid Coffs Harbour Substation to import and export electricity onto the transmission network. The purpose of the development is to assist the national electrical grid at times of peak demand and during adverse network operation, ensuring stability of supply.

What is a BESS?

A BESS (Battery Energy Storage System) is a system that stores electrical energy using a collection of batteries. It captures power from various generation sources on the transmission network including solar and wind. The system helps mitigate the intermittency of these sources by offering backup power to overcome network constraints, including adverse weather conditions and limited grid capacity. BESS plays a vital role in supporting the broader use of decentralised energy sources and infrastructure, helping to minimise the risk of widespread power outages. The technology of the battery units is relatively similar to the kind of battery you have in your phone.

Why is this Project needed?

The Project would support the national electricity network during peak times and during adverse network operation, ensuring stability of supply.

NSW aims to cut emissions by 70% by 2035 (compared to 2005 levels) while expanding renewable energy generation. This initiative is expected to create 6,300 construction jobs and 2,800 ongoing positions in regional Australia. Additionally, it will help lower electricity costs by approximately $130 per year for households and $430 for small businesses while reducing carbon emissions by around 90 million tons (NSW Government, 2020). As of 2024, renewable energy accounts for 53% of NSW's electricity mix, including large-scale solar, rooftop solar, wind, hydro, and biomass power (Energy NSW, 2024).

Who is Avenis?

Avenis Energy is dedicated to developing utility-scale battery energy storage projects, and large-scale renewable energy projects that deliver clean, green energy into the transmission network, reducing reliance on fossil fuels and helping minimise the impacts of climate change. Avenis prides itself on working closely with landowners, near neighbours, key stakeholders and the wider communities where our projects are proposed.

The Avenis team has significant experience in the industry across all elements of the development cycle, from site selection, planning and permitting to engineering, construction and operation. The team has been working together since 2018 and is solely dedicated to the Australian market, with a proven track record of developing high quality community sensitive projects.

How does the Development Application process work?

Given the significant potential that the development has in contributing to the clean energy transition and climate action targets of the state, the BESS proposal is considered as a State Significant Development (SSD) by the NSW Department of Planning, Housing and Infrastructure (DPHI).

At the early stage of the development application process, a Scoping Report is submitted to DPHI that helps to determine which technical assessments will be included within the Environmental Impact Statement (EIS). Following the submission of the Scoping Report and evaluation by DPHI, Secretary Environmental Assessment Requirements (SEARs) will be issued, outlining required assessments and considerations for the EIS.

Once SEARs are supplied, EIS reporting commences. An EIS is a very in-depth document that outlines specialist assessments and contains detailed planning information regarding the development. Following completion and lodgement of the EIS document with the DPHI, the Minister for Planning will decide whether to issue a development approval.

You can learn more about the SSD process on the NSW Government's Department of Planning website.

Who approves the Project?

The Minister for Planning will determine whether to grant development approval, under New South Wales' State Significant Development Process (SSD). A decision will likely be made within 12 months following submission of the Environmental Impact Statement.

When will construction commence and how long will it take?

The construction timeline depends on several factors, including securing a planning permit, selecting a construction company, obtaining grid connection approval, negotiating a Power Purchase Agreement (PPA), and completing the Financial Close process. Once contractors are appointed, construction is expected to take approximately 18 months.

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

The Project is designed for an operational lifespan of up to 35 years. After this period, the site may either be decommissioned and restored to its original use as freehold land, or the utility will be upgraded and repurposed, subject to future energy requirements, landowner agreements, and lasting approvals.

Design Considerations

What does a BESS look like?

BESS utilities comprise of a series of units that resemble 20-foot shipping containers. This modular configuration is based on site parameters, system capacity and storage duration.

Why Karangi?

Selecting an appropriate site for a Battery Energy Storage System (BESS) requires careful evaluation of several key factors, such as access to the electricity grid, existing land use, potential environmental impacts, and existing infrastructure.

In this case, the site was chosen due to its proximity to the TransGrid Coffs Harbour Substation and surrounding environment, which make it well-suited for the development.

Coffs Harbour is fastly growing regional hub, and this role is reflected in its strategic position within the state's transmission network. This utility would serve as a critical storage hub along the backbone of New South Wales's 330kV transmission network, reinforcing the region's importance in maintaining energy reliability and stability.

Will there be any visual impact?

The installation of a BESS will inevitably have some effect on the visual landscape; however, the BESS modules are unlikely to produce any glare or reflections. As part of the development application process, an independent technical assessment is undertaken to evaluate visual impact. If necessary, screening measures — such as vegetation or artificial barriers — can be implemented to minimise any potential impacts.

The proposed site is already well shielded by surrounding trees, but Avenis remains committed to working closely with the local community to address any concerns, questions or suggestions.

Will there be any noise impact?

Like all utility developments, BESS facilities may generate noise during operation. However, as part of the development application process, an independent technical assessment will be undertaken to evaluate noise levels, any potential impacts, and provide clear mitigation measures to be incorporated into the BESS design to prevent regulatory noise emission levels at close by receivers.

Technical

What type of battery units will be used?

The equipment manufacturer is yet to be finalised; however, the manufacturer will be a global recognised leader in battery research and development. The Project will incorporate the latest technology available at the time of construction, ensuring high performance and reliability. Furthermore, the manufacturer will be well-positioned to provide ongoing technological updates to the equipment as needed. Generally, the battery units will be of similar technology to the battery used in your phone.

How high will the battery units be?

The BESS units are typically the size of a 20-foot shipping container and will be installed on low-lying foundations; as such, the units are not expected to 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.

How will construction traffic be managed?

Construction traffic will primarily access the development site via Casuarina Lane. During the estimated 18-month construction phase, vehicle types will range from light commercial vehicles to 26-meter B-Doubles. As part of the planning permit process, an independent traffic and transport assessment will be conducted. Before construction begins, a construction traffic management plan will be implemented to effectively manage and mitigate any potential impacts. Construction will only commence once the necessary planning approvals are in place.

Will there be electricity outages during construction?

No outages expected during the construction phase. Once the BESS is operational, it will help to increase the grid stability and reduce outages.

Are there health risks associated with EMF's from a BESS?

Electromagnetic fields (EMFs) naturally exist in the environment, with electric fields occurring in the Earth's atmosphere and static magnetic fields generated by the planet's core. EMFs are also produced whenever electricity is used, including in household appliances such as refrigerators and microwaves.

Daily exposure to low-frequency EMFs from common electrical devices is not considered a risk to human health (NSW Government, 2022). For reference, the EMF levels of a kitchen stove range from 2 to 30 milligauss (mG), while a hairdryer emits between 1 and 70 mG. Standing at the edge of a transmission powerline easement typically exposes a person to 10–50 mG, whereas directly underneath a transmission powerline, levels range from 20 to 200 mG.

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has established a human exposure limit of 2,000 mG (NSW Government, 2022). The EMF levels produced by a BESS are generally lower than those of household appliances and remain undetectable beyond the site boundary.

Technical and engineering authorities, including the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), have found no evidence of adverse electromagnetic radiation effects associated with large-scale battery storage systems.

Environmental

Do batteries increase fire risk?

The Project will not increase the risk of bushfires in the area. The BESS design will fully comply with the latest regulatory guidelines and requirements for BESS utilities, including provisions for clearance, accessibility, firefighting water supply, and firebreak buffer zones.

Avenis will collaborate with relevant fire service agencies to establish clear access requirements for the BESS in the event of a bushfire in the area, or a fire within the facility. Before construction commences, site-specific Emergency Management Plans will be developed to address fire prevention and response strategies during construction, operation, and decommissioning.

Avenis remains committed to working with the RFS to ensure the final design meets all required safety standards and best practices.

How will fire risk be managed onsite?

The likelihood of an onsite fire is very low. However, the proposed battery units are designed with multiple layers of protection to prevent onsite fires. Each unit will be equipped with advanced detectors, such as heat and carbon monoxide sensors, to identify abnormalities and automatically initiate a shutdown if needed. Additionally, these systems will send real-time alerts to our control room, where the battery units are continuously monitored, allowing for a swift response to any potential issues. Additionally, built-in fire suppression systems, including dry pipe and inert gas systems, are in place to extinguish any internal fires. A buffer zone around each battery unit will further help to prevent the spread of fire. We will also work closely with fire authorities to ensure that all safety protocols are established and clearly understood in the unlikely event of an emergency.

Are state fire authorities consulted on projects and plans?

Planning legislation in every jurisdiction outline that the relevant fire authority must be consulted and given the opportunity to make recommendations on management plans and mitigation measures. This is mutually beneficial as it ensures expert insights are incorporated into the design and operation of the facility.

Is the site affected by flooding?

The BESS infrastructure is expected to remain stable in the unlikely event of flooding. An independent assessment will evaluate hydrology and address risk and mitigation measures, as required.

Is there a contamination risk?

The BESS components will be equipped with spill containment measures, including plates, bunding, spill trays, and absorbents. In the unlikely event of a spill, these measures will ensure that any substance will be fully contained.

Are batteries recyclable?

Battery manufacturing has greatly improved in efficiency and scale in the past decade, driven by the critical growth phase of battery recycling. Nearly all materials in a lithium-ion battery, including nickel, cobalt, graphite, copper, aluminium, iron, and lithium, can be recycled, with up to 95% recovery rate.

CSIRO is actively involved in supporting lithium-ion battery recycling through research on metal and material recovery processes, new battery materials development, and fostering a circular economy for battery reuse and recycling.

Australia's lithium battery recycling industry, though in its early stages, is already demonstrating progress towards a cleaner and more sustainable future, with operational recycling facilities like Envirostream in Victoria.

The Ecocycle Group of companies has also announced the largest and most advanced lithium battery recycling plant in Australia will commence operation in late 2025.

Social and Economic

How will Coffs Harbour benefit from the Project?

We intend to work with local product suppliers and service providers, which will boost the local economy by creating job opportunities, both directly through construction and operational roles and indirectly through supply chain demands. Local businesses will also benefit from increased demand for building materials, equipment, plant hire, and other ongoing goods and services. Hotels and restaurants will also benefit from visiting workers and project staff. This economic activity could stimulate growth, support small businesses, and enhance community prosperity.

How many jobs will be created during construction of the Project?

The Project will create a range of employment opportunities, from skilled positions to manual labour jobs, with the workforce potentially tallying 180 at the peak of construction. Prioritising qualified local contractors is a key focus for Avenis in the development of the Project.

How many jobs will be available during operations of the Project?

Avenis Energy envisage 4 permanent roles for the operation of the Project. Maintenance contracts would also be required and would likely be met by local contractors, including plant hire, fence repair, road grading, etc.

What other benefits will the community receive?

Avenis is dedicated to making long-term investments in the regions and communities where we operate. Meaningful engagement with the local community is a key priority, ensuring that our project delivers both economic and social benefits.

The insights gathered from our community engagement work will help shape community benefit programs that create positive, lasting value for the local area.

Additional benefits may include potential upgrades to roads and intersections, and the provision of affordable, zero-emissions electricity to support the region's energy needs.

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 been denied coverage or have had 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 there always be a contact onsite in case of emergency?

A dedicated 24/7 contact will be provided during construction and operation. The Project will also be continuously monitored by remote CCTV.

Furthermore, the Operations Manager, and other staff members will be stationed near the Project.

How can local suppliers get in touch?

EMAIL US AT

karangi@avenisenergy.com.au

QUESTIONS AND FEEDBACK

For more information please visit our project website:
www.avenisenergy.com.au/projects/karangi

Or complete the feedback survey via the QR code.