

# Wandoan South

NOVEMBER 2020

VENA ENERGY AUSTRALIA

*Renewable Energy Project*

## Battery & Solar

*Community Information Package*



# Community Information Package

As you are aware Vena Energy Australia decided to cancel our Community Information Session, originally planned for April, due to the impacts of COVID-19. We didn't make this decision lightly; however, we believe that cancelling the event was of the utmost importance to ensure the health and wellbeing of the community.

As an alternative we've developed this Community Information Package (CIP); that we hope provides an opportunity for you to gain a further understanding of the Wandoan South Project and highlight our intent to commence construction of the Wandoan South BESS later this year.

This CIP intends to provide an overview of the entire Project, a description of the infrastructure and technology required for the BESS, detail our construction timelines and introduce our construction partners.

We're excited to progress the Wandoan South BESS with our construction partners; Doosan GridTech Australia (main contractor) and FKG Group (subcontractor). We hope to celebrate the Project's operation by late 2021!

## Vena Energy Australia

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## Our Local Team

### SINCE 2016

The team has grown to 21 local leading experts in the development, construction and operation fields of renewable electricity generation assets.

### THE PIPELINE

The Australian team are actively developing a diversified pipeline of over 2.5GW of renewable energy assets across New South Wales, Queensland and South Australia. With 1250MW of solar generation and over 500MW of BESS secured with Development Approvals in South Australia and Queensland.



### START TO FINISH

Site Selection  
&  
Feasibility



Planning  
Approvals



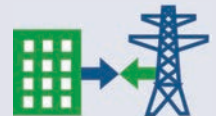
Land  
Acquisition



Financing  
&  
Sales



Construction &  
Grid Connection



Operation  
&  
Maintenance



# COMMUNITY & ENGAGEMENT

## Our Commitments | Our Communities



### OUR GOAL

We seek to contribute to those communities within which we are currently developing and operating within.

### OUR FOOTPRINT

We are determined to be a catalyst that will reduce dependency on coal and fossil fuels, and pave the way for a more sustainable future through renewable energy.

### OUR SUCCESS

We acknowledge that our long-term success goes hand-in-hand with enhancing the broader well-being of the communities and regions in which we operate.

### OUR ASPIRATION

We consistently seek to encourage local procurement and employment practices within all our host communities, for the life of the Project. This aspiration doesn't end with our local Vena Energy Australia team, but extends to all our partnering companies, such as our construction contractors.

### OUR SUPPORT

We've supported the following local initiatives within the Wandoan Area:

- Wandoan Community Commerce & Industry Inc. in 2017 for the Octoberfest.
- Juandah Rodeo Association in 2018 & 2019 for the Wandoan Rodeo.
- Wandoan State School and the 2018 Excellence Awards Night.
- The Wandoan Show Society for the 2021 Show.

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**That's just the beginning;  
we're committed to  
continuing our support for  
the Wandoan Community.**



# SUSTAINABILITY

## Our Story



## OUR COMMITMENTS

Sustainability is at the heart of all that we do at Vena Energy. Inspired by our Latin namesake, Vena Energy aims to become the vessel that accelerates the transition to renewable energy in the Asia-Pacific region. We are committed to generating solar and wind energy and providing reliability through BESS, that empowers and enriches local economies and communities.

## OUR PROFILE

We're focused on sustainable energies, economies and environments; we're committed to delivering renewable alternatives across Australia. We will achieve this through our core pillars of environment, society and governance.

**VENA ENERGY**  
**NOUN NOUN**

**Latin for the vein which brings blood to the heart for renewal.**  
**Power derived from the utilisation of physical resources.**

## VENA ENERGY ENVIRONMENTAL IMPACT METRICS 2019



**2,630,721**  
Households Powered<sup>(1)</sup>



**3,072,801**  
Greenhouse Gas Emission Reductions in Tonnes<sup>(2)</sup>



**3,739**  
Million Litres of Water Saved<sup>(3)</sup>



**663,672**  
Equivalent Cars Removed from the Road<sup>(4)</sup>



**51,213,349**  
Equivalent Trees Planted<sup>(5)</sup>

1. Households Powered is based on annual household electricity consumption of each operating country derived from Residential Electricity Consumption data obtained from the International Energy Agency (2017) and number of households data obtained from the United Nations and Taiwan Statistical Bureau (2019).
2. Greenhouse Gas (GHG) Emissions Reduction is calculated assuming that the generation from renewable energy plants replaces an equal quantity of electricity generated using fossil fuels. Respective country generation and emissions data obtained from Bloomberg New Energy Finance (2018).
3. Water Saved is based on water usage factors of solar and wind power plants compared against coal-based power plants using once-through cooling, generic technology. Data obtained from National Renewable Energy Laboratory Report (2012), by the national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy.
4. Equivalent Cars Removed from the Road is based on annual GHG emissions of passenger vehicles obtained from the United States Environmental Protection Agency (2019).
5. Equivalent Trees Planted is based on the amount of GHG sequestered by a medium growth coniferous or deciduous tree, planted in an urban setting and allowed to grow for 10 years, data obtained from the United States Environmental Protection Agency website, last updated: May 27, 2020.

# WANDOAN SOUTH PROJECT

Renewable Project | Western Downs



## THE PROJECT

The Wandoan South Project (WSP) is located in Woleebee; across 2 parcels equating to approximately 1940ha.

## THE APPROVAL

The Development Approval was approved by Western Downs Regional Council in August 2017, with a subsequent Other Change approved in March 2020.

The Project incorporates:

- Major Electricity Infrastructure - Battery Energy Storage System (BESS) over 3 stages and up to 450MW.
- Public Utility - Solar Farm over several stages and up to 650MW to 1000MW pending final technology choice.

## THE SITE

Has an undulating profile, which contains a range of environmental assets including several heavily vegetated areas and a variety of different classified watercourses. Preliminary Asset Protection Zones (APZ) between 25-50m have been established around classified watercourses and mapped remnant vegetation.

## SOLAR PROJECT

- 70% of the WSP site is dedicated to solar, and will be delivered across multiple stages.
- The staging will respond to market demand, retailer requirements and reflect current PPA's within the NEM.
- Potential for both single-axis tracking and fixed tilt mounting structure technology to be utilised.
- The capacity of the solar farm ranges from 650MW - 1000MW, depending on technology, with the ability to power up to 400,000 homes annually.

**The Wandoan South Project will be the 1st construction milestone for Vena Energy Australia in Queensland.**

**The WSP has been in Vena Energy's development pipeline since 2016.**

# WANDOAN SOUTH BESS

The Details | Up to 450MW



## THE STAGES

The BESS component of the Wandoan South Project will be established across several stages, all positioned opposite Powerlink's substation on Gadsbys Road.

The total BESS capacity for the entire WSP is up to 450MW, of which the first 100MW will soon begin construction.

## THE WHAT

The BESS will provide energy arbitrage and ancillary services to the National Electricity Market. Storing energy when the price of electricity is low. Typically when generation is high but there is a low level of demand and sell it back when the price of the electricity is high, normally when generation is low but the level of demand is high.

## THE WHY

Suitably placed due to the existing high voltage electrical infrastructure and connection to Powerlink's Wandoan South Substation. This connection provides a strong link to the wider electricity grid, which has an extensive customer base given the high electrical demand within the local area due to the LNG industry within the Surat Basin.

## BENEFITS

The BESS has a strong connection point within the Western Downs Region, which provides for unconstrained use.

The BESS will facilitate future renewable energy generation.

The BESS will help with system stability by providing a range of ancillary services, as well as dispatchable electricity supply during periods of high demand.

The BESS is located in an area with high solar resource, matched with a strong electricity demand due to the extensive energy industry in the region.



# WANDOAN SOUTH BESS

## Technology | Components



**VENA  
ENERGY**  
AUSTRALIA

**Discharge capacity of 100MW  
and storage capacity of  
150MWh of energy, powering  
up to 57,000 average homes.**

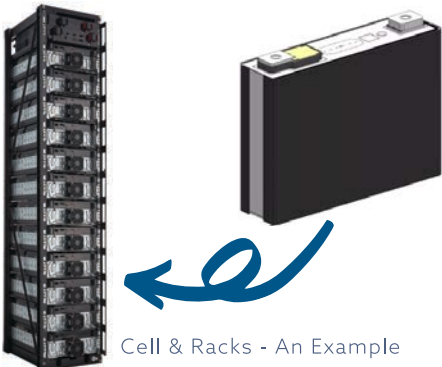
## TECHNOLOGY

The main components of the BESS will be:

- A large sealed building housing the battery cells.
- A number of outdoor inverter stations to convert the DC electricity of the cells to AC.
- Substation to step up the voltage to the transmission network voltage and provide electrical switching and control.

## BATTERY CELL

Typical dimensions: 125mm high, 45mm wide, 173mm long. Smaller than your average text book! Installed in racks which will be organised in parallel rows, similar to a server rack.



Cell & Racks - An Example

## COMPONENTS

Nearly 500,000 battery cells make up the Wandoan South BESS.

The cells will be housed in approximately 1600 racks.

These separate racks will be divided across 4 partitions within the battery building; all constructed with concrete walls to prevent the spread of fire and increased insulation, as an additional design precaution.

Power conversion from DC to AC will be performed by 17 inverter stations located outside the building.

The cells comply with the UL9540A standard, the most stringent test of its kind.

Patented VESDA fire suppression system installed along the battery racks that activates in the presence of fire.

Separate fire suppression systems are included in the switchroom and control room, along with smoke alarms and remote monitoring systems as per the Australian Standards.



# WANDOAN SOUTH BESS

Stage 1 | AGL



## OUR PARTNER

Vena Energy Australia have partnered with AGL Energy for the BESS as part of the Wandoan South Project.

## THE AGREEMENT

- Long term usage agreement between Vena Energy Australia and AGL Energy.
- BESS will be built, owned and maintained by Vena Energy Australia.
- AGL will decide when and how the BESS is to be run.
- AGL will utilise the BESS as part of their portfolio of electricity generation assets in Queensland.

**Playing a major role in Australia's transition to cleaner energy; together Vena Energy & AGL will continue to modernise Queensland's energy supply with the BESS.**



**We look forward to switching on the BESS - coming to the Western Downs in 2021!**



# WANDOAN SOUTH BESS

## Construction Schedule | Milestones



### TIME FRAMES

The BESS has a construction timetable of approximately 12 months, with commencement of site establishment in October 2020. Anticipated completion of construction in September 2021. Peak construction workforce of 45 people.

### CONSTRUCTION

The major milestones for the BESS construction program:

1. Design & Engineering
2. Procurement of Equipment
3. Site Establishment
4. Earthworks, Civil Works & Underground Cabling
5. Foundation Installation
6. Installation of Battery Building, Inverter Stations, Electrical Substation, Control Room & Maintenance Building
7. Commissioning & Testing - High Voltage Electrical Connections
8. Commissioning & Testing - Plant

### THE DATES

#### Detailed Design Works

March 2020 - September 2020



#### Site Civil Works

October 2020 - April 2021



#### Delivery of Equipment

December 2020 - May 2021



#### Installation

December 2020 - May 2021



#### Commissioning & Testing

June 2021 - September 2021



# CONSTRUCTION PARTNERS

Doosan GridTech Australia | Main EPC Contractor  
FKG Group | Subcontractor



## Doosan GridTech®

All of us at Doosan GridTech are honoured that Vena Energy Australia selected us as their EPC partner to deliver Queensland's largest battery energy storage system at the dawn of a new energy future for Australia. We're so proud that the Wandoan South BESS solution designed by our Australian team will provide increased grid resiliency for the country's third-largest economy.

We are a global company of power system engineers, software developers and battery storage delivery experts that help electric utilities and power producers bring more renewable power onto the grid. Our teams have designed and built energy storage installations in the Americas and Asia-Pacific region - representing 260MW of capacity.



With offices in Toowoomba, Brisbane, Cairns, Darwin, Mackay, Newcastle, Rockhampton, Roma and Townsville the FKG Group provides integrated construction, civil engineering and support services for the property, resources, infrastructure and government sectors across Australia.

The FKG Group is committed to delivering value for clients through our core business units and our service partners; providing integrated, total project solutions.

## NEXT STEPS

The FKG Group will require the following trades and services:

- Steel Reinforcement
- Concrete Supply & Pumping
- Structural Steel
- Roofing Materials & Contractors
- Gravel Supply
- Civil Contractor
- Hire Equipment
- Accommodation
- Meals

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All subcontractors and suppliers interested in tendering for the Wandoan South BESS with Doosan are requested to submit an Expression of Interest (EOI).

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**EOI's to be sent via email to:**  
**[tenders@fkg.com.au](mailto:tenders@fkg.com.au)**  
**Subject: Doosan Project EOI**

Answering Australia's call for cleaner energy

# Vena Energy Australia

