

# Fulcrum3D Sodar Case Study

Clarke Creek Wind Farm



# Fulcrum3D Sodar Case Study: Clarke Creek Wind Farm

Fulcrum3D treats all information regarding monitoring sites in the strictest of confidence. Below is a case study from monitoring sites that we are at liberty to discuss with express permission from our clients.

## Clarke Creek Wind Farm

Lacour Energy is an Australian renewable energy development company focused on developing premium wind and solar projects across Australia. Goldwind Australia specialises in comprehensive wind power solutions with over 1000 MW of renewable energy currently under construction in Australia and a pipeline of over 1000MW in the development phase. Lacour Energy has partnered with Goldwind Australia to deliver the Clarke Creek Wind Farm in central Queensland.

The Clarke Creek Wind Farm is currently Australia's Largest wind farm project, consisting of up to 195 wind turbines with a power output of over 800MW, to be built in two stages starting in 2021. This is in addition to 400MW of solar power and a battery storage facility. Clarke Creek Wind Farm is located on the Broadsound Range: approximately 50km inland, 150km north west of Rockhampton and 150 km south of Mackay in the Isaac Shire and Livingstone Shire areas.

Key features of the site include strong wind speeds and the high capacity power lines which run parallel to the site. The bias of the strong winds throughout the night is complemented with the solar yield during the day, making Clarke Creek an ideal location for a combined wind and solar farm.

Four Fulcrum3D Sodars collected data on 17 locations across the site between 2016 and 2020. The sodar data made a significant contribution to the overall wind resource monitoring campaign for the project. The sodar data complimented the comprehensive network of met masts across the large site, resulting in an overall reduction in yield uncertainty and thus increase in bankability. A key feature of the Sodar campaign was the ability to position the Sodars in locations which were either inaccessible, or very expensive to reach, with met masts.

The Fulcrum3D Sodars reliably measured wind speed and direction at 10m height intervals to heights well above those of the onsite masts. Each sodar location was monitored for 6 to 12 months before being moved to a different site. Data was delivered to the client through secure servers in near real time.

Mark Rayner, Director of Lacour Energy, commented "Fulcrum3D's involvement in the development of the Clarke Creek Wind Farm was essential in providing the data we needed to increase confidence and ensure bankability of the project. Data acquired from the Fulcrum3D Sodars assisted in the project progressing towards construction."

"The portability of the Fulcrum3D Sodars allowed turbine site selection to be accelerated and optimised due to cost effective, simultaneous monitoring on multiple sites." Rayner said.

Fulcrum3D's Head of International Markets, Paul Copestake, notes that "Our sodar is quick and easy to deploy with most installations taking little over an hour — having installed it a few hundred times, any niggling difficulties have been ironed out. With inbuilt power and comms kits the trailer-mounted design is easily moved around in order to gain a more detailed understanding of the wind regime across the site."

The first stage of the project is expected to be operational by mid-late 2023, with stage 2 complete approximately 2 years later. Once both stages are completed, it will contribute to Queensland's 50% renewable energy target and is expected to:

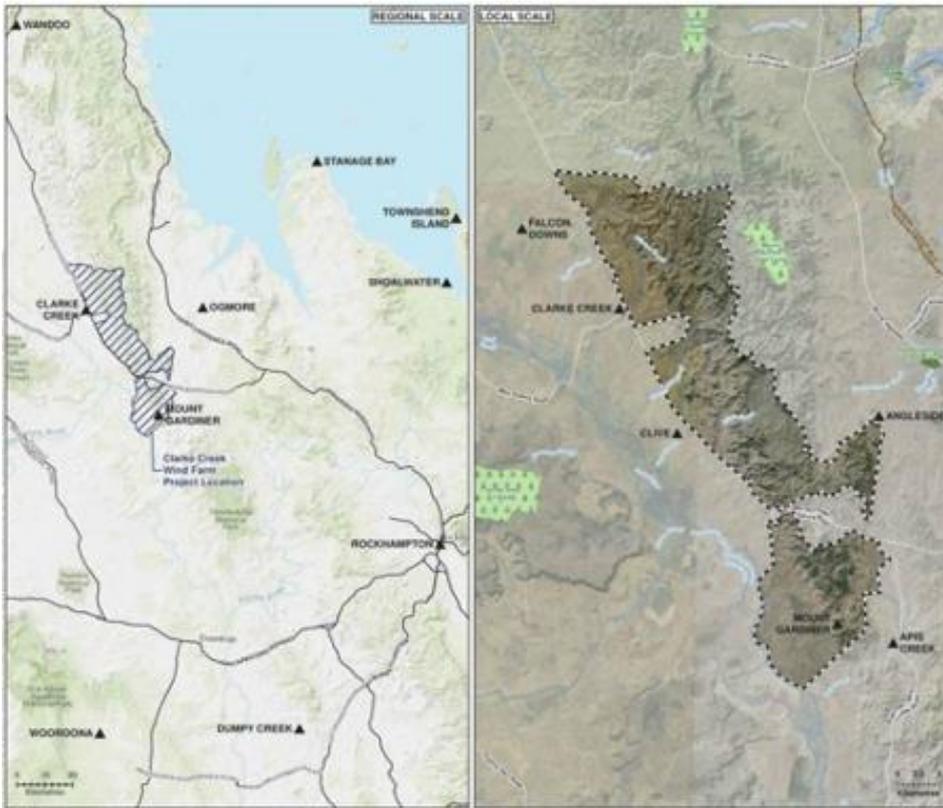
- ▶ Supply over 1% of the electricity demand in the National Electricity Market
- ▶ Power approximately 590 000 Queensland homes
- ▶ Make up 4% of Queensland's electricity supply.

Fulcrum3D's Technical Director, Dr Colin Bonner, said "The total project investment of approximately \$1.5 billion and estimated lifespan of 25 years demonstrates Clarke Creek's scale. We are proud that our data and analysis has contributed to the wind farm viability and to the renewable energy industry as a whole."

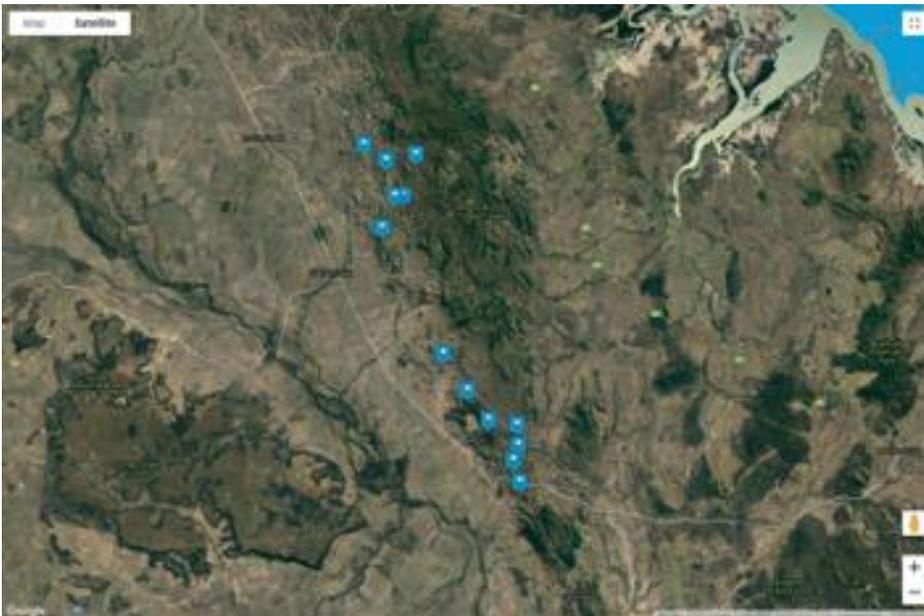
### ***Fulcrum3D Sodar install on complex terrain at the Clarke Creek Wind Farm site***



**Project location<sup>1</sup>**



**Clarke Creek Sodar locations<sup>2</sup>**



<sup>1</sup> Source: Clarke Creek Wind Farm Planning Report.

<sup>2</sup> Source: Fulcrum3D FlightDECK