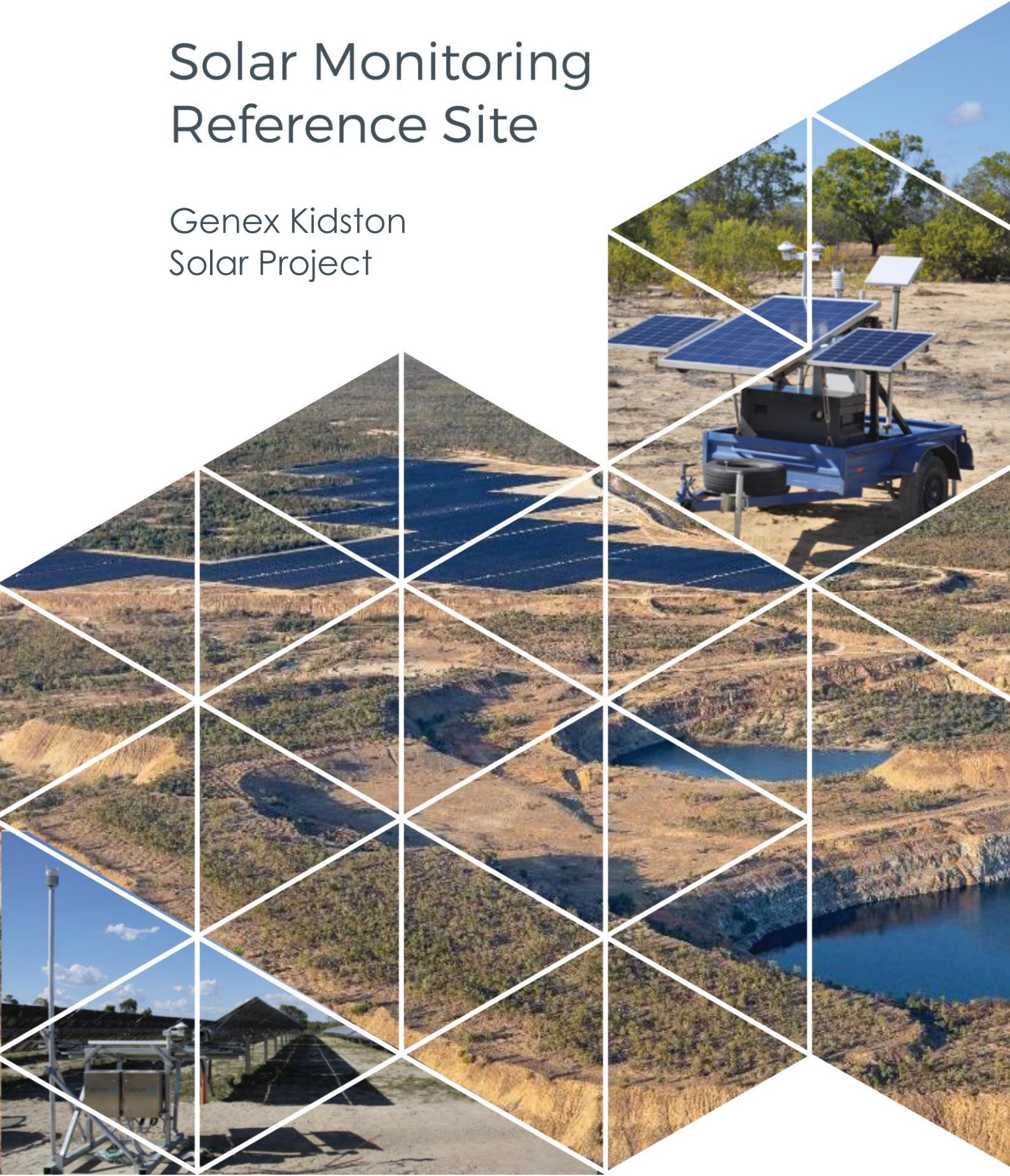




Solar Monitoring Reference Site

Genex Kidston
Solar Project



Solar Monitoring Reference Site

Fulcrum3D treat 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.

Genex Kidston Solar Project

Genex Power Limited is a leading Australian developer of utility scale solar farms and energy projects focused on the generation and storage of renewable energy. Genex is currently developing a renewable energy hub in north Queensland.

The first stage of the project is the 50MW solar farm with the power generated being supplied directly into the National Electricity Market (Kidston Solar Project Stage 1).

Fulcrum3D supplied a resource monitoring station for the initial solar farm resource assessment. This station was fully equipped with autonomous power supply, robust remote communications and solar specific instrumentation. Being a local Australian organisation, Fulcrum3D's team was able to undertake the installation, commissioning and maintenance of systems and provide ongoing support and expertise on the ground.

Accurate solar power measurement and data delivery is essential for assessing, financing and operating solar energy projects. Accurate ground-based solar monitoring reduces the uncertainty that is inherent in satellite data and computer models, this:

- ▶ Improves financing by improving the accuracy in yield calculations; and
- ▶ Reduces risk to equity, particularly in highly geared projects.

Genex was able to view the performance of solar monitoring in real time via FlightDECK – Fulcrum3D's secure server and visualisation system.

They were able to provide enough certainty of solar generation yields to secure approximately \$100 million in debt funding with Société Générale (Soc Gen) and the Clean Energy Finance Corporation (CEFC).

"Fulcrum3D's solar resource monitoring was essential to achieving Financial Close for the Kidston Solar Project Stage 1" said Arran McGhie, Genex Power's Chief Operating Officer. "The importance of ground-based measurement to reduce uncertainty is now well understood and accepted".

First energisation occurred in November 2017, with the project successfully built on-time and on-budget.

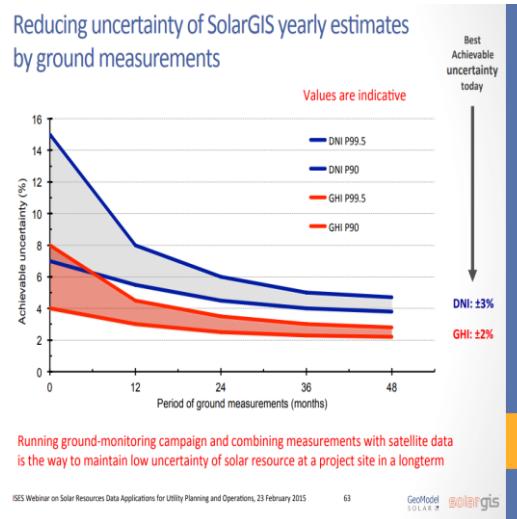
Fulcrum3D then supplied four meteorological stations for Kidston Stage 1. "Fulcrum3D's stations monitor the solar farm's ongoing operational performance monitoring and provide AEMO's required data feeds" McGhie said.

- ▶ Stage One of the Kidston Solar Project (50MW) is expected to generate up to 145GWh (145,000MWh) of renewable electricity per year. This is approximately equivalent to:
 - ▶ Powering 26,000 Australian homes
 - ▶ Offsetting 120,000 tonnes of CO₂ per year
 - ▶ Removing 33,000 cars off Australian roads

Given the success of Stage 1, Genex are now well advanced in progressing the development of Stage 2 (250MW of pumped hydro).

"Quality resource monitoring is about much more than just measuring irradiance" says Dr Colin Bonner, Fulcrum3D's Technical Director. "Knowing what to measure and how to measure it is essential. This includes monitoring station design and selecting quality instruments (pyranometers, pyrheliometers, temperature sensors, soiling stations, rainfall detection, humidity, wind speed, wind direction etc.). All of these variables affect the ultimate solar farm yield and must be measured at ground level. Our experience shows that it is always worthwhile."

SolarGIS analysis showing the benefit of site measurements:



Source: SolarGIS. <https://solargis2-web-assets.s3.eu-west-1.amazonaws.com/public/publication/2015/0b410889e2/Suri-Cebecauer->

Fulcrum3D Resource Monitoring Station for Kidston Solar Farm yield assessment



Fulcrum3D Solar Monitoring Station at Kidston Solar Farm

