SOLAR RESEARCH BUILDING GATTON CAMPUS

Consideration:
UQ is the lead research institution in a Solar Flagships consortium with AGL, First Solar & UNSW. As part of this program, the Federal Government has provided UQ with $21.7M of EIF funds to build a 3.275 MW research solar array at the Gatton Campus. This project will be a pilot for the construction of two large scale photovoltaic solar plants in NSW as part of the broader Solar Flagships program.

As a requirement of this EIF funding, UQ is to build a research/visitor facility in close proximity to the solar array. Additionally, UQ is required to provide battery storage into the system and this will require a suitably designed shelter to house the batteries. This will be one of the largest solar photovoltaic research facilities in the world and will significantly raise the University’s profile in renewable energy research.

B&G and UQ Senate has previously approved the site plan for the overall Gatton solar project, and this submission is to obtain B&G and Senate approval for the design of the research building, battery storage shelters and associated road and car park infrastructure. The building will be used to accommodate UQ and visiting researchers and it is expected there will be many visitors to the site.

All formal agreements associated with the Solar Flagships have now been fully executed with the University signing off the final agreement with First Solar on the 23rd September 2013 to build the solar plant at Gatton. As UQ has already obtained heritage approval for the overall site layout, there is no requirement to submit an application for heritage approval for the building design.

Description:
The building form has been designed as a linear arrangement of spaces with a linking roof structure between the research building and the battery shed, thus becoming a single combined structure. The research building is raised above the ground level to provide an elevated viewing platform from where the visitor can view the expanse of the solar array. These two devices of raising the building, and the linear arrangement of the spaces, allows the form and scale of the building to commensurately reflect the vast scale of the solar arrays.

Architecturally, an array of solar panels is proposed as an expressed awning to the northern side of the building, which is viewed upon as visitors arrive to the site. The northern elevation is clad with a translucent fibreglass screen, visually linking the research building with the battery station, creating an over scale appearance in response to the expanse of solar arrays. The profiled translucent fibreglass wall cladding and corrugated metal soffit continue around the building envelope.

The entry for the building is via an accessible ramp up to an elevated timber viewing platform. The entry ramp is lined on one side with the translucent screen, and on the other side of the ramp is proposed a vinyl printed information graphics wall, where information about the solar technology and the geothermal technology is displayed to inform the visitor as they enter the building.

The building embraces sustainable design principles with minimisation of trades on-site, use of recycled and salvaged materials (e.g. recycle timber decking and construction materials). Mixed mode ventilation and rainwater collection are adopted to minimise energy and water usage. Air conditioning for the building and cooling for the storage batteries, as well a heat rejection system for hot water supply will be provided by carbon neutral geothermal technology. Interactive displays will inform the visitor of the sustainable provisions and provide live information relating to the energy usage of the project.
SOLAR FLAGSHIPS PROGRAM
$166.7M ARENA Funding
$40.7M EIF Funding

UQ Gatton
3.275 MW
Pilot Solar Plant
& Solar Research Facility

Broken Hill
53 MW
Solar Plant

UQ St Lucia
Data Hub &
Monitoring Centre

Nygan
102 MW
Solar Plant

UNSW
Power Systems
Interface
Laboratory

Sydney

Brisbane
BACKGROUND

– UQ B&G & Senate have previously approved the site development plan for the 3.275 MW solar plant, research & visitor facility and battery storage infrastructure at the Gatton Campus

– Heritage approval is completed – subject to conditions during construction

– This presentation is to seek approval for the design of the research & visitor facility and battery storage shelter.
Proposed Research Building & Battery Station

Existing grazing paddock

Solar Array

Macarthur Hay Shed

Stock route

Stock crossing
Research + Visitor Centre

Small building given of scale commensurate with scale of solar array site

Green Credentials
- Passive Design
- Mixed mode ventilation system
- Pursuing Recycled and Reused construction materials
- Pursuing Solar PV Collection
- Rainwater collection and storage
- Pursuing Low Embodied Energy material options
  - Timber structural frame
  - Local suppliers
  - Concrete with fly ash
  - Recycle timber
Proposed Plan

GATTON SOLAR & RESEARCH VISITOR CENTRE

Proposed Battery Station

Proposed Research Building

Car park

04 October 2013
Roof Plan

GATTON SOLAR & RESEARCH VISITOR CENTRE

- **Photovoltaic cells**
- **Colorbond metal roof sheet** (Colour: ‘Surf mist’)
- **Ritek Ecotek composite panel system** (Colour ‘Surf mist’)

04 October 2013
Charcoal painted compressed fibre cement cladding

Translucent fibreglass screen, (5 rib profile, 'Cool-lite' colour)

Entry

Access ramp behind screen

Ink-jet printed Ampelite translucent fibreglass screen

Photovoltaic cells on black powdercoated aluminium awning frame

North Elevation

GATTON SOLAR & RESEARCH VISITOR CENTRE

Wilson Architect

04 October 2013
South Elevation

GATTON SOLAR & RESEARCH VISITOR CENTRE

04 October 2013
East Elevation

GATTON SOLAR & RESEARCH VISITOR CENTRE

Ampelite translucent fibreglass screen, (5 rib profile, ‘Cool-lite’ colour)

Charcoal painted compressed fibre cement cladding

04 October 2013
Section

GATTON SOLAR & RESEARCH VISITOR CENTRE

Metal sheet roof
(Ritek Ecotek composite panel system)

Photovoltaic cells

Access ramp

Water storage tanks

GATTON SOLAR & RESEARCH VISITOR CENTRE
04 October 2013
Arrival view
Arrival view

3D Illustrations
GATTON SOLAR & RESEARCH VISITOR CENTRE

Wilson Architect
Expressed photovoltaic cells as shade awning

Translucent screen

Access ramp (recycled timber)

Info graphic wall

**3D Illustrations**

GATTON SOLAR & RESEARCH VISITOR CENTRE

Wilson Architect

04 October 2013
Arrival at Viewing Deck

3D Illustrations

GATTON SOLAR & RESEARCH VISITOR CENTRE

04 October 2013
3D Illustrations

GATTON SOLAR & RESEARCH VISITOR CENTRE

Framed and shaded view of solar array

Digital display screens

Viewing platform (recycled timber)

Presentation / Multifunction room

04 October 2013