Gatton Infrastructure Upgrade Project

Consideration:

The Gatton Infrastructure Upgrade Project is a multi-stage project comprised of:

1. Upgrading of the electrical connection to the Gatton campus from 11kV to 33kV;
2. Developing a Central Energy Plant (CEP) for the central academic core of the campus;
3. Construction of a Thermal Energy Storage (TES) tank;
4. Reticulating chilled water to the central academic core buildings and connect them to the CEP chiller station.

This submission relates to the building and structures that form stages 1 to 3 above. Stage 4 is expected to occur within the existing buildings.

This project aligns with the University’s Sustainability Goals including the vision for UQ Gatton to become an Energy Neutral campus. It is forecast that the site electrical load and renewable energy generation will increase over the next few years requiring the introduction of a 33kV electrical connection to the Energex grid. A change to 33kV simplifies the strict compliance burden we have with the current conditions of our Electrical Connection Agreement. We have presently reached a working ceiling on the capacity of renewable energy on the campus with our existing 11kV connection. This project provides the required infrastructure to permit further development (buildings and renewable energy) of the campus and to support life cycle replacement of air conditioning plant on the campus.

Description:

The Central Energy Plant and 33kV Substation are combined into a single building located between the Inner and Outer Ring Roads on campus beside the existing 11kV substation and above the design flood level. The Thermal Energy Storage tank is to be constructed beside the new building. The building will be constructed to a similar form and using the same materials (concrete masonry and profiled metal cladding) as the existing neighbouring building. The upper section includes metal louvres to provide visual and acoustic screening to the air conditioning cooling towers. The tank will be constructed of bolted galvanised steel plates with internal insulation. The proportions of the tank reflect the requirement to have a thermal stratification of the chilled water stored.
Proposed Substation + Chiller Plant
SOUTH ELEVATION

NORTH ELEVATION

ELEVATIONS

1:250 @ A3

10 November 2016
PERSPECTIVE 1 EXISTING (LOOKING SOUTH)
PERSPECTIVE 1 PROPOSED (LOOKING SOUTH)
PERSPECTIVE 2 EXISTING (LOOKING NORTH)

UQ GATTON SUBSTATION & CHILLER PLANT

Inner Ring Road
PERSPECTIVE 2 PROPOSED (LOOKING NORTH)
PERSPECTIVE 3 EXISTING (LOOKING WEST)
PERSPECTIVE 3 PROPOSED (LOOKING WEST)