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The design team was sourced for leading industry knowledge in Central Energy Plants with Thermal Energy Storage utilising stratified chilled water storage.

The mechanical services Central Energy Plant solution dictated the form and function of the building to achieve optimum capital cost and system efficiency performance.

Since practical completion of the construction, the control systems have been fine-tuned by JCU personnel and consultants to achieve the lowest running cost on the new Ergon energy tariffs.

The site location was selected to position the tank at a higher elevation than the onsite buildings and to camouflage the large 9ML tank and building into the surround green scape.

The Central Energy Plant is the centralised plant for the district cooling. It contains the chillers, cooling towers, pumps and Thermal Energy (chilled water) Storage tank. It offers the benefits of high efficiency, a centralised plant, reduced maintenance, ease of expansion and technological upgrades as technology advances.

For large centralised plants such as this 'redundancy' or back-up systems are included in the system architecture, which allows for continuous supply in the event of a component failure.

Thermal Energy Storage makes use of periods of the day or night when the site demand for cooling is less than the average demand. During these times the central chilled water plant cools return water (15°C) back to chilled water (6°C). During times when the site demand exceeds the average demand (typically in the afternoon), the chilled water is drawn from the storage tank. From here, the pre-cooled water is then reticulated throughout the campus and delivered to air conditioning air handling units within each building. The installation of air-conditioning systems within the buildings themselves remains essentially the same as any

conventional chilled water system, except that the chiller plant takes the form of one efficient centralised plant rather than numerous different cooling plants. The central energy plant can be up to 2.5 times more efficient than the aged smaller chiller plant.

All materials were selected for a life span of 25 years to 40 years.

The central energy plant operates at a system coefficient of performance (COP) between 5.5 and 7.5 compared

This facility