



commtel™ case study

weddell power station

providing an end-to-end solution for
a power transmission network

The New Weddell Power Station is a \$126.6 million dollar project that will add 30% capacity to Darwin and Palmerston's power supply and provide back up supply for Katherine if needed. CommTel Network Solutions was involved in the design, supply and integration of the communications network

Power and Water Corporation is the Northern Territory's premier provider of electricity, water and sewerage services, and is one of the largest businesses in the Northern Territory.

To accommodate the growing electricity demand in the Darwin/Katherine region, Power and Water Corporation constructed the Weddell Power Station. The power station is located at the existing Weddell substation site and will meet the increasing demand for electricity, driven by the region's economic and population growth.

The Weddell Power Station is the largest electricity generation project in the Northern Territory in the last 20 years and, with a budget of more than \$120 million, it is their largest project to date. Using gas fuel with highly

efficient turbines, the new power station generates only half the amount of greenhouse emissions generated by standard coal-fired power stations.

The Challenges

CommTel were commissioned to design and integrate the communications network for the new Weddell Power Station.

The purpose of this communications network is to carry critical protection signaling, while also delivering voice and data services between various sites.

These communication services are critical to the safe operation of the power station and so demand a highly available network infrastructure. To achieve the required level of resiliency and network availability, a fully redundant network architecture was

required, including path redundancy to each site.

CommTel faced several major challenges when designing the network. Firstly, the existing fibre optic cable network did not provide path redundancy. This path redundancy was essential, however it was not possible to install additional optical fibre cables due to the environmental impact and prohibitive overall cost.

The optical cable infrastructure offered further challenges, as a portion of this was comprised only of multi-mode fibre. The overall communications solution needed to operate within the physical constraints imposed by the existing optical cable infrastructure. Other challenges included the implementation of a network-wide management system, suitable for managing both the existing and new communications infrastructure, in a true multivendor environment.

Innovative Solutions

CommTel worked closely with Power and Water Corporation to develop a complete end-to-end solution, meeting the network resiliency and availability requirements. Due to the critical nature of the services being delivered and the extremely low latency requirements, the solution was developed using both PDH and SDH technologies.

Quick Facts

- Power and Water Corporation is the only Power, Water and Sewerage Utility provider in Darwin.
- CommTel was responsible for the supply of the appropriate equipment
- PAWA is one of the only utilities in Australia
- to manage Generation, Transmission and Distribution
- The design and integration of the equipment was prepared and completed at CommTel's Integration Facility.
- Supplier of 70,000+ Customers throughout the Northern Territory
- One of the largest employers in the Northern Territory.

commtel™ case study

weddell power station

providing an end-to-end solution for
a power transmission network

To deliver the access level PDH services, Nokia Siemens Networks' Dynanet equipment was selected because of its superb reliability and proven performance in Power and Water Corporation's operating environment. The PDH equipment provides 2Mbits multiplexing, supported by a full suite of channel cards, ranging from 19.2kbps to nx64kbps.

The SDH transport layer was implemented using Ericsson's OMS1240 Add-Drop multiplexer. The OMS1240 hardware offers very high availability, with its full 1+1 hardware redundancy.

The OMS1240 optical interface supports a wide variety of SFP's, allowing a broad range of optical spans to be achieved with a minimum number of spares. In addition, coloured wavelength SFPs are also supported, allowing for easy future integration with xWDM systems. The OMS1240 supports capacities upto 2.5Gbps, and with future integration into a xWDM system, substantially greater bandwidths can be supported.

In order to implement a solution with path redundancy, while working within the known constraints in the existing optical cable infrastructure, a microwave radio solution was developed to supplement the fibre optic links. The Ceragon 1500HP radio with space diversity was used, as it provides high bandwidth with extremely high link availability over long distances.

To overcome the issue of multimode fiber being the only fiber available in a particular area, CommTel selected Media Converters from MRV.

The Fiber Driver® multi-mode to single-mode converter is a highly reliable, managed device, which enables single mode SFP to transport signals over multi-mode fibre

The communications network was a diverse one, including equipment from Nokia Siemens Networks, Ericsson, Ceragon and MRV.

In order to manage this diverse range of communications equipment, CommTel selected CNMS to provide a single view of the entire network. CNMS is based on an open platform and supports a range of plug-ins to manage equipment from various vendors. It aggregates all alarm and performance parameters from each network element, offering a single point for network management and analysis.

CommTel and Power and Water Corporation worked together to finalise the overall system design. CommTel's scope of works included the detailed design and overall system documentation

The equipment was sourced directly from each vendor and consolidated at our Tullamarine headquarters for full system integration and testing. With the broad spectrum of equipment supplied for this project, Network Management System integration and testing was a key element in ensuring the overall project success.

CommTel and Power and Water Corporation worked very closely during the implementation phase to optimise the implementation schedule. The project was delivered on time and on budget.

Staff from Power and Water Corporation were trained in the operations and maintenance of the communications equipment and the overall network architecture. In support of the network operations staff, CommTel's ServiceDesk is available to assist with any network related issues.

With this project, CommTel has demonstrated its ability to provide an end-to-end solution with a multi-vendor and multi-technology approach. We have selected the best-of-breed products from vendors around the world to deliver a complete solution.

About Commtel

CommTel is a leading international provider of advanced and engineered solutions for mission and business critical networks. We are a technology integrator, specialising in the delivery of network solutions that ensure the reliable delivery of vital services such as water, gas, electricity, public transport, and emergency services.

CommTel is widely known for innovative technology solutions, providing the network infrastructure and associated applications that optimise existing networks, as well as delivering digital transformation programs that provide a seamless transition from legacy to new technology.

Businesses in the mining, transport, oil & gas, utilities and emergency services sectors rely on CommTel as their trusted, long-term partner to ensure their systems meet their exacting requirements in the critical areas of safety, reliability, capacity, efficiency, intelligence and security. CommTel is certified to the highest international standards for Security, Health & Safety and Quality, and maintains a strong commitment to the environment.

To find out more about how CommTel can take your business into the future, visit www.commtelns.com



scan me to
download this
document

© CommTel Network Solutions. All rights reserved

CommTel and the CommTel logo are registered trademarks of CommTel Network Solutions. The contents of this document are subject to change without notice.

May 2019

