STAFF REPORT

TO: Chairman and Members, Engineering Services Committee

FROM: Jeff Cuthbertson, Utilities Asset Manager

DATE: 17 November 2008

SUBJECT: **TDC DIGITAL TELEMETRY UPGRADE**

PURPOSE

The purpose of this report is to update the Engineering Services committee on proposed long term improvements to the Utilities Network Telemetry system.

BACKGROUND

Ongoing and significant issues within the TDC utilities telemetry network mostly relate to the age and capacity of the existing network and need to be addressed to provide for the current required capacity and development of the network. The existing analogue radio/controller system was first installed in the late 1980s and at that time was appropriate for TDC's needs and up-to-date technology.

Nowadays the system is quite inadequate and is hindering the operation of 115 utility sites, particularly those in our most remote locations. The demands on our system have grown significantly, for instance to meet the requirements of the Health Act (Drinking Water Amendment), continuous water quality data is required and in wastewater treatment plants where continuous monitoring is required to maintain resource consent conditions.

Problems are occurring with the speed of data sent, the way it is sent, and the volume of data attempting to get through at once, for instance to Richmond via Mt Campbell, from all pump stations in Golden Bay.

A request for a proposal was sent out (via TDC Contract 688 with Downer EDi Works) in May 2008 to the following suitably qualified and experienced subcontractors who had appropriate working knowledge of the TDC's telemetry network (they each currently provide service via Contract 688):

Qtech Data Systems	Christchurch
Mount Campbell Communications	Nelson
Newpower Electrical	Nelson
Industrial Marine	Nelson

The primary goal in requesting the proposals was to obtain some innovative ideas from industry specialists to address the current communications issues the TDC telemetry network is experiencing. We wanted an upgraded network that will provide the following:

- Data transfer and collection within the criteria set out in the Health Act (Drinking Water Amendment).
- Equipment diagnostic facilities to enable more flexible operational control and fault finding capabilities.
- Flexibility in relation to the remote management and maintenance of the TDC Utilities Network to enable larger volumes of data to be transferred at greater speeds/ efficiency.
- The integration of the telemetry network into TDC's intranet
- Flexibility to potentially incorporate other TDC assets onto the telemetry network, for instance not only TDC engineering assets.

The proposal request outlined the requirement of the ideal network and set out the criteria of what outputs the equipment was required to achieve. It did not however go so far as to detail specific pieces of equipment hence leaving scope for the submission to be innovative.

The proposals were returned by all four sub-contactors in early July 2008 and by mid-July the assessment team had met and carried out the preliminary assessment of the proposals using a weighted attribute scoring method.

The assessment team consisted of:

Kim Arnold	TDC	Asset Engineer
Daryl Kearns	TDC	IT Specialist
Paul Barratt	MWH	Contract Manager
Joe Dean	Downer EDi Works	Contract Manager
Adrian Spiteri	Downer EDi Works	Contract Electrician
Brian Davis	Independent	Radio Communications Specialist
Wayne Stronach	Independent	Telemetry/Electrical Engineer

The two submitters that received the lowest attribute scores were informed that their submissions were not being considered further. The two submitters that scored higher were then given the opportunity to present their information to the assessment team in greater detail via a one hour presentation. This was completed by mid-August 2008. The team then evaluated the detail further and incorporated the priced information into the assessment process. The submission which complied with the criteria set out within the original request for proposal, and had the highest overall score was submitted by Industrial Marine Electrical, a locally based company who have extensive knowledge and experience of telemetry systems in both the Tasman District and Nelson City areas.

THE PROPOSAL

Key elements of the proposal include:

- TDC base-station hardware and software upgrades. (The base station is located in Council's IT department).
- Install digital data transmitter/receivers/controllers on critical water treatment sites.

- Install digital units at repeater sites, re-engineer sites from repeaters, reduce licence fees, and improve efficiency.
- Install digital data transmitter/receivers/controllers on critical wastewater treatment sites.
- Send data via local hubs by high speed data transfer to base (eg Takaka TDC office to Richmond base).
- For remote sites, use specialised telecom service where radio comms is impractical eg Tapawera, St Arnaud, use 'One Office'.
- Install on new sites and gradually convert existing sites to digital equipment.

THE WAY FORWARD

A primary driver to improve communications and data transfer, are the requirements set out within the Health Act (Drinking Water Amendment), therefore TDC Water Treatment Plants need to be given the highest priority. This priority has been dovetailed with the requirements of the Health Act and the need to upgrade water treatment plants. These priorities and funding have been included in the proposed LTCCP (2009/2016).

ADDITIONAL SYSTEM IMPROVEMENTS

Re-engineering of the licensing structure is also an additional advantage which is related to the overall system improvement and needs to be considered within the whole process. The process requires looking at the existing network and making improvements in communications and results in reducing costs related to licensing of the network. The main aspects include:

1. Reducing licences to three at existing repeater sites (potential reduction in annual radio licence fee of $20,000). At present Council owns approximately 115 radio licences.
2. Reduce Radio Spectrum Management compliance risk ($1200.00 instant fine).
3. Remove individual radio engineering of each SCADA site (generic installation operating at 25 watts transmits power).
4. Increased baud rate.
5. More robust communications.

RECOMMENDATION

THAT this report be received.

Jeff Cuthbertson
Utilities Asset Manager