

Te Anau Water Treatment Plant Upgrade

The Benefits Of Early Contractor Involvement

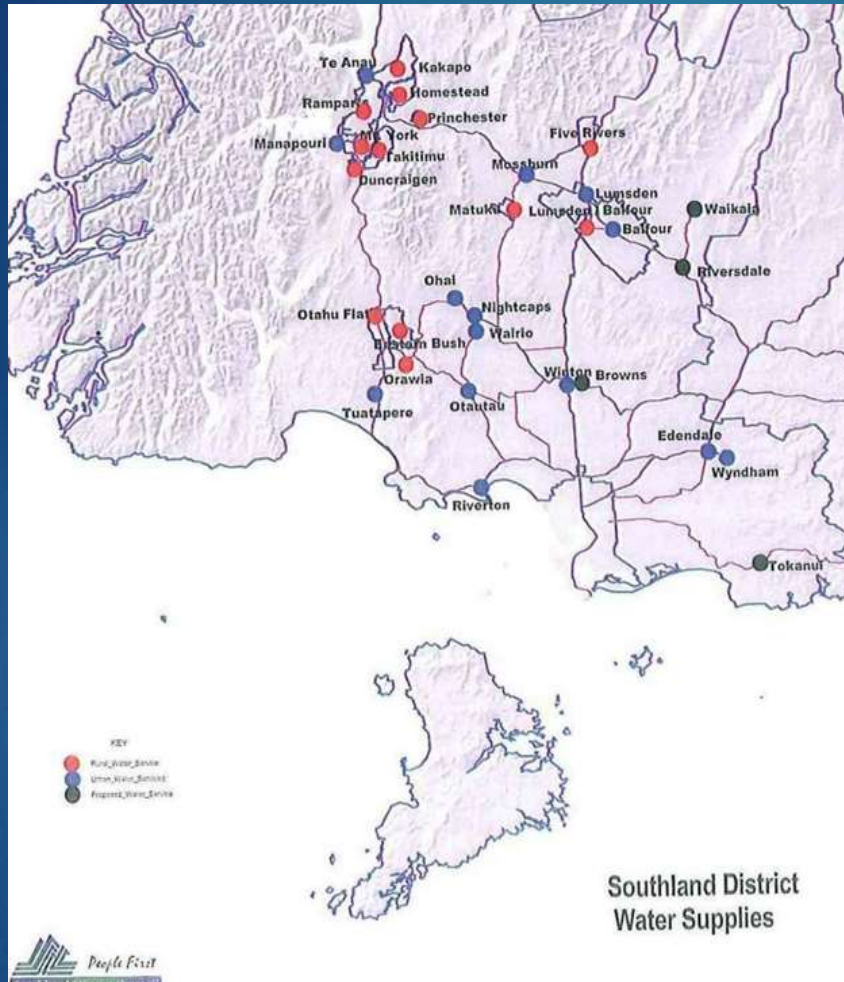


Southland District Council Water and Wastewater Operations and Maintenance Contract

- Commenced 1 July 2010
- Maximum term 12 years to June 2022
- Lump Sum Contract
- Open collaborative relationship
- Rodger Dawson – Southland Island Operations Manager Water



Te Anau Water Supply



- The Te Anau water supply is one of 13 potable and 8 rural water supplies within the geographical area of the Southland District.
- Three of Downer's 11 field operators are permanently based in the Te Anau area.
- Scheme first installed in 1966.
- Previous major plant upgrade completed in 2006.

Background



- Te Anau current population is 1878
- Holiday peak population of 9500
- Water supply flows typically 2,500-4,000m³/day
- Peak demand flows of 6,400m³/day
- Water is sourced from Lake Te Anau
- Four shallow bores

Upgrade Procurement Model

- Early Contractor Involvement (ECI) procurement model used
- First contract to be negotiated and let by SDC client using this model
- Upgrade planning commenced in 2013
- Te Anau was the first of four sites to be upgraded using this model
- Each site included Filtration, UV disinfection and pH correction
- Te Anau WTP required UV disinfection only



Procurement Process Benefits

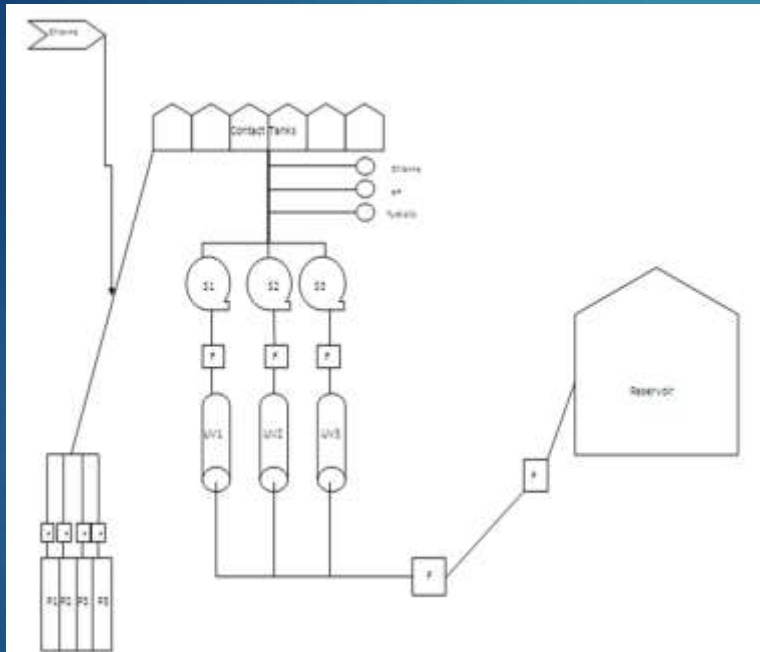


► The benefits of early contractor involvement (ECI) were considerable. ECI minimised construction, operational and future maintenance issues as well as costs by covering and agreeing in detail:



- Design
- Critical equipment selection
- Design risk transfer
- Guaranteed maximum price certainty
- Cost visibility throughout project
- Reduced operational risk to Downer and Client over a long term contract to 2022
- High performing ECI team
- Committed contractor
- Strong trust based relationship

Design Process and Construction



1. Initial design concept was identified and approved.
2. Collaborative workshops held to identify the preferred processes, equipment components, suppliers and materials.
3. Full design plans and equipment schedules were approved and issued.
4. Site work methodology plans were developed and approved by the plant operators.
5. HAZOP workshops involving all levels of staff were held before beginning construction.
6. Post contract reviews held.

Operational Benefits

- Fully involved throughout process from design to handover
- Ownership of the plant and process
- Positional and operational changes identified and made on site
- Full confidence in delivered product
- No defects
- No cost related variations
- Extended defects liability period and reduced risk to client and contractor
- Additional operating costs calculated and agreed prior to completion



- The major upgrade component at the plant was the installation of 3x Trojan Swift SC D-06 UV disinfection reactors.
- Significant internal pipework changes were required to fit the UV units which required complete shutdown of the plant.
- Simple operational changes made immediately on site.





- Plant remained operational throughout construction
- Workflow impact each day understood by both operator and project staff
- Uninterrupted supply maintained to all consumers



- With this upgrade any interruption to supply had to be planned very carefully. A shutdown methodology plan was drafted and approved well before any work commenced.
- We planned the major plant shutdowns from midnight to 4am when demand was at the lowest, mindful that we only had a maximum of 3-4 hours storage available in which to move pumps and install UV units.
- Working and planning as a team this was achieved on each occasion even with minor changes being made along the way.



- The Te Anau water treatment plant upgrade was a great example of how a true collaborative working relationship can provide benefits which are not only cost related to a number of stakeholders, including:
 - Southland District Council
 - Environment Southland
 - Te Anau community and ratepayers
 - Downer and our people
- With security of source and treatment, remote operating ability via SCADA telemetry, trouble free plant operation with reduced operational input it has given our staff the ability as operators to widen their areas of responsibility and expertise and grow as treatment operators within our industry.

