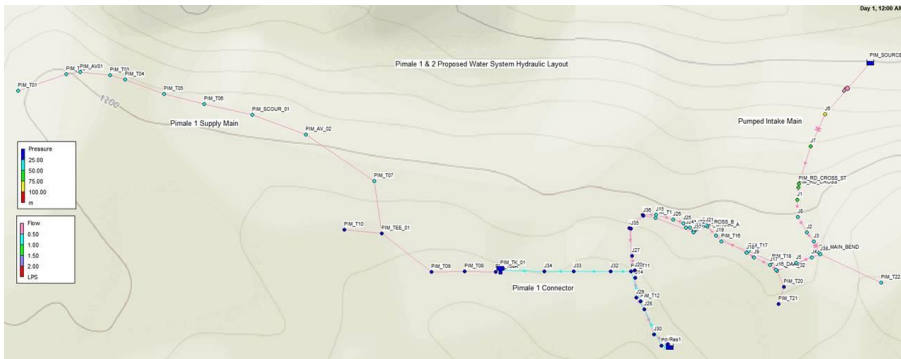


Project Sheet

PNG – Gravity Water Supply to Villages



Project

Gravity Water Supply for Pimale, Pawabi and Kikori villages

Client

Oil Search Limited.

Location

Southern Highlands and Gulf Provinces of PNG.

Date

December 2017 ongoing

Background

Pimale and Pawabi are villages located in the Southern Highlands Province of Papua New Guinea, approximately 470km from Port Moresby. Axiom Water Technologies Pty Ltd (Axiom) was engaged by Oil Search Ltd (OSL) to provide site evaluation, water quality investigation, water supply design and documentation services for reticulated water supplies in both communities. This work was undertaken under OSL's Drought Recovery and Support (DRS) program.

Services Provided

The key activities of the project were:

Site Assessment and Planning:

- Undertake a site inspection / alignment evaluation with community members and OSL staff.
- Locate and assess potential clean water source(s).
- Water quality and yield assessments.
- Locate potential sites for water treatment and storage infrastructure.
- Undertake GPS survey of proposed pipe alignments.
- Determine the location for taps in consultation with OSL staff and community members.

Designing the water system:

- Determine the design delivery capacity for the system.
- Design the intake arrangements and hydraulic needs.
- Determine the water treatment needs.
- Determine the water storage requirements for the system.
- Undertake hydraulic design and modelling based on the use of shared tap stands; and
- Document the system - drawings, Bill of Materials and Operating and Maintenance Manuals.

Key considerations during the Planning and Design process:

- Local community involvement to identify preferred water sources and tap locations;
- The use of ram pumps or solar powered pumps to lift water to the treatment and storage system if necessary;
- Maximising the use of the local terrain to optimise gravity reticulation;
- Keeping the treatment system chemical-free and minimising operational costs to maximise sustainability;
- Keeping the CAPEX for the systems as low-cost as possible using locally available/preferred materials;
- Design Limitations such as Topography, limit of head, sedimentation, and level of maintenance required;
- Constructability in remote locations with challenging terrain.

Project Challenges:

Both designs presented significant challenges due to the terrain, distances involved, and the need to keep the systems as simple as possible. For example, at Pimale the water must be pumped to the header tanks against a static

head of 100m and over a chainage of 1,200m. This exceeds the capability of the ram pump so an intermediate solar powered re-lift pump station was included. This has the added benefit of providing access to LED light and power for the community. The Pimale gravity reticulation network is over 2,200m long.

The Pawabi network will operate fully under gravity from an elevated water source. Design challenges included large changes in elevation within the system, diverse demand patterns and over 4,500m of pipework of various sizes resulting in significant head losses to manage.

The designs were completed on time and within budget. The client is happy with the design and is procuring materials to construct the networks in 2019. Axiom will assist with system startup and provide O&M training to local people to allow them to manage the network.

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