

Omdurman Water Treatment Plant

By Biwater



Khartoum is the most populated state in the Republic of Sudan with well in excess of six million inhabitants. El Khartoum is the largest industrial centre in the state and is made up of three cities, Khartoum, Khartoum North and Omdurman. The latter is the largest of the three cities, lying to the west of the White and Main Nile rivers and covers an area of approximately 320 Km. In 2002 the population in Omdurman was estimated at 2,931,200 and this is expected to rise to 9,800,000 by 2040.

There is a critical shortage of potable water in Greater Khartoum city. The estimated current demand is in excess of one million cubic meters per day, with around two-thirds of the city currently not supplied with water. Omdurman is the area with the greatest un-served population.

Scope of Work

This contract involved the turnkey construction of the Omdurman water treatment plant and the optimisation of the works in Khartoum, Sudan under a 10 year deferred payment capital light structure. The project covered the turnkey design and construction of a water treatment plant and distribution systems to supply potable water to Omdurman City, part of Greater Khartoum for the Khartoum State Water Corporation (KSWC).

Biwater's scope of supply includes the construction of a 200 mega litre per day (Mld) water treatment plant, transmission

mains, booster pump station, storage reservoirs and the implementation of an integrated network management system.

The aim of this project is to maximise the social and health benefits of a supply of clean, safe, reliable drinking water in a manner that is both sustainable and economically viable in the medium to long term.

Biwater's scope of works covers the construction at the El Manara site and the distribution of potable water to Omdurman City. Biwater designed, constructed and commissioned:

- A river intake, a raw water main and a 200 Mld water treatment plant located at the El Manara site on the Nile River and will include a laboratory, a workshop and an administration building.
- One 12,000 cubic meter storage reservoir at the water treatment plant.
- Approximately 11 Km of 1,200 mm treated water main to a new 40,000 cubic meter storage reservoir, complete with booster pump station.
- Approximately nine Km of 700 mm treated water main to the existing 14,000 cubic meter storage reservoir, south of El Manara.
- Approximately three Km of 400 mm treated water main from El Manara site to the main road where the pipe runs

to the north. KSWC connects to this main to distribute water to the areas north of the new treatment plant.

- A distribution network designed to ensure the optimum distribution of water produced at the treatment plant. The size and design of the network was developed during the project as part of the water asset management (WAM) strategy.
- WAM systems and equipment, as elaborated below.

Water Asset Management Strategy

The need for additional potable water supplies is crucial to the population of Khartoum. However, in addition to the increased production of water, it is essential that KSWC maximises the revenue from water supplied to consumers through an efficient distribution system. Therefore, a WAM strategy was undertaken as part of the capital works programme.

This initiative optimised the performance of the distribution network and reduced non revenue water in Omdurman via management and consultancy services. The scope of these services was refined following final design studies, but the main features encompassed:

- Information gathering on the current network
- Creation of network models and geographic information system (GIS)
- Design of the control system
- Establishment of DMAs on the existing network
- Meter installation in DMAs
- Construction of the water distribution sites
- Categorising customers and per capita consumption calculations
- Customer education
- Design of distribution extensions
- Leakage control
- Pressure management (if appropriate)
- KSWC staff training

Conclusion

Biwater successfully completed the largest water treatment plant in Sudan. The project cost amounted to €88m comprising a water treatment plant, transmission mains and storage reservoir. The plant serves a population of two million people. In addition, Biwaer has commenced a 10 year contract to operate and maintain the plant.

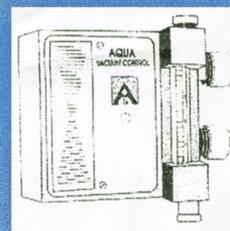
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