The Khartoum North Water Treatment Plant (Bahri WTP) located on Blue river Nile once was constructed in 3 phases. Plant A with a design capacity of 12,000 m³/day was constructed in 1957, followed in 1968 by plant B (72,000 m³/day). Last but not least plant C (108,000 m³/day) was added since 1988.

The aim of the project now was to refurbish all the water treatment facilities and to increase the capacity of the plant to 300,000 m³/d. The general concept was based on centralizing the intake of the plant by construction of a new Mixing and Distribution Chamber in order to get more flexibility for operation and maintenance. To increase the intake flow existing pumps were at first complete overhauled and later replaced by new pumps with higher flow. To minimize the energy consumption, new gravity lines were implemented. This was accomplished through installation of new pipe lines from and to the new Main Mixing Chamber. All clariflocculators underwent rehabilitation and complete overhaul followed by installation of lamella settlers, which resulted in increase of settling area and reduction of the required retention time. As a positive effect, the loads on the upgraded or new constructed sand filters were significantly reduced. For the distribution of the additional gained capacity a new low lift station was constructed, serving Bahri and Haj Yousif. To ease and better control of the operation new process / flow control equipment were installed and automatic back wash for sand filters was implemented.

After rehabilitation and upgrade, the plant provides at least 300,000 m³/day of the cleanest potable water available in Sudan. The project started in 2010 and was accomplished by the end of 2012.
Repair of 8 clarifiers:

before  
during  
after

Overhaul of 11 intake pumps and 13 low-lift pumps

Installation of 8 new river intake pumps & pipelines

Installation of 6 low-lift pumps including headers

Installation of lamella settlers in 8 clarifiers

Repair or new construction & automation of 36 sand filters

Construction of new main mixing & distribution chamber