

## CITIES COOPERATION BETWEEN AARHUS & CITY OF TSHWANE (Pretoria), Annual report for 2018



Salvokop reservoir: Available Space in chamber to place turbines if the stairs are moved to a different location.

### Project description

The Aarhus-Tshwane (Pretoria) sustainable cities programme focus on four thematic areas: 1) Non Revenue Water & Conduit Hydropower, 2) Green and Non-Motorised Transport, 3) Liveable Public Spaces and 4) Mixed-Use & Human Settlements.

A significant contribution in 2018 was the support that SSC provided to City of Tshwane with regards to the development of a pre-feasibility study on conduit hydropower in the Salvokop Precinct, the last remaining undeveloped inner city precinct in City of Tshwane.

The aim of the intervention is to support sustainable energy through promoting low carbon consumption, energy efficiency and promote access to sustainable modern energy services so as to address the needs of the poor.

### Key activities in 2018

City of Tshwane (Pretoria) is located in a valley surrounded by the Magaliesberg Mountains. This offers good potential for conduit hydropower which is a method of using mechanical energy of water as part of the water delivery system through man-made conduits to generate electricity.

The National Department of Public Works (NDPW) is the landowner in the Salvokop precinct and has appointed a service provider to design a new 30 ML reservoir. NDPW is responsible for the construction of the reservoir as part of bulk contributions requirements to support their new developments in Salvokop. The construction of the new 30 ML reservoir situated next to the existing 27 ML reservoir provides the opportunity to construct a conduit hydropower plant.

Because of this potential, it was decided to carry out a pre-feasibility study in a partnership between City of Tshwane, University of Pretoria and Aarhus Water (utility).

### Main achievements and lessons learned in 2018

The data that was collected during pre-feasibility study provided some useful information regarding the potential available on site. The study established, that there is indeed good potential for conduit hydro power in the Salvokop Water infrastructure.

The study has now been successfully completed and the results and outcomes has been disseminated. Main conclusions:

- Good potential for conduit hydro power
- There is a need for renewable energy and the generated power can be utilised
- Enough space in existing PRV chamber for the necessary components to be installed
- Limited pipework would be required
- Significant/viable potential available at the site;
- Easy access to site and to the PRV chamber;
- Access in chamber to allow for measurement of pressure and flow

Therefore it has been decided to proceed to phase 2 (design phase) in the development of conduit hydropower at Salvokop Reservoir.

The design phase will consist of a number of analysis, designs and drawings and will end up with a report which will be the foundation of a funding proposal to the City of Tshwane and the National Department of Public Works. The intention is to have a budget allocation to implement the conduit hydropower in the Salvokop reservoir complex in 2020/21.

An unintended positive spin-off from the collaboration is that a number of the city's university students are able to participate in the project and thereby obtain real life work experience from working on site at the water reservoir. It is important for the university to have access to such a platform and for the city, the relationship with the University of Pretoria and Aarhus Water provides access to important research and innovation that it can use to improve the daily work.

**Status:** Project under implementation.

**Partners:** Aarhus Water Utility, City of Tshwane (Department of Water and Sanitation) and University of Pretoria (Department of Engineering).

**Contact information:** Carsten Lützen, Project Manager – City of Aarhus, [carstenl@aarhus.dk](mailto:carstenl@aarhus.dk)  
Kristoffer Rønde Møller, Sector Adviser, Sustainable Cities Programme, Danish Embassy in South Africa [krmoll@um.dk](mailto:krmoll@um.dk).