Tapping into the Klein Karoo

When effectively managed, and its source allowed to replenish, groundwater abstraction is a viable alternative in ensuring sustained water security, with Oudtshoorn Municipality's surrounding wellfields offering the promise of continuity of supply, when needed. **By Alastair Currie**

Given its location within the semi-desert Klein Karoo region, Oudtshoorn is no stranger to drought conditions. However, their extended frequency and severity are placing increasing pressure on existing dam storage capacity. Oudtshoorn Local Municipality encompasses the towns of Oudtshoorn, Dysselsdorp and De Rust. Presently, all these towns have Level 3 water restrictions in place.

In response, the Department of Water and Sanitation (DWS) has given the go-ahead for the construction of the Blossoms water supply pipeline, which forms the main component of the Oudtshoorn Groundwater Project. This was previously earmarked as a medium- to longer-term bulk water supply augmentation intervention, but has now been brought forward given the urgency of the situation.

The Oudtshoorn Groundwater Project entails equipping existing deep boreholes into the Table Mountain aquifer and constructing a 22 km pipeline extending from the Blossoms wellfields to the town's water network. Studies indicate that the supply capacity is sufficient to meet close to 50% of Oudtshoorn's drinking water needs if dam levels at the town's Koos Raubenheimer Dam drop accordingly. In mid-February, capacity was sitting at around 42%. Purely relying on the Blossoms pipeline in a 'Day Zero' scenario would translate to around a daily delivery of 50 ℓ per person.

The pipeline will also be linked to the existing Klein Karoo Rural Water Supply Scheme, which includes supply to Calitzdorp, falling under the nearby Kannaland Municipality. Currently, Calitzdorp does not have a secondary water source if its Nels Dam runs dry. Level 4 restrictions are currently being applied and the storage level recorded in February was at around 7.4%. This has required bulk water to be delivered to the town in various forms, including bottled water.

Blossom's two-phased approach

Split into two phases, the estimated total cost of the Blossoms pipeline project is R92 million. Neil Lyners and Associates has been appointed as the lead consulting engineer, responsible for overall design and project management of the pipeline and booster pump station, working in conjunction with Oudtshoorn's municipal engineering team.

Approximately R50 million will be allocated for Phase I, with construction expected to commence in July 2019. An initial amount of R30 million was allocated to the DWS towards the end of 2018 by the National Disaster Management Centre. Additional funding will be sourced from the DWS, the Western Cape Provincial Government, and Oudtshoorn Municipality.

The scope of works in Phase I includes: the equipping of the boreholes (mechanical and electrical); the establishment of a pump line from these boreholes to a balancing reservoir;

Oudtshoorn's Koos Raubenheimer Dam has a storage capacity of approximately 9 200 000 m³

and the installation of a gravity water main from the balancing reservoir to the outskirts of the town.

During Phase II, the plan is to extend the gravity main and connect it to existing reservoirs within Oudtshoorn. This will include the installation of a booster pump station on the line.

Further afield, additional wellfields are also being investigated in the Calitzdorp area to augment the western part of the current rural supply scheme. The intention is to supplement supply when the Nels Dam drops to critical levels.

With augmentation from Blossoms, the Dysselsdorp wellfields will also be sufficient to supply water to Dysselsdorp and the eastern regions of the rural scheme. A future project could also see the supply of water to the town of Dysselsdorp from the Rust-en-Vrede catchment waterfall.

For Oudtshoorn itself, the next phase in terms of longer-term storage capacity will be the building of the new De Kombuis Dam, situated higher up in Schoemanshoek, which will supply irrigation water to the farming community in this separate catchment area. Once on-stream, De Kombuis is expected to add an additional 6 000 000 m^3 to 7 000 000 m^3 of storage capacity. This will free up all water associated with the Koos Raubenheimer Dam for dedicated municipal supply to the town's residential and commercial potable water users. 3S