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The Lower Tugela Bulk Water Scheme

Background

Areas north of the Tugela River, mostly peri-urban and semi rural along the Kwazulu-Natal North Coast including the Mandini Local Municipality are experiencing water shortages that are likely to get more severe in the near future unless appropriate interventions are put in place.

In response to the impending water crisis, the Lower Tugela Bulk Water Supply Scheme (LTBWSS), situated in KwaZulu-Natal, approximately 110km north of Durban at the Mandini Local Municipality, was initiated. The other intervention was the raising of the Hazelmere Dam wall and capacity upgrade of the Waterworks (located approximately 40km north of Durban).

The Lower Tugela Bulk Water Scheme (LTBWS) has a design capacity of 55ML/d up to a maximum of 110ML/d with a firm yield of raw water available through direct abstraction, via a weir, from the Tugela River.

Description of High level Brief Project:

The LTBWS is planned for two phases each with a capacity of 55ML/d.

Phase 1

- A design and construction of a weir across the Tugela River.
- A low lift pump station that will be incorporated in the design of the abstraction works.
- A raw water pipeline (DN900) approximately 1km in length across the Tugela River that will discharge raw water into a hydrocyclone unit of the Waterworks.
- A 55ML/d Waterworks.
- A high lift pump station that will pump potable water to a 30ML command reservoir situated at a height of approximately 300m.
- A rising main pipeline of approximately 3km in length between the high lift pump station and the command reservoir.
- A DN 900 gravity main pipeline, approximately 29km in length that will reach the Mvoti reservoir (South of LTBWS).

Phase 2

- A 2nd 55ML/d Waterworks System.
- A 2nd 30ML command reservoir, additional pumps, electrical equipment at the low and high lift pump stations to facilitate the capacity upgrade from 55ML/d to 110ML/d.

An optional pre-treatment facility is included for use during periods of high rainfall and possible flooding of the Tugela River.

Raw water is pumped from the low lift pump station/ abstraction works to a hydroclone for further solids removal. A polymeric coagulant is added at the rapid mix chamber to aid in particle settling. The coagulated water flows by gravity into three clariflocculators (primary settling) and the effluent flows by gravity into three pulsators (secondary settling). The clarified water from the pulsators is discharged into 8 rapid gravity filters. The final water will be disinfected using chlorine gas and ammonium hydroxide to sustain adequate chlorine residual in the pipeline enroute to Umvoti. The sludge from the clariflocculators and pulsators will be discharged into a sludge plant for further





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treatment. The sludge system consists of thick sludge tanks, two gravity thickeners and two centrifuges for sludge dewatering.

A backwash recovery tank is also available for recycling of effluent back to the head of works.

The scheme with an estimated cost of R1.6b is in the commissioning phase.

