

6. WASTE WATER

6.1 OVERVIEW

Umgeni Water currently owns and operates the Darvill and Ixopo Waste Water Works (WWWs). It also operates the Howick WWW for uMgungundlovu District Municipality under a management contract, and the Albert Falls North and South WWWs as part of the management of Albert Falls Dam (**Figure 6.1**).

All existing operations are based on current technology. New technology such as membrane separation would allow for the treatment of at least double present volumes in activated sludge (i.e. all these plants). These processes are still relatively expensive, although these costs are dropping. The quality of water produced may make this technology a necessity as DWA raise standards to compensate for increased water demand and population density.

6.2 DARVILL WASTE WATER WORKS

The Darvill WWW serves The Msunduzi Municipality. This WWW has a current biological treatment capacity of 65 MI/day and has chemical supplementation to 75 MI/day. Current dry weather flow is approximately 72 MI/day, having risen by 5.1 MI/day in the last 12 months (**Figure 6.2**). The capacity of the WWW is often exceeded during the summer seasons when there is ingress from the city's stormwater pipes into the sewer system.

The present method of disposal of sludge by spray irrigation to land is being operated well. This seems likely to come under pressure from the development of the Hollingwood Cemetery and the Bank Charter housing development in close proximity to the WWW and disposal site. Alternative methods of sludge treatment and disposal will be considerably more expensive to construct and operate and will utilise a significant amount of liquid treatment capacity for supernatant. As a result, this technology should be delayed for as long as possible.

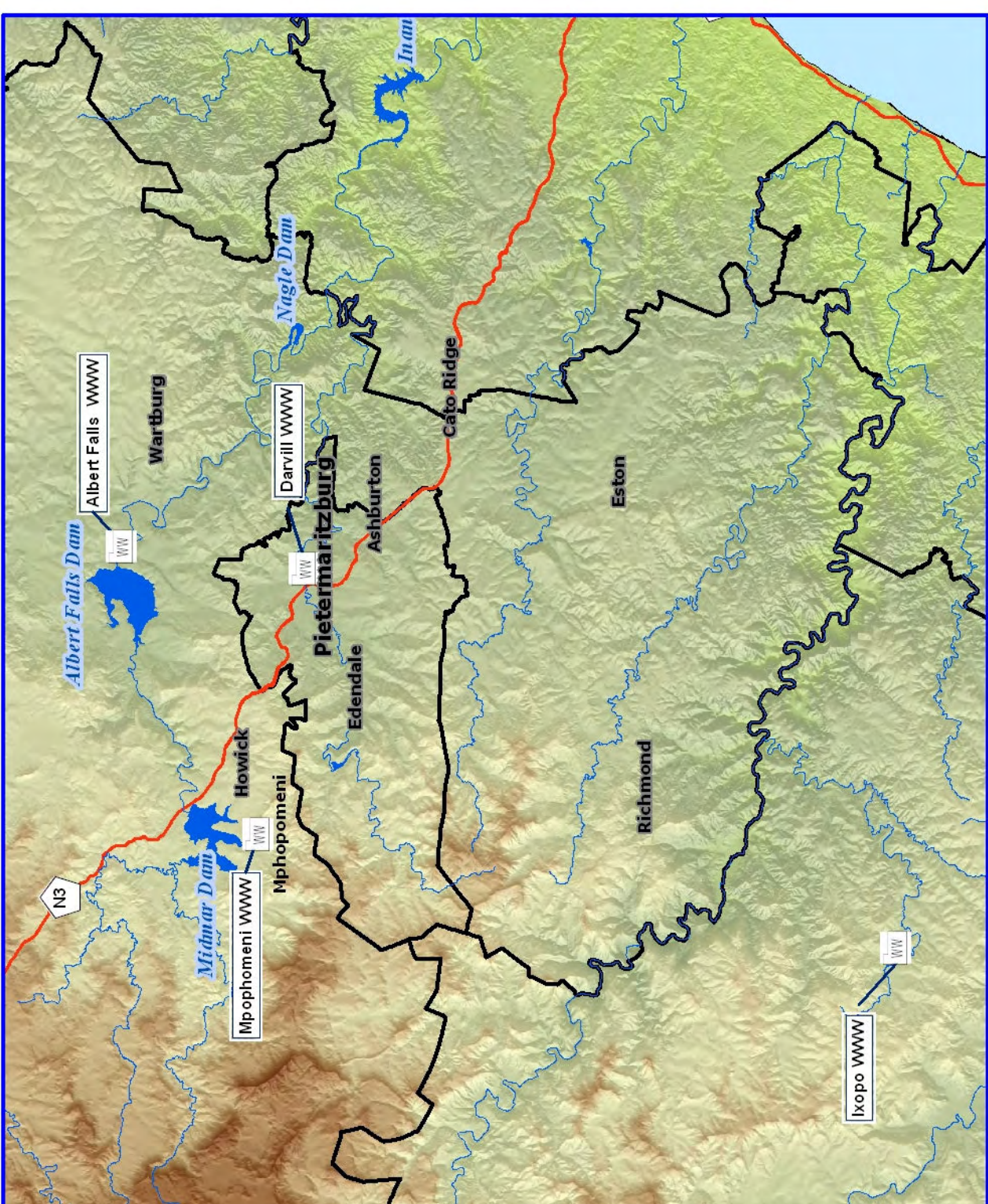


Figure 6.1 General layout of the WWSA operated by Umgeni Water

Legend

- UW Operated WWSA
- Rivers
- National Roads
- WSAs for whom UW is BWSP
- UW Operated Dams

Elevation (m)

High : 2500
Low : 0

Source:
 Department of Water Affairs
 DRDLR
 KZN Department of Transport
 Municipal Demarcation Board
 Umgeni Water

Original Scale on A4 at 1:600000

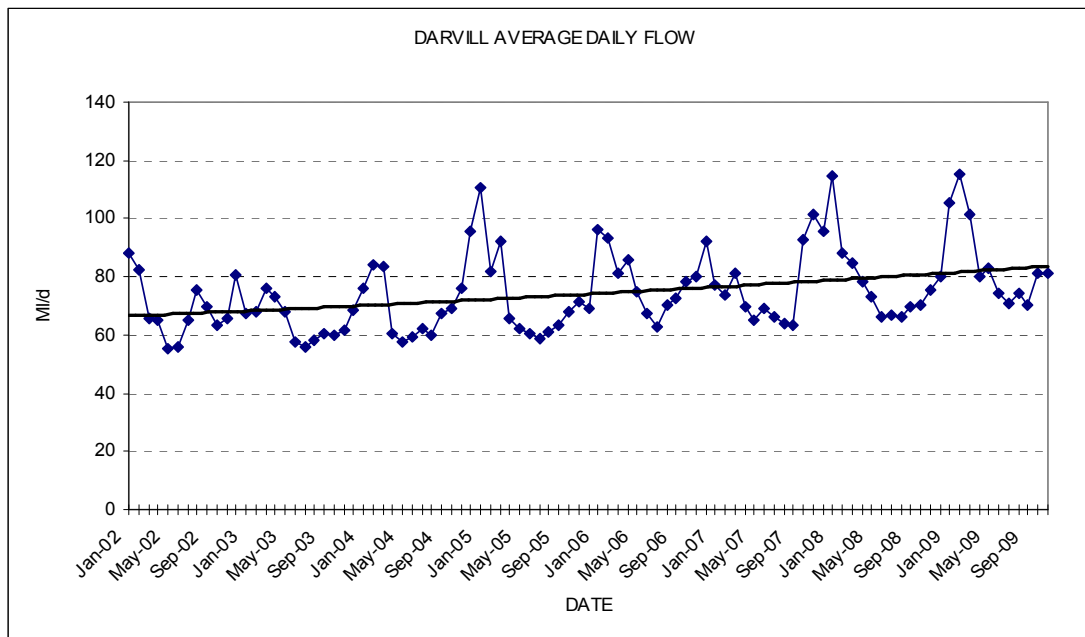


Figure 6.2 Average daily flow at Darvill WWW.

The Msunduzi Municipality intends converting the Edendale area to a water-borne sewerage system and the municipality is currently assessing the various options relating to the treatment of the effluent. These options include diversion to the Darvill WWW, the construction on a new WWW in the Edendale area and the construction of a new WWW in the Ashburton area.

Umgeni Water is currently investigating options to upgrade the Darvill WWW to cope with the additional inflows received during the wet season. The upgrade will need to take cognisance of the final option selected for the Edendale area. The site has nominally been estimated to have sufficient space to install a plant with a capacity of 220 Ml/day.

Effluent recovery to potable standards is being tested at laboratory and pilot plant scale at the WWW. This includes an assessment of various membrane bioreactors (MBRs) which could also form part of a general plant upgrade.

6.3 IXOPO WASTE WATER WORKS

Ixopo WWWW serves the town of Ixopo in the Sisonke District Municipality. The WWWW has a design capacity of 1.0 MI/day and is designed to be doubled. Sludge is dried on beds and disposed of on a local farm owned by Umgeni Water. The average daily inflow to the Ixopo WWWW is shown in **Figure 6.3**. An upgrade to the WWWW is not envisaged in the near future.

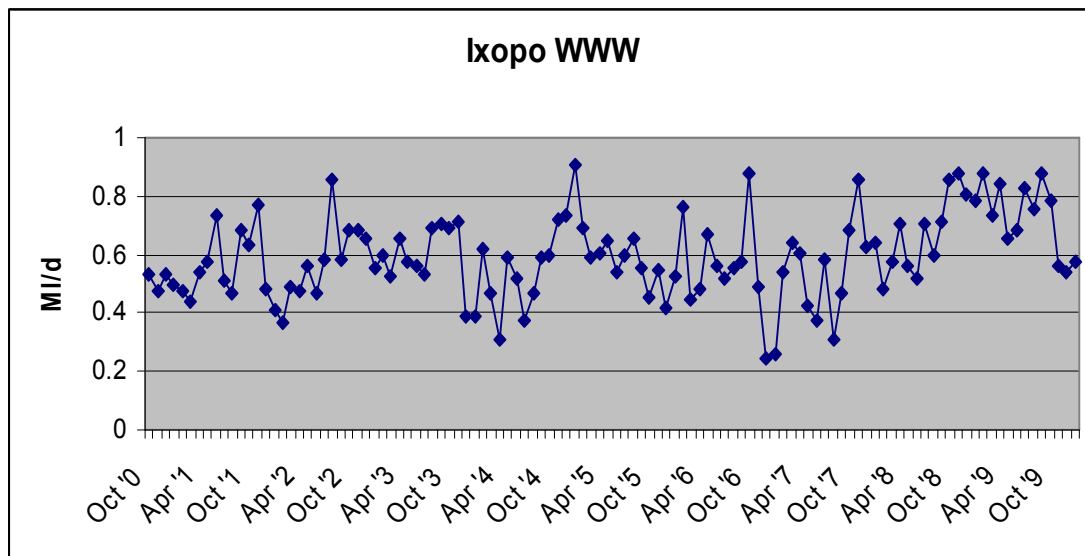


Figure 6.3 Average daily flow at Ixopo WWWW

6.4 HOWICK WASTE WATER WORKS AND MPOPHOMENI WASTE WATER WORKS

Umgungundlovu District Municipality provides wastewater treatment services for the uMgeni Local Municipality at the Howick WWWW. A large pump station at the Mphophomeni WWWW site and a number of smaller pump stations in Howick transfer wastewater for treatment at Howick WWWW. Umgeni Water has a management contract with Umgungundlovu District Municipality to operate this WWWW on their behalf.

Howick WWW has a design capacity of 6.8 MI/day and is currently treating 5 MI/day. The WWW site is currently fully utilised. If further treatment capacity is required on this site, the drying beds will have to be replaced with mechanical dewatering or the WWW will have to upgrade to a membrane bioreactor (MBR) or similar.

Mpophomeni WWW is currently not functioning, and is only used as a transfer station to Howick WWW. This WWW will be reinstated as a treatment facility as soon as the necessary finances have been raised by Ungungundlovu District Municipality. The proposed plant will be designed to treat 3 MI/day. The site has space for at least 20 MI/day.

The area served by the Howick WWW and Mpophomeni WWW is in a high rate of expansion (**Section 2.5**). Despite this, there appears to be relatively little forward planning of the wastewater infrastructure being carried out. The combination of this growth combined with the restrictions on the size of the Howick WWW site could limit development. This situation needs to be rectified.

6.5 ALBERT FALLS NORTH AND SOUTH WASTE WATER WORKS

The two Albert Falls WWWs are transportable activated sludge units installed for the construction of the dam in the early 1970s. They were probably originally designed for approximately 100 m³/day (0.1 MI/day). The bulk of the current feed to these WWWs is from conservancy tank contents delivered by tanker from the Albert Falls and Bon Accord resorts. Umgeni Water is currently refurbishing the WWW to a Sequencing Batch Reactor (SBR) configuration with a treatment capacity of 40 m³/day to suit present demands.