6. **Wastewater**

6.1 **Overview**

Umgeni Water currently owns and operates the Darvill and Ixopo Wastewater 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.

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). Umgeni Water is currently investigating this at pilot scale. 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 Wastewater Works**

![Darvill Wastewater Works](image)

**Figure 6.1** Darvill Wastewater Works.

The Darvill WWW (*Figure 6.1*) serves The Msunduzi Municipality. This WWW has a current biological treatment capacity of 65 Ml/day. Current dry weather flow is approximately 70 Ml/day (*Figure 6.3*) which is more than the plant’s capacity. As can be see in *Figure 6.3*, the increase in flow has tapered over the last year. The graph also indicates the spike in flow in the summer seasons when there is ingress of stormwater into the sewer system.
Figure 6.1 General layout of the Darvill WWW

Legend
- Umsunduzi River
- Catchment Area

Darvill WWW

Original Scale on A4 at 1:120000

0 2 4 km
The present method of disposal of sludge by spray irrigation to land is operating adequately. This is 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 are being investigated in order to determine the optimal future disposal strategy.

The Msunduzi Municipality intends converting the Edendale area to a water-borne sewage 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 Darvill WWW to cope with the additional inflows received as water consumption in the WWW supply area increases into the future, new supply areas are added, and to partial cope with the wet season flows. The upgrade will need to take cognisance of the final option selected for the Edendale area. The average dry weather sewage volumes within the Darvill WWW catchment is expected to grow to about 95 Ml/day by 2020 (Figure 6.4). This includes the option whereby the sewage from Edendale is diverted into Darvill WWW. Hence, it is proposed that the plant be upgraded initially by at least another 30 Ml/day. The upgrade design should make allowance for a further expansion in the future when inflows warrant it. 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 form part of the plant upgrade.

![Average daily inflow to Darvill WWW](image_url)
Figure 6.4 Projected inflow into Darvill WWW.

6.3 Ixopo Wastewater Works

Ixopo WWW (Figure 6.5) serves the town of Ixopo in the Sisonke District Municipality. The WWW has a design capacity of 1.0 Ml/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 WWW is shown in Figure 6.6.

Figure 6.5 Ixopo Wastewater Works.