

CALEDON–BLOEMFONTEIN GOVERNMENT WATER SCHEME

LOCATION

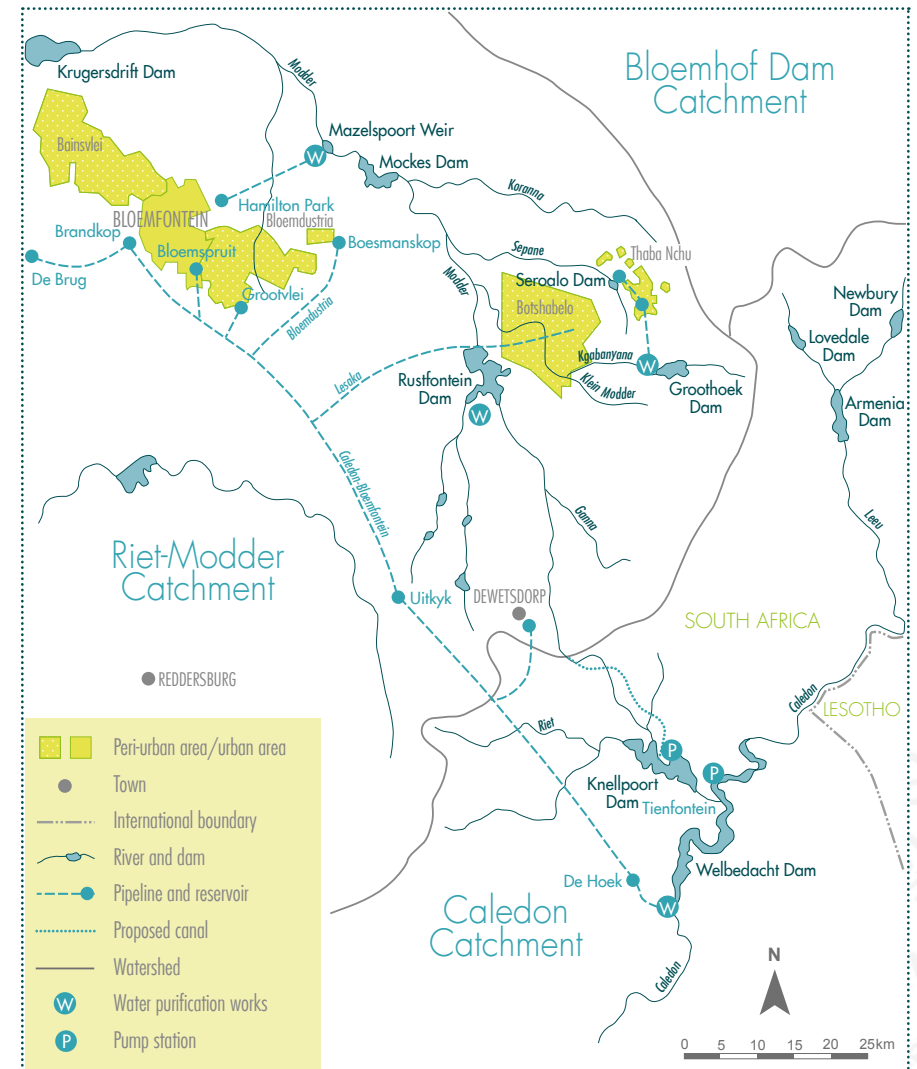
The Caledon–Modder Transfer Scheme consists of two transfer schemes, namely the original Caledon–Bloemfontein Government Water Scheme and the Novo Transfer scheme, which are situated in the Upper Orange Catchment.

DESCRIPTION

The Caledon–Bloemfontein Government Water Scheme and Novo Transfer schemes are two of the three main schemes used to supplement the Riet–Modder Catchment due to the full utilisation of the water resources within the catchment, the third main scheme being the Orange–Riet Transfer. The Mazelspoort Scheme was developed by Mangaung Municipality. The Caledon–Bloemfontein Government Water Scheme and Novo Transfer, together with the Mazelspoort Scheme situated on the Modder River, form one integrated supply system serving the Mangaung area.

The Caledon–Bloemfontein Government Water Scheme is operated by Bloem Water, and consists of Welbedacht, Rusfontein and Knellpoort dams, along with other service reservoirs, pump stations and water treatment works.

The storage capacity of the Welbedacht Dam reduced from 115 million m³ to approximately 16 million m³ in only 20 years due to siltation. This impacted the assurance of supply to Bloemfontein and so Knellpoort Dam was constructed (off channel storage) to augment the supply. The Tienfontein Pump Station in the Welbedacht Reservoir pumps water to Knellpoort Dam, at a capacity of 10 m³/s. Control measures have been set up to reduce similar siltation problems in the dam. There is also a water treatment works at Welbedacht Dam. Water is then pumped via the 112 km Welbedacht–Bloemfontein Pipeline (or Caledon–Bloemfontein Pipeline) to augment urban water supply at Bloemfontein.



Locality map (from map produced for ORASECOM Infrastructure Report, 2007)

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The Novo Transfer Scheme is an extension of the Caledon–Modder Transfer Scheme. It transfers water from Knellpoort Dam to Rustfontein Dam in the upper reaches of the Modder River Basin. This is done via the Novo Pump Station at Knellpoort Dam (29.7 km of pipeline and 12 km of river channel). The Novo Transfer Scheme is then linked to the Mazelspoort Scheme downstream on the Modder River. The scheme will be developed in stages, according to Bloemfontein demands, which are increasing, and is expected to reach a maximum transfer capacity of 150 million m³/a by the year 2030.

PHYSICAL INFORMATION: DAMS

Name	River	Quaternary	Live full supply capacity *(million m ³)	Wall height (m)	Wall length (m)	Maximum spillway capacity (m ³ /s)
Welbedacht	Caledon	D23J	15.5	32	192	5 310
Rustfontein	Modder	C52A	72.6	36	210	1 090
Knellpoort	Rietspruit	D23H	136.2	50	200	1 070

PHYSICAL INFORMATION: PUMP STATIONS

Pump station name	Location	Capacity (m ³ /s)
Tienfontein	Welbedacht Dam	10
Novo	Knellpoort Dam	1.5

PHYSICAL INFORMATION: PIPELINES/CANALS

Name	Length (km)	Capacity (m ³ /s)
Welbedacht–Bloemfontein Pipeline (pressure)	6.55	1.68
Welbedacht–Bloemfontein Pipeline (gravity)	105.5	1.68
Novo Pipeline	29.7	2.4

PURPOSE

Towns including Bloemfontein, Botshabelo, Thaba Nchu, Dewetsdorp, Reddersburg and Edenburg are supplied with water from Welbedacht Dam via the Caledon–Bloemfontein Canal. The Novo Transfer Scheme conveys water to supplement the Bloemfontein demands, along with Botshabelo and Thaba Nchu.

