



WELBEDACHT DAM

COORDINATES (degrees, minutes, seconds)

LATITUDE	LONGITUDE
29°54'32" S	26°51'38" E

LOCATION

This dam is situated on the Caledon River near Wepener in the Free State in quaternary D23J, South Africa.

DESCRIPTION

The Welbedacht Dam is a concrete barrage-type dam. The dam has a full supply level of 1 402.9 m, with a dead storage level of 1 385.2 m, and the bottom of reservoir is at 1 383.2 m.

PURPOSE

Welbedacht Dam was constructed as the main storage element of the Caledon–Modder River Government Water Scheme (CMRGWS) and water is abstracted from this dam for transfer to Bloemfontein and various smaller users along the way. Its purpose was to supply water to the city of Bloemfontein via the 115-km-long Caledon–Bloemfontein pipeline which has a capacity of approximately 1.157 m³/s. Due to the high sediment concentration in the water, the transfer from Welbedacht Dam is first purified at the Welbedacht Purification Plant which is located just downstream of the Dam. The purification plant has a capacity of 1.68 m³/s.

The storage capacity of the 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 to augment the supply.



Welbedacht Dam (source: www.ewisa.co.za)



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PHYSICAL INFORMATION

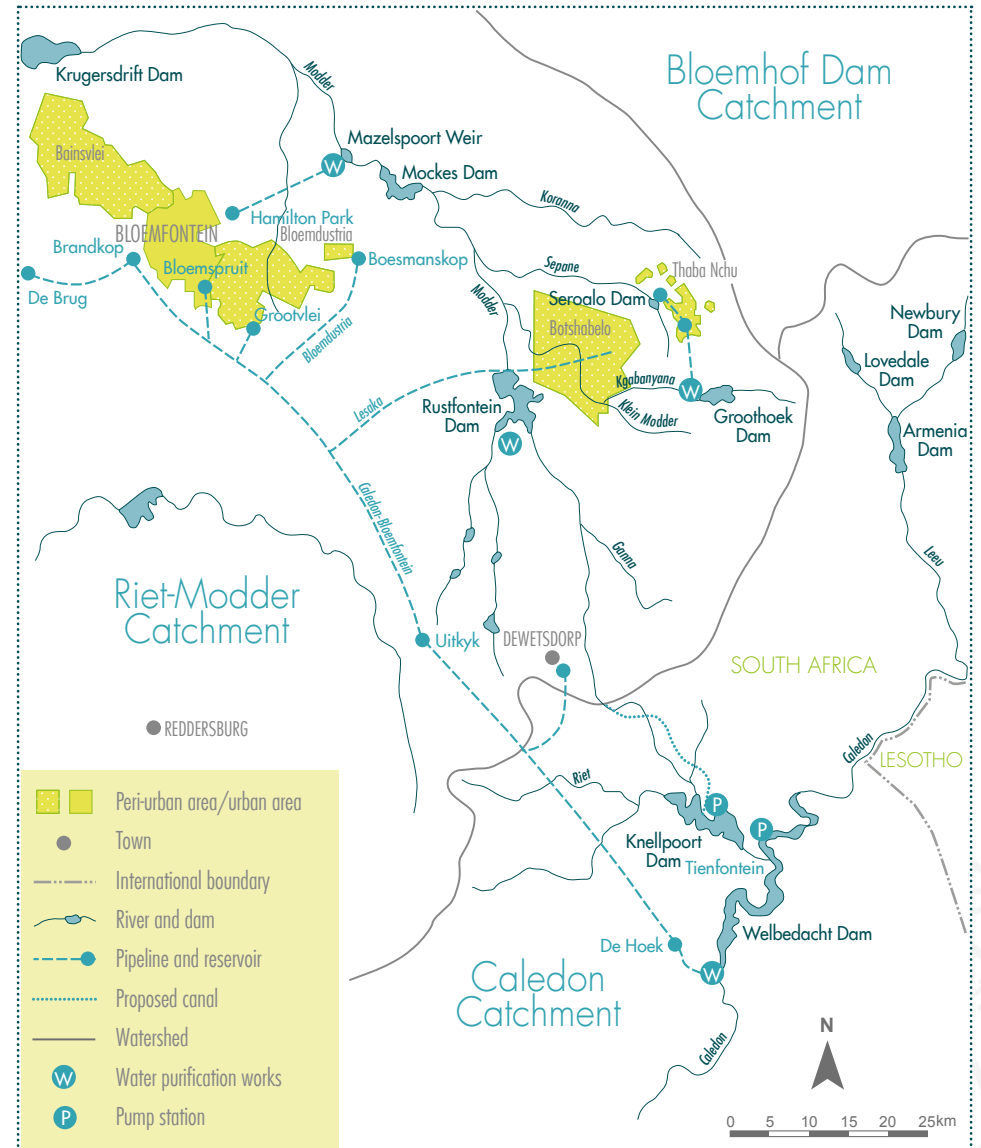
Dam name	River	Quaternary catchment	FSC* (million m ³)	SA (km ²)	Owner	DWA code	Wall height (m)	Wall length (m)
Welbedacht	Caledon	D23J	15.47	11.75	DWA	D2R004	32	192

* Live full supply capacity (ORASECOM)

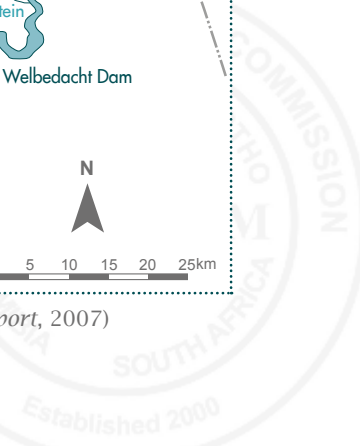
Year of completion	Demands/abstractions (million m ³ /a)			1:50 yield (million m ³ /a)	Maximum spillway capacity (m ³ /s)
	Domestic	Irrigation	Other		
1973	48.27 †	Unknown	1166 ‡	Unknown	5 310

† WR2005, WRC

‡ WR2005, WRC (total outflow from the dam)



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



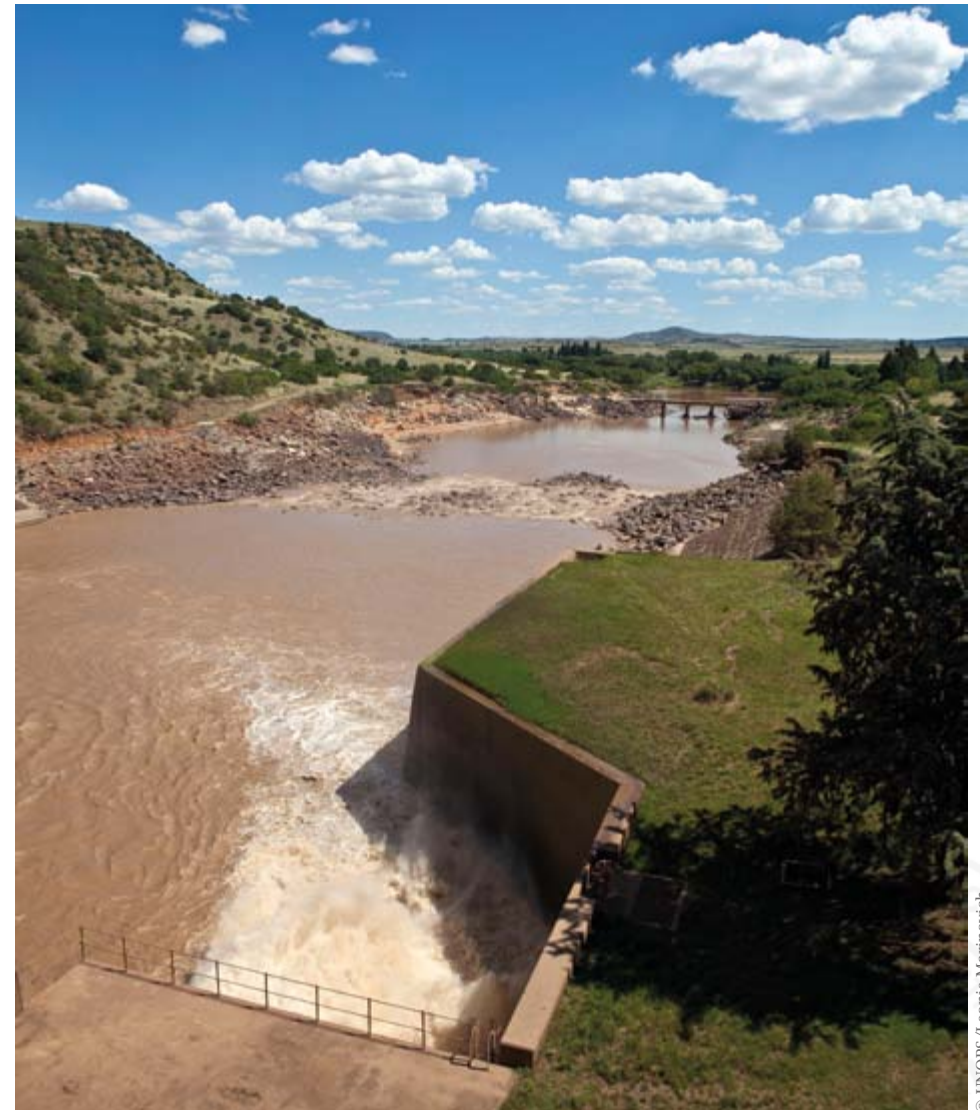
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AREA–CAPACITY RELATIONSHIP

Elevation (m)	Storage (million m ³)	Surface area (km ²)
1 403.4	22.25	14.20
1 403.1	18.18	12.88
1402.9	15.47	11.75
1 402.5	11.45	9.29
1 402.3	9.74	7.85
1 401.7	6.21	4.30
1 401.3	4.78	2.90
1 400.5	3.19	0.44
1 385.6	0.01	0.01
1 383.2	0.00	0.00

OPERATING RULE

Welbedacht Dam (along with Knellpoort Dam) support the Modder system when there is insufficient water in the system, via the Caledon–Modder transfer.



Welbedacht Dam is heavily silted.