



STERKFONTTEIN DAM

COORDINATES (degrees, minutes, seconds)

LATITUDE	LONGITUDE
28° 23' 14" S	29° 01' 00" E

LOCATION

This dam is situated in the upper reaches of the Vaal River, upstream of Standerton in quaternary catchment C11L in South Africa. It is located on the Nuwejaars Spruit, in the upper catchment area of the Vaal River.

DESCRIPTION

The dam has an earthfill wall. It receives its water via the Thukela–Vaal Transfer Scheme, which is a pumped-storage scheme involving the net transfer of up to 630 million m³ of water from KwaZulu-Natal. This is stored in Sterkfontein Dam and released to the Vaal Dam via the Wilge River when needed. The Sterkfontein Dam is a very effective reservoir, since it is deep, with a relatively small surface area. The dam has a full supply level of 1,702 m and a dead storage level of 1,646 m. The bottom of the reservoir is at 1,617 m.

PURPOSE

The water from KwaZulu-Natal is stored in Sterkfontein Dam and released to Vaal Dam via the Wilge River when needed. Due to the favourable storage and climatic characteristics of Sterkfontein Dam, it is beneficial to store water in the deep, cool Sterkfontein Dam and only release water to the shallow Vaal Dam when needed. The evaporation losses from Sterkfontein Dam are approximately 35 million m³/a which represents approximately 10% of the losses that would be experienced from the Vaal Dam for a similar volume. Water is pumped up from Kilburn Dam at a rate of 174 m³/s by four 250 MW pumps/turbines into Driekloof Dam during periods of low power demand. During periods of peak demand, typically during the morning and early evening, the water is released from Driekloof Dam at a rate of 312 m³/s to generate up to 1,000 MW of power.



Sterkfontein Dam under construction. (Source: SA Dept of Water Affairs)



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PHYSICAL INFORMATION

Dam name	River	Quaternary catchment	FSC* (million m ³)	FSA (km ²)	Owner	DWA code	Wall height (m)	Wall length (m)
Sterkfontein	Nuwejaars Spruit	C81D	2,616.95	67.26	DWA	C8R003	69	3,060

* Live full supply capacity (SANCOLD, 2009)

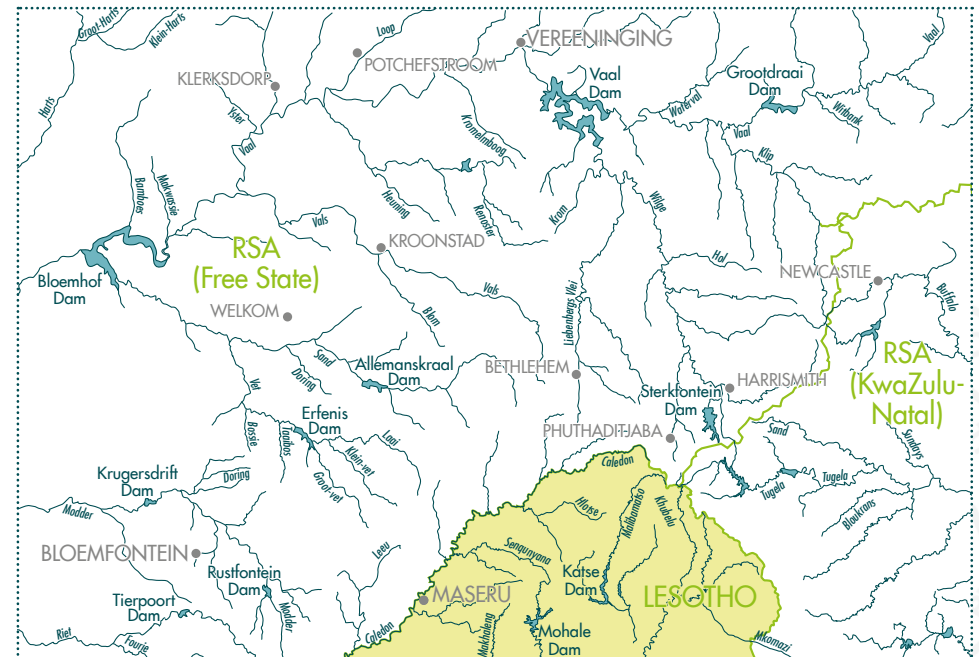
Year of completion	Demands/abstractions (million m ³ /a)			1:50 yield (million m ³ /a)	Maximum spillway capacity (m ³ /s)
	Domestic	Irrigation	Other		
1974	Unknown	Unknown	Unknown	Unknown	Unknown

AREA-CAPACITY RELATIONSHIP

Elevation (m)	Storage (million m ³)	Surface area (km ²)
1,702	2,616.95	67.26
1,675	1,050.95	47.13
1,664	590.24	36.53
1,656	335.16	26.68
1,651	217.40	20.49
1,644	101.52	12.72
1,634	20.61	4.38
1,630	6.88	2.56
1,621	0.05	0.04
1,617	0.00	0.00

OPERATING RULE

Sterkfontein Dam (on the Wilge River, a tributary of the Vaal River), along with Grootdraai Dam, Vaal Dam, Vaal Barrage and Bloemhof Dam (all on the Vaal River) form part of the Bloemhof Sub-system, which is part of the greater Integrated Vaal River System. Woodstock Dam and the Driel Barrage (situated in the Thukela River catchment), form the Thukela Transfer Scheme into the Vaal catchment. The large scheme is operated as follows: The Thukela system supports Sterkfontein Dam until the dam is full. The transfer limit is 606 million m³/a. When the Vaal Dam is at 15% storage or less, Sterkfontein will begin to support it. Abstractions at Sedibeng and Midvaal make use of local runoff and spills from upstream dams. When this is not adequate, the Vaal Dam supports the abstractions. The Vaal Dam will only begin to support Bloemhof Dam when Bloemhof Dam reaches its minimum operating level (1,213.6 m).



Dam network in the upper areas of the Orange-Senqu basin

