



**water & sanitation**

Department:  
Water and Sanitation  
**REPUBLIC OF SOUTH AFRICA**



# Coordination and Development of Potential Types of Renewable Energy Power Plants

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# Sites

- Berg River Dam (Southern - WC)
- Spring Grove Dam (Eastern - KZN)
- Lavumisa Pump Station (Eastern - KZN)

# Berg River Dam

- Location: Franschhoek Western Cape
- Concrete-faced rockfill dam (CFRD ) approximately 938 m in length and 62,5 m high 65 m high intake tower, a 5,5 m diameter concrete outlet conduit, outlet works and an ungated side channel spillway.
- A pump station (the Dasbos pump station) and a 2,5 km long 1,5 m diameter (Dasbos) pipeline to convey water from the dam to the Dasbos adit of the Riviersonderend Tunnel System

# Berg River Dam

- Release via sleeve valves: 0,36 m<sup>3</sup>/s and 8,6 m<sup>3</sup>. 2 x DN 400 and 2 x DN 800
- The reservoir has a volume of 130 million m<sup>3</sup> and a surface area of 537 ha (5,37 km<sup>2</sup> ) at FSL
- Electricity NMD: 9MVA



# Berg River Dam



# Spring Grove Dam

- Location: Rosetta KZN Midlands
- Reinforced cement concrete embankment. Ogee crest spillway, height 37m, length 607m and outlet works
- A pump station (Spring Grove) abstracts water from the dam and sleeve valves release water into the river downstream of the dam.

# Spring Grove

- Release via sleeve valves: 0,36 m<sup>3</sup>/s . 2 x DN 400 and 2 x DN 1200. Average flow of 3,17m<sup>3</sup>/s to Spring Grove Pump Station
- The reservoir has a volume of 139 million m<sup>3</sup> and a surface area of 1022 ha (10,22 km<sup>2</sup> ) at FSL
- Electricity NMD: 7MVA

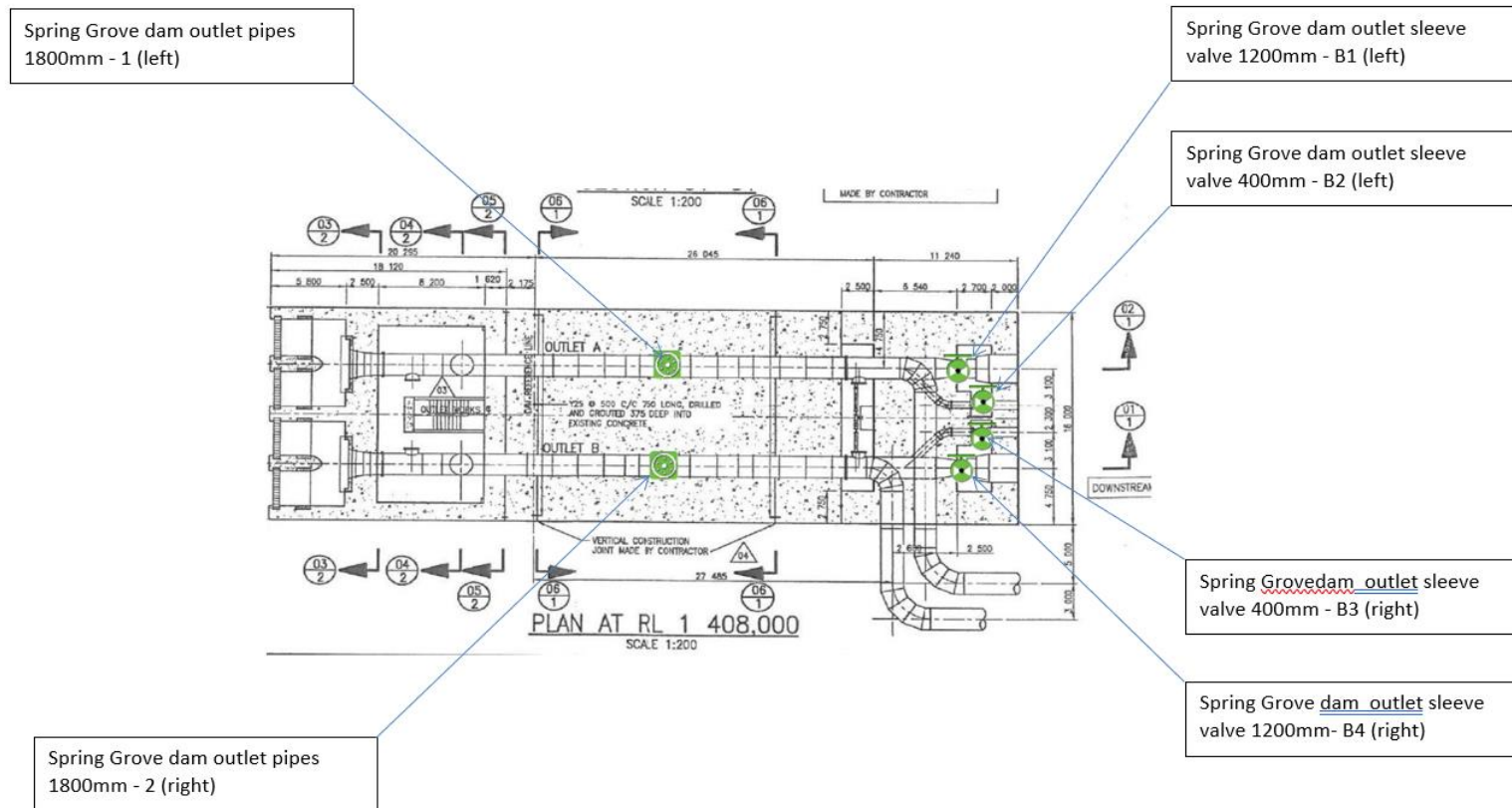


# Spring Grove





# Spring Grove



# Lavumisa Pump Station

- Location: Golela KZN RSA / eSwatini Border
- Low lift and high lift pump station abstracting water from Pongolapoort Dam and pumping via a rising main to Lavumisa Dam in eSwatini
- Located on the bank of the Pongolapoort Dam on the RSA/eSwatini border.
- Electricity NMD: 0,6MVA

# Lavumisa Pump Station





# Lavumisa Pump Station





# Envisioned Implementation (Hydro)



Canyon Filter Plant in Colorado, U.S.A.

Image: [www.hydroreview.com](http://www.hydroreview.com)

# Energy Facts and Figures

- Solar generates approximately  $150\text{w/m}^2$
- For 1MW of generation capability, area coverage will be approximately  $7\text{km}^2$

# Energy Facts and Figures cont...

For Hydropower Generation:

$$P = m \times g \times H_{\text{net}} \times \eta$$

$$m = 0.5\text{m}^3/\text{s}$$

$$g = 9,81\text{m}/\text{s}^2$$

$$H_{\text{net}} = 50\text{m}$$

$$\eta = 0,7$$

Result = 171kW (11 houses approx.)



Thank you for your attention

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Questions