LESOTHO HIGHLANDS WATER PROJECT

LOCATION

The Lesotho Highlands Water Project (LHWP) Phase 1 scheme was constructed from the Kingdom of Lesotho to the Vaal River in South Africa, by an agreement between the two countries.

DESCRIPTION

The original planned project envisaged five phases (currently as at 2012, Phase 2 is about to commence implementation), as shown below:

Phase 1a

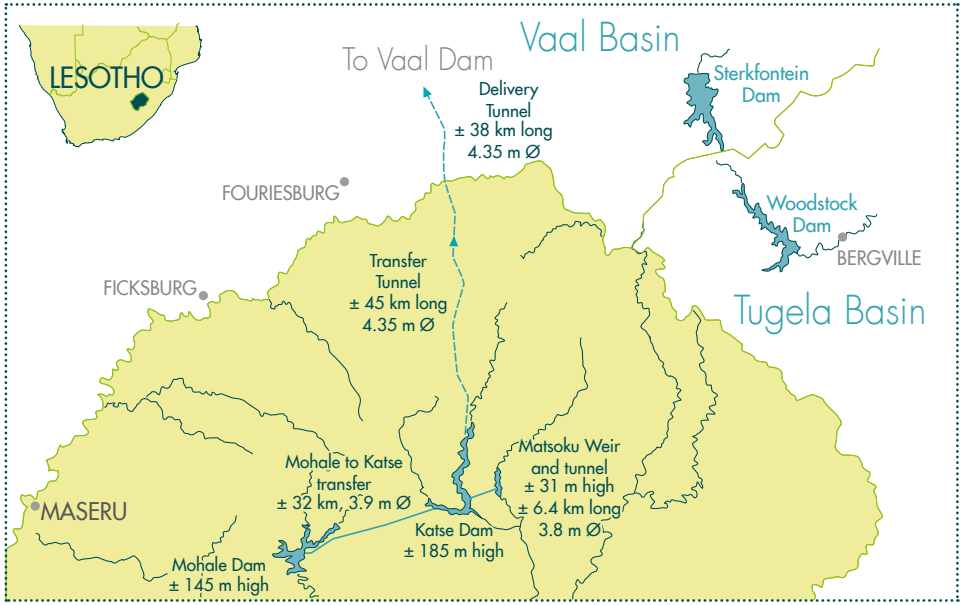
- the 185 m high Katse Dam;
- the intake structure capable of handling 70 m^3/s;
- the 45 km long transfer tunnel from Katse reservoir to the Muela reservoir
- the Muela Dam and hydropower station;
- the 37 km long delivery tunnel from the Muela reservoir to the Vaal River basin.

Phase 1b

- the 145 m high Mohale Dam;
- the 32 km long transfer tunnel from the Mohale reservoir to upstream of Katse Dam;
- the 15 m high Matsoku Diversion Weir;
- the 5.7 km long transfer tunnel from the Matsoku Weir to Katse Dam.

Phase 2

- the 163.5 m high Polihali Dam;
- the 38 km Katse/Polihali tunnel;



Phase 1 of the Lesotho Highlands Water Project (from locality map produced by the SA Dept of Water Affairs)

Mohale Dam, part of the Lesotho Highlands Water Project (© UNOPS/C Mor)

- the upgrading of the Muela hydropower plant;
- the existing tunnels would be used as conveyance from Katse Dam.

PURPOSE

The purpose of the LHWP is to augment South Africa's water supply via a transfer to the Vaal River Catchment (and is therefore classified as part of the Vaal River System), in addition to generating electricity for Lesotho itself. The hydroelectric station is situated near Muela in Lesotho, approximately 45 km from Katse Dam. However, demands within Lesotho are growing, and therefore it is envisaged that current resources, including surface water runoff, groundwater and wellpoints, will not be sufficient to supply the growing demand. Part of the recently completed Lesotho Lowlands Study was to assess options for possible storage dams for this reason.

During periods of water shortages, water is discharged from the Muela Dam into the Mohokare (Caledon) River to provide water to the capital of Lesotho, Maseru. Releases are also made for the downstream ecological reserve. Once the whole scheme has been implemented, it will transfer the maximum flow to South Africa (long term maximum 877 million m^3/a).

PHYSICAL INFORMATION LHWP DAMS

Name	Live full supply capacity (million m^3)	Wall height (m)
Katse	1 950	185
Mohale	947	145

PHYSICAL INFORMATION LHWP TUNNELS

Description	Length (km)
Katse Dam to Muela Dam	45
Muela Dam to the Vaal River basin	37
Mohale Dam to Katse Dam	32

Lesotho constitutes only 5% of the Orange River Catchment, but provides approximately 50% of the total catchment runoff. In addition, the water quality is characterised as good with low sediment content.