

POLIHALI TRANSFER TUNNEL UPDATE



Tunnels


The main purpose of the Lesotho Highlands Water Project is to improve the lives of the people of Lesotho and South Africa, by harnessing the water resources of the highlands of Lesotho through the construction of a series of dams and tunnels to deliver specified quantities of water to South Africa and to utilise the water delivery system to generate hydro-electric power in the Kingdom of Lesotho.

The water transfer component of Phase II comprises a Concrete-Faced Rockfill Dam (CFRD) and saddle dam at Polihali, downstream of the confluence of the Khubelu and Senqu (Orange) Rivers, a gravity tunnel that will connect the reservoir at Polihali to the Katse reservoir and river diversion tunnels built prior to the construction of the Polihali Dam.

Polihali Transfer Tunnel

Just as water from Phase I's Mohale reservoir flows through the interconnecting Mohale Tunnel to the reservoir at Katse, so will water from the Polihali reservoir flow by gravity through the Polihali Transfer Tunnel on its way to Katse.

The envisaged transfer tunnel will be approximately 38 kilometres long with a nominal bore of five metres. Both tunnel boring as well as drill and blast methods are being used to excavate the tunnel. The Polihali Transfer Tunnel works also include the intake works and gate shaft at the Polihali reservoir; outlet works and gate shaft at the existing Katse reservoir, with underwater connection to the lake; access adits to the waterway and associated construction infrastructure. Training LHDA staff for the purposes of operating and maintaining the tunnel is part of the skills and technology transfer element of the tunnel project.



Work on the tunnel design commenced in mid-January 2018 and was completed during 2019. The construction contract was tendered during 2021. Construction commenced in early 2023 following the completion of the construction procurement in late 2022. The first blast making way for excavation works at the tunnel boring machine access adit was in September 2023.

Polihali Diversion Tunnels

The diversion tunnels for the Polihali Dam were designed and excavated in advance of the construction of the Phase II main works – the Polihali Dam and Polihali Transfer Tunnel - as part of Phase II's advance works.

Diversion tunnels divert water away from the natural riverbed to create a dry foundation and work area needed for the construction of the dam. Their construction usually goes along with the building of the cofferdam, one upstream and one downstream of the proposed dam, which together allow the river flow to bypass the dam foundation area.

In the case of the Polihali Dam, two diversion tunnels have been constructed to divert the waters of the Senqu River. Building two tunnels increases the capacity to carry floods and will provide flexibility to work in one tunnel while the river flows in the other one.

The tunnels, one 7 metres in diameter and almost a kilometre in length, and the second, 9 metres in diameter and also almost a kilometre long, run parallel to each other from the intake point to the outlet downstream of the dam. The tunnels were excavated by drill and blast method, and supported by rockbolts and shotcrete as required.

Construction of these tunnels was completed in November 2021, in advance of the appointment of the Polihali Dam construction contractor in late 2022.

