



Lesotho Highlands Development Authority

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LESOTHO HIGHLANDS WATER PROJECT – PHASE II November 2015

Phase II of the LHWP comprises two main components: a Water Transfer component to augment the delivery of water to South Africa and a Hydropower component which will increase the electricity generation capacity in Lesotho, to help meet the country's electricity requirements. In addition, each country has the opportunity to undertake ancillary developments in its territory.

Water Transfer

The main works of the Water Transfer component are the Polihali Dam and the Polihali Transfer Tunnel. The advance infrastructure works include the demarcation of the reservoir, geotechnical studies and the design and construction of roads, bridges, housing and the telecommunications infrastructure as well as the professional services pertaining to the environmental, social and public health aspects of the project.

Project progress

The main focus currently is the procurement of consultants which commenced early in 2015 and is expected to continue into 2017.

To date, the procurement has focused primarily on the procurement of consultants to design and supervise the construction of the advance infrastructure works i.e. roads, bridges, housing, telecommunications as well as the Environmental and Social Impact Assessments and Resettlement Action Plans.. The procurement of consultants for the main works – the dam and the tunnel – includes a prequalification process to shortlist consultants who are then invited to submit bids for the main works. This process is underway.

Five contracts have been awarded for elements of the advance infrastructure works. These are:

- *Contract 3017 – Demarcation of the Polihali Reservoir:* The reservoir demarcation entailed surveying the approximately 230km perimeter of the Polihali reservoir at 2 080 metres above sea level – five metres above the projected full supply level, a safe margin. The demarcation of the reservoir area is critical for the acquisition of land, resettlement and compensation of people in the catchment area whose homes and livelihoods will be affected by the construction of the dam. It is also essential for the planning of the Phase II activities.

The Maleka, Ntshihlele, Putsoa Joint Venture, a local Lesotho firm was appointed to install the beacons. The construction of the beacons to mark the perimeter of the Polihali reservoir began during the winter of 2015. Working in remote and sometimes inaccessible areas of the Mokhotlong district can be challenging. Thanks in part to the dry weather conditions and the cooperation of the local communities to assist with the building, the construction of the more than 1 300 beacons was completed ahead of time.



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- *Contract 3014 – Professional Services for the Design and Construction Supervision of the Polihali North East Access Road:* This contract is for the upgrade and widening of the existing road to a standard appropriate to provide a gravel road suitable to facilitate the safe movement of construction vehicles during the mobilization of the dam and tunnel contractors. It was awarded to the SMEC-FMA Joint Venture.

The designs are at an advanced stage.

- *Contract 3015 – Professional Services for the Evaluation, Optimisation, and Site Supervision of Geotechnical Investigations:* This contract pertains to the appointment of a geotechnical engineer – Jeffares & Green (Pty) Ltd in association with GWC Consulting Engineers - who will oversee the work done by a drilling contractor, Diabor (Pty) Ltd.
- *Contract 4016 – Geotechnical Investigations for the Polihal Dam and Transfer Tunnel:* The geotechnical investigations are necessary to confirm the geological conditions and identify any anomalies in the dam foundations as well as along the tunnel alignment. This information informs the design of the dam and tunnel. The investigations will also identify the suitability, quality and quantity of concrete aggregate found at all investigated quarries.

The Lesotho Highlands Development Authority (LHDA) recently awarded Diabor (Pty) Ltd as the drilling contractor to undertake the geotechnical investigation works.

“The geotechnical investigations are important because they provide comprehensive information to the dam and tunnel design consultants about the geological conditions of the ground in the dam and tunnel site area. The investigations are also expected to identify and prove the suitability, quality and quantity of the construction material available at the quarries that are investigated,” explained Mrs Refiloe Tlali, the LHDA’s Chief Executive, at the time of the contract award. “Finding suitable construction material close to the dam and tunnel sites is

important to the management of the project’s costs. At the same time, extracting material from below the water level will minimize impacts on the environment and save rehabilitation costs.”

The investigations will take place in two stages, with stage 1 already in progress. The work entails gathering geotechnical information mainly conducting seismic refraction surveys, core drilling, and logging of the cores retrieved from the boreholes, extracting and testing samples of rock, sampling the sand in the area and establishing that the material at the quarry sites is suitable for use in the making of concrete.

Stage 2 will coincide with the appointment of the Polihali Dam engineering consultant.

Chris Strydom, Managing Director of Diabor and team lead on the project, commented: “The Lesotho Highlands Water Project is one of the most admired cross-border water infrastructure projects and a significant contributor to the economies of Lesotho and South Africa. Diabor is pleased to be part of it again.



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Our expertise and our experience in Lesotho on the geotechnical investigations for the 'Muela Hydropower Station and a number of bridge projects give us the confidence to tackle this investigation work which is so important to the durability of the dam and tunnel and the long-term sustainability of the infrastructure."

- *Contract 3009 – Professional Services for the Planning, Design and Construction Supervision of the Housing and Associated Infrastructure:* Polihali Infrastructure Consultants (Pty) Ltd, comprising Mott MacDonald PDNA and Khatleli Tomane Moteane in joint venture, were recently awarded Contract 3009 for the master planning, design and construction supervision of the Phase II housing and associated infrastructure. The consultant kicked off its contract with a fact finding /information gathering visit to Mphahlele, Katse and Polihali early in September. It should be completed in the latter part of 2021. This contract forms part of the advance infrastructure works that must be completed to facilitate the construction of the main works namely the Polihali Dam and Transfer Tunnel. The project housing works comprise accommodation facilities for the staff and labour force, site offices, workshops, plant yards and other work areas.

Hydropower Component

The Phase II Agreement on the Lesotho Highlands Water Project determined that the hydropower generation component of Phase II would comprise the Kobong pumped storage scheme consisting of a hydropower station, the existing Katse Reservoir as the lower reservoir and a new upper reservoir in the Kobong valley, or any other similar scheme subject to agreement on the outcome of a feasibility study.

The initial technical and economic feasibility studies have recommended that further studies be undertaken. These should include the following: A market study, an integration study, geotechnical investigations and legal and commercial arrangements.

At the same time, these further feasibility studies will explore alternative viable hydropower generation schemes that will increase the electricity generation capacity in Lesotho towards meeting the country's electricity requirements.

In April 2015, the World Bank approved a grant for the Lesotho Highlands Development Authority to conduct the further feasibility studies.

In July 2015 the LHDA solicited Expressions of Interest (Eoi) from suitably qualified consultants. A total of 24 proposals were received and following an evaluation process, six consultants were shortlisted to participate in a competitive bidding process.



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The six shortlisted firms represent a wide international market reach and include at least one firm from a developing country, as the World Bank procurement criteria stipulated. The firms which hail from North and South America, Europe, Australia and South Africa, offer considerable expertise and are expected to yield a high standard of service. Some of these include Lesotho firms in their teams.

Towards the end of October 2015, the six shortlisted consultants were provided with the Terms of Reference (as part of the full Request for Proposals pack) for the further feasibility studies. The closing date for proposals is 18 December 2015.

Work on the feasibility studies is expected to commence in the second quarter of 2016 and the study is expected to take approximately two years to complete.