



UNHCR

United Nations High Commissioner for Refugees
Haut Commissariat des Nations Unies pour les réfugiés

TERMS OF REFERENCE BOREHOLE DRILLING SUPERVISOR

Background

Since March 2017, the conflict in Kasai Province of the Democratic Republic of Congo (DRC) has caused a flow of refugees into Northern Angola. As of November 14th, 2017 there were 34,556 refugees and asylum seekers registered in the Dundo area. In July UNHCR began the development of a new settlement in Lóvua located 94 km west of Dundo. UNHCR began relocating refugees from the reception centres in Dundo to the new site in early August. It is planned that Lóvua will be the settlement for all refugees from DRC, and it will consist of many small villages, each with WASH and other facilities according to UNHCR standards.

Relocation from the other reception centre, Cacanda, was set to begin in early September. However, the lack of available heavy machinery to open primary and secondary roads, has been causing delays on the relocation process of the refugees living in Cacanda. Relocation has recently started at a low pace to ensure all WASH facilities and readily cleared plots are available in each and every village of Lóvua.

A summary of the current WASH situation in Lóvua settlement:

- UNHCR and UNICEF are coordinating all WASH activities, each having implementing partners on the ground.
- Water is being trucked from a location nearby. It is chlorinated and distributed to communal tanks with tapstands located in each village.
- Communal sanitation facilities (gender segregated latrines and showers) are available in every village, as well as refuse pits.
- Individual household sanitation facilities are foreseen to be constructed in the near future.
- Hygiene promotion is being planned and carried out by the implementing partners, in coordination with other communication and community strengthening activities

It is planned to construct a piped water supply network in Lóvua. Hydrogeological and geophysical studies have been carried out in Lóvua identifying a number of drilling sites for boreholes with an expected drilling depth of 200 – 300 meters. Two different drilling companies are being contracted and are expected to mobilise by the end of January. Each drilling company will construct three boreholes: two (2) boreholes on the Lóvua settlement for use by the refugees and one (1) borehole fitted with a handpump, which will be sited in a nearby host community.

The current plan is to first drill and develop two boreholes at the identified locations on the Lóvua site, to confirm the safe yield of these boreholes is sufficient and that the water is of acceptable quality (chemical, biological, physical, etc.). Subsequent boreholes will be developed in sites that will be identified in by the drilling specialise in collaboration with the drilling contractors. It is hoped that four to six high yielding boreholes with an average sustainable yield of 10 m³/hour each, when pumped 12 hours a day will be able to supply the design population of 30,000 refugees with 20 litres of water per person per day. The good yielding boreholes will be equipped with solar powered pumps and a distribution network to the villages in the immediate vicinity of the borehole.

A borehole drilling specialist has been in-country since November 14th assisting with the development of the technical specifications, identification of suitable drilling companies, inspection of the available materials and

drilling equipment, and scoping of the proposed drilling locations. Their deployment will end in mid-January, and a replacement is required to oversee all the field work which will commence in January.

Mission

The Borehole Drilling Supervisor will support the UNHCR Country Operation under the supervision of the UNHCR WASH Officer based in Dundo, by supervising the drilling, development and equipment of boreholes in the Lóvua settlement. The Borehole Drilling Supervisor will work to ensure that the borehole development follows all UNHCR and National Standards as well as international best practice.

Duty Station: Dundo town/Lóvua Settlement (Angola)

Overall Responsibilities

- Act as the Supervisor on behalf of UNHCR (the Employer) towards the drilling contractor(s)
- Discuss the work schedule with all parties, agreeing changes and recording them as necessary.
- Cross-check that the two initial locations comply with the recommendations of the hydrogeological report. Identify additional drilling locations on the Lóvua site as needed.
- Ensure that all safety measures are adhered to.
- Ensure that the design specifications are adhered to.
- Decide when to stop the excavation in case hard formation is struck and/or the borehole cannot be drilled deep enough to ensure sufficient water throughout the year, or in case of other reasons.
- Ensure that all the required data are collected in the approved format
- Ensure that records are submitted to the appropriate authorities.

The Borehole Drilling Supervisor should be on site at all times during operations, however, if this is not possible, at least for the following key milestones:

- mobilisation to each site
- check siting/site selection
- start and termination of drilling
- lining of the borehole
- borehole development
- pumping test
- sanitary seal installation
- demobilisation
- platform construction and pump installation

Supervision and Oversight

- Monitor and report on the key elements of drilling including: the depth of the borehole as it progresses, the static water or mud level in the borehole, the different depths of water strikes and aquifers, the penetration rates at various strata or change of tools
- Measure borehole depth, screening and casing locations, screen slot sizes, joint types, plug and gravel pack materials, etc.
- Collect and test materials as appropriate including gravel packing
- Collect/log (or oversee the collection and logging of) drilling cuttings
- Observe borehole develop and site completion including backfilling and grouting, following the terms and conditions specified in the contract.
- Oversee pump testing following the accepted best practice. Measure the appropriate parameters including recovery time, drawdown, water levels etc.

- Ensure borehole development carried out according to the drilling specifications (e.g. borehole development until the water is free of solids, fine materials and turbidity for a continuous period of 30 minutes).
- Ensure the envisaged submersible pump is of the proper specifications befitting the borehole size and capacity and installed at the appropriate depth.

Water Quality Monitoring

- Collect and log samples for water quality parameters including physical, chemical, and biological parameters.
- The water quality for all boreholes must be tested in accordance with the Guidelines for Water Quality Monitoring of the government of Angola
- Advising on the results of water quality tests
- Oversee borehole disinfection as appropriate.

Reporting

- Document details of drilling method, drilling plant, drilling fluids and fluid additives
- File daily reports on drilling progress including a complete description of all formations encountered, number of meters drilled, number of hours spent drilling, shutdown due to breakdown, length and type of casing and screen set, and such other pertinent data as requested by the UNHCR WASH Officer.
- Complete Borehole Summary Report in accordance with new UNHCR Standard (Annex 1).
- Register the borehole as required according to national standards (or have it registered).

Technical Assistance and Capacity Building

- Facilitate capacity strengthening activities of national UNHCR WASH staff and, if applicable, of staff of implementing/operational partners in regards to borehole development
- Training of any staff as and when required, especially in monitoring and follow-up.

Expected Outputs

- Borehole(s) that adhere to specifications with respect to diameter, depth, casing and screen, gravel pack/formation stabiliser, verticality, drilling additive and sanitary seal.
- Completed reports (e.g. drilling, borehole development, pump tests, water quality tests, etc.) with the appropriate recommendations on how to proceed.
- Pump installed in the borehole and connected to solar power panels and elevated tank, and pump operating properly.

Essential minimum qualifications, professional experience and skills

Education:

University degree in Water / Civil / Environmental Engineering or similar skills and knowledge demonstrably acquired. Advanced training in water, sanitation or public health engineering will be preferable.

Experience:

Essential

- At least 8 years of progressively responsible functions in water/ sanitary engineering or a related field in developing countries.
- At least 4 years field experience in borehole drilling supervision
- Proven experience with Engineering Project Management and ability to achieve quality results, on time, and within budget.

- Proven ability to deal with multiple tasks in a courteous and service-oriented manner in demanding working conditions that often have short deadlines.
- Proven technical expertise in the area of borehole drilling including survey, implementation, technical design, monitoring and coordination.
- Knowledge and understanding of working procedures in large/global organisations.

Desirable

- Exposure to UNHCR mandate, its priorities and principles.
- Applied knowledge in UNHCR programme management, project formulation, programme cycles and reporting standards.

Skills:

- High ethical and professional standards
- Good communicator with strong interpersonal and negotiations skills to deal with persons of various cultural and educational backgrounds.
- Proficiency in basic computer software

Languages:

- Excellent knowledge of English (written / oral / comprehension) is essential.
- Proficient Portuguese (written / oral / comprehension) is essential.

Reporting Line

This position will report to the WASH Officer and to the Head of Field Office.

Duration

Maximum 3 months

Duty Station

The UNHCR Field Office is located in Dundo, with daily travel to Lóvua settlement. At times, overnight stay in a basic campsite just outside the settlement will be necessary. There are three good lodging accommodations in Dundo. Leisure facilities are limited and be self-organised. There are a number of shops with basic commodities, however if the applicant has any special dietary needs these should be addressed by bringing the required items. Expect land climate conditions with humidity and maximum temperatures around 30 degrees.