

MSF-OCA: Hydrogeological Consultancy - Terms of Reference

Hydrogeological Consultancy - Refugee Camps around Kutupalong area (Balukhali, Mainer Ghona Hakimpara, , Burmapara and Jamtoli), Southern Bangladesh.

Duration: 31 working days

Reporting to: MSF-OCA¹ and UNHCR

Operational Context

There has been a massive influx of Rohingya Muslims from Northern Rakhine State of Myanmar towards Bangladesh since August 2017. The new arrivals are mostly being settled in an area close to Kutupalong in Teknaf Ukhiya under Cox's Bazar District of Bangladesh. This recent massive influx of several hundred thousands of refugees in the past two months has led to a major humanitarian crisis, and water and sanitation is one of the biggest challenges. Two official refugee camps exist from before, Nayapara in Teknaf and Kutupalong with approximately 20'000 and 15'000 refugees, respectively. Along with the official camps an estimated 35,000 unrecognized refugees who have been living in a makeshift camp on the fringes of Kutupalong camp for the past years, as well as another 15,000 were relocated to Leda site, seven kilometres from Nayapara camp.

A joint hydrogeological and sanitation planning mission was carried out in November 2016, by Ellen Milnes (UNHCR) and Philippe Reymond (SANDEC, EAWAG), leading to a recommended groundwater prospection approach, particularly for the groundwater-scarce area of Nayapara. Although there is an annual average rainfall of more than 3000 mm/year, the particular morphological and geological settings in the Nayapara area are such that groundwater prospection is extremely challenging. The mission showed that the groundwater conditions in the Kutupalong area were quite reliable and stable at the time and for the population figures in 2016. However, the new refugee situation requires reassessment of the resource potential going hand in hand with drilling activities to cover the exponentially increased needs.

MSF has been working in the area for many years with mainly health activities as basis for presence but also with WatSan activities in the makeshift camps at times of influx when needs were overwhelming. Currently, MSF is active again in the camps with a sizeable response that includes a water supply component. New shallow and deep tube wells have been constructed mainly for the supply of water for the camps but also for the new health facilities. To date, 26 new water points have been established (generally deeper than 120 feet) of which 6 are free flowing (artesian) and 2 are large diameter (4 "). All small diameter tube wells are equipped with hand pumps to the exception of free flowing wells. Large diameter wells are to be equipped with motorised pumping systems. However, in most locations, hundreds of shallow tube wells have been constructed some time right next to each other. In general, quality is poor especially regarding protection (seal + apron). The risk of contamination of the shallow aquifer is

¹ OCA – Operational Centre Amsterdam

compounded by open defecation but also by latrines being indiscriminately located sometime as close as a few meters from water points.

Drilling technics are somewhat rudimentary (sludging or rotary jetting) and material use is simple (GI pipes, manual pumps) or possibly unsuitable (cow dung as drilling fluid) but effective and accepted locally.

Mission Aim

To assist UNHCR, MSF-OCA and other actors involved in water supply for refugees to better understand the hydrogeological context of the camps and areas they are working in and ensure the right measures are taken to ensure the sustainability of groundwater infrastructure.

Scope

A desk and field based consultancy to review existing hydrogeological information, develop new maps for each camp with existing infrastructures, characterise the different aquifers, quantify demand (present and future), assess suitability for use as drinking water for the refugees living in the camps and the local population and evaluate the impact of seasonal changes in water production including during the dry season (starts in December).

For each camp, issue specific report with analysis of situation and technical recommendations for construction of new infrastructures as well as monitoring system needed to ensure uninterrupted supply all year round.

Output

An overall report which includes hydrogeological maps and an outline of the general situation in the different camps.

A specific report per camp with technical recommendations for the construction of new boreholes (siting, depth, diameter, configuration, expected outputs, mode of exploitation) as well as requirements for specific monitoring parameters of local ground water resources to guarantee sufficient quantity for the expected number of users during dry season.

Since similar investigations are being undertaken for other camps (Kutupalong Leda/Huchimpara), it will be important for the consultant to liaise with the other consultants to get and share information.

Activities

Tasks to be undertaken and time required (31 days total):

1. Review of existing hydrogeological information for the entire area where the camps are located. This might include consulting DPHE archive in Dhaka and/or review of existing remote sensing data (if available). (3 days)
2. Compile, map and review existing information on all existing groundwater infrastructure in each camp – drilling logs, pumping tests and water quality analyses included. Get missing information on site for a representative number of infrastructures. Perform pumping tests (and interpretation) and water analyses if required. (5 for the biggest camps and 3 days for 4 smaller camps = 17 days)
3. Analyse information and write 1 report per camp with technical recommendations for construction of new infrastructures according to the current and predicted future needs of the population(s). (7 days)
4. Assess and report on the suitability of the different aquifers at the time of study but also for the following months during dry season as well as for monitoring of ground water utilisation with sets of indicators. (2 days)
5. Compile overall report with overview of situation as well as general recommendations for the WASH sector regarding the use of ground water as drinking water supply in the area. (2 days)

Timeline

Work will begin in October 2017. Allowing for time for correspondence, the final output will be ready in November 2017.

Profile

Experience;

- 5 to 10 years international experience as a Hydrogeologist
- Experience providing consultancy services to the Humanitarian sector
- Some knowledge of the hydrogeological context of the study area

Essential Requirements;

- Minimum of a Master's Degree in Hydrogeology

Personal Characteristics;

- Ability to creatively problem solve and to provide practical and cost effective solutions in the field,

- Concise and clear communication style, including for report writing.