

## WE-Consult Note on Drilling Contracts

We would like to draw your attention to the different contract types used for borehole implementation projects.

Generally, Clients tend to give out no-cure-no-pay drilling and siting contracts at lumpsum rates per borehole. The success is linked to the yield of the borehole (e.g. only boreholes with more than 1000 l/hr are considered successful) and sometimes even to the water quality of the borehole. These contracts are easy to manage from the Clients point of view and at first sight this framework seems to be favorable to the Client, since all the risks are with the other parties; if there is no successful borehole produced, the Client doesn't need to pay anybody.

However, the question is whether this is always as beneficial to Client as it seems and whether this is a fair contract from the perspective of the other parties.

The driller will increase his rates to cater for the risk of dry boreholes that are not paid for. In some areas this is a good approach especially in areas where there is a low potential. However, if the driller underestimates the risk and the success rate falls far below what he anticipated, he may walk out on the contract to avoid any further losses. Same goes for the siting consultant, who will increase his rates according to low expectations when paid only for successful boreholes.

If all boreholes are successful, the client will be overpaying and spending budget that could well be used elsewhere.

In most areas the more professional approach, using a competent / reliable geophysical siting consultant and driller who both are paid for work done independent of the yield of the borehole results in a better cost efficiency.

Over the last ten years of working in Uganda WE-Consult has acquired vast experience with all types of drilling contracts. WE strongly believe that the contract set-up as described below is your best option.

Three parties are involved that respect and trust each other in their role in the project:

- The Client, who wants to supply water to a community
- The Drilling Contractor, contracted to construct the water sources and auxiliary works.
- The Siting and Supervising Consultant, who performs a professional geophysical survey and supervises all field activities during the construction

### Siting

A driller is specialized in drilling boreholes and his knowledge of geophysical surveying and groundwater assessment studies is absent or limited compared to Consultants specialized in borehole siting surveys. A driller can therefore not execute a hydrogeological survey with the same value for money as the specialized consultant. A proper siting procedure for a handpump at a cost of around UGX 800,000 per day can easily pay for itself through the increased success rate, e.g. saving the Client drilling an extra borehole of 10 to 16 million.

However, no 100% guarantee can be given for any drilling programme. The consultant can not be held responsible for the success rate of the geophysical site investigations. The success rate not only depends on the performance of the consultant but also on the geology of the area. Often it is difficult to make

estimates of a 'normal' success rate for an area due to the limited amount and unknown reliability of data and very heterogeneous geology<sup>1</sup>. The Consultant did not make up the subsoil, neither does he have the capacity to map the underground in detail, since no equipment can indicate what is in the subsoil with a 100% accuracy. The equipment is just a tool to indicate the characteristics of the subsoil. The Consultant has the responsibility to carry out a professional desk study and extensive fieldwork to make the optimum assessment. He will then be in the position to give the Client a good assessment of the groundwater potential and the risks involved in the drilling in a certain area. In case numerous boreholes have been drilled in an area, the consultant can come up with some conservative expected success rates.

Furthermore, when the consultant becomes financially dependent on the yield of a borehole, he may not like to take risks. This means the hydrogeologist is less likely to drill on less favorable village preferred sites and will always recommend a better hydrogeological site further away from the village preferred site.

Based on the results of the assessment the Client has to take the decision whether he wants to take a certain risk to carry out a drilling program in a certain area. It cannot be the Consultant to be blamed for dry boreholes as long as the work has been carried out in a professional manner. We recommend an approach for a borehole siting exercise using a combination of resistivity profiling and vertical electrical soundings that has proven to increase the success rates significantly on many projects in Africa.

The payments to the siting consultant should therefore not be linked to the success of the borehole, neither should the payment to the driller be linked to the quantity and quality of the water in the borehole. Preference is given to selecting reliable partners who will perform the duties assigned to them in the contract in a professional manner and charge reasonable rates.

It should be noted that in other African and European countries most government contracts are based on work-done according to Bill of Quantities items and unit rates. Competent Consultants are contracted for hydrogeological/geophysical surveys and supervision.

Sometimes payments are linked to average success rates in the area of operation. This is possible when results of earlier projects are known. These success rates however are generally rather low due to the fact that in the past it was not common practice to carry out proper hydrogeological investigations prior to drilling and penalties are hardly implemented to competent consultants. Therefore there is no added value to this type of contract.

### **Contract Management**

The Supervising Consultant is the representative of the Client and as such has to make sure that all parties carry out their duties and works according to the contract and all parties are satisfied in the end with the works and the costs. The Supervising Consultant should be involved in the tendering procedure and contract negotiations and management. The Consultant can provide proper tender documents and drilling contracts and, since he has worked with many drillers over the last years, can provide a shortlist of drillers with a good reputation that could be invited to tender, so no newspaper advertisement is necessary. The Consultant can evaluate their bids, critically verifying each item of the BoQ against a so-called Engineers Estimate (EE). Any item deviating more

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<sup>1</sup> as an example: the success rate for a siting project of WE Consult near Mityana using an identical approach went down from 100% to approximately 40% over a distance of 15 km, whereas the geology and geomorphology was the same for both areas

than 20% from the EE should be revised in concert with the selected contractor. The Consultant can ensure a correct payment procedure by making BoQ based certificates in accordance with the contract payment terms as agreed with the Client and discussed with the Contractor. The Consultant will organize a pre-contract meeting with the Contractor and the Client during which he will explain and discuss the implementation of the drilling program, addressing problems that occurred during other contracts and that should be avoided in the current one. This meeting will be minuted and form part of the contract.

### **Supervision**

It is the Supervising Consultant who checks the driller's equipment before going to the site, who supervises the drilling procedure, declares a borehole successful or not and certifies the actual quantities of work for the driller. Also the testpumping program is supervised and the quantities certified. The casting and installation is checked and mobilization and travel quantities certified. The supervisor's knowledge and experience is an extra input in the borehole implementation procedure.

It should be noted that the role of the Consultant is the one of an advisor. He should make sure the borehole is constructed according to the contract specifications. The Contractor remains responsible for the final result of the borehole. If the driller wants to deviate from the standard approach and methodology and/or the contract specification he will be asked to sign on the instruction-to-the-driller form so it is clear he takes the responsibility for any negative impacts on the borehole quality.

By linking the payment of the Supervising Consultant to the success of a borehole, the consultant is not fully unbiased. There is a conflict of interest which should not be there. If for instance a borehole is regarded successful with a yield  $1\text{m}^3/\text{hr}$ , both parties will want the testpumping procedure to show that yield when payment is linked to success. An impartial Consultant can focus fully on the interest of the beneficiaries.

### **Drilling**

The drilling contractor should focus on their specialist work of drilling boreholes. Especially when the driller is not contracted for the siting procedure, he can not be held responsible for the success of a borehole. The payment to the driller should not be linked to the quantity and quality of the water in the borehole. A Bill of Quantities (BoQ) contract with specified rates for all activities involved is preferred. As all actual work, work executed on a dry borehole will be paid for. The driller is assured his work will be paid for and will accept lower rates. Combined with a good geophysical survey the project is likely to be cost effective and the Client can get more done within the same budget.

A provision should be made in the contract to exclude payment for poor workmanship or so called technical failure of a borehole resulting in a non-functional borehole, a low yield or poor quality of the water. If the borehole collapses due to lack of temporary casings, the water is not clean due to poor installation of the permanent casing, the borehole has dirty water due to cracking of the screens during installation or similar problems, the driller shall not be paid for any works executed on this borehole. Poor installation of the handpump, which is sometimes too low to place jerry can under the spout, will not be paid until it is repaired. Same goes for a poor job on the casting of the platform and soak away pit (the size of these pits should be at least  $2\text{x}2\text{x}2\text{m}$  in areas with impermeable top soils). Upon completion of the works the driller will be paid up to 90% of the total contract sum according to the BoQ, while 10% retention should be withheld for six months to account for problems arising at a later date.

## **Summary**

In short the best solution for the Client is to work with a professional and integer consultant specialized in hydrogeological and geophysical surveys, drilling supervision and drilling contract management. This consultant will make sure that the project is carried out in a cost effective way with high quality output (value for money). A reliable and experienced driller should be contracted to a BoQ contract. This type of project set-ups is very common in various parts of Africa and Europe. It is preferred to let the success and cost effectiveness of a project be dependent on the professionalism of the contracted parties rather than on the accuracy of the risk assessment.

We hope to have informed you sufficiently. If you require more technical details, an example of a financial breakdown of a successful and cost efficient project or any other information, please do not hesitate to contact us or visit our website [www.we-consult.info](http://www.we-consult.info)

Kind regards

Ron Sloots  
Director