

ENVIRONMENTAL IMPACT ASSESSMENT: DRILLING ACTIVITIES

NOTE: This document is intended only for use with drilling of exploratory boreholes or boreholes to be fitted with hand-pumps.

For boreholes which are to be used with motorised pumps the following assessments should be undertaken:

- Water features survey, whose radius will be related to the proposed pumping rate, but which may extend to several km.
- Full hydrogeological impact assessment, using, as a minimum criteria, the guidelines suggested by **Banks, D. & Soldal, O. 2002: Towards a policy for sustainable use of groundwater by non-governmental organisations in Afghanistan. Hydrogeology Journal 10, 377-392.**

For exploratory drilling or drilling of boreholes to be fitted with hand-pumps

Before commencing drilling, the following factors should be considered:

1. Is there any well, borehole, spring or karez located within 200 m of the proposed drilling site?	<i>If so, you should make an assessment of whether the drilling activity could negatively impact the level or quality of water within the other source. This will depend on the drilling method and hydrogeology of the site. Use of large quantities of drilling fluid, or extensive pumping / air lift may have impacts.</i>
Response:	
2. Is there a risk that any pipeline, cable, karez or other underground structure may occur below the drilling site?	<i>Ascertain the course of such underground services and avoid them</i>
Response:	
3. Is there any possibility of encountering artesian water during drilling?	<i>Avoid drilling in such situations. Uncontrolled outflow of artesian water can cause flooding and is a gross waste of water resources. Before penetrating the artesian horizon, a string of plain casing, with a sealable flange plate, should be securely grouted into the strata overlying the artesian aquifer. This allows any flow of artesian water to be controlled.</i>

Response:	
4. Is there any risk of encountering natural gas or oil during drilling?	<i>Avoid drilling at this location! If essential, prepare a thorough contingency plan to avoid the risk of explosion, asphyxiation or oil leakage from the well.</i>
Response:	
5. Is the drilling site located within 30 m of a load-bearing wall or foundation, or artificial embankment?	<i>Evaluate whether drilling activities could affect the integrity of the structure: this is particularly important for drilling methods using percussion (cable tool, down-the-hole hammer)</i>
Response:	
6. Is there any risk of contamination (other than contamination related to agricultural manure or normal sanitation activities) at the site?	<i>Ascertain the nature of the contamination. If significant, avoid the site. If drilling is unavoidable, develop a detailed health and safety plan which provides adequate protection for drilling workers and the public. Any pumped groundwater or drilling cuttings may need to be treated as hazardous waste, requiring removal from site and appropriate disposal.</i>
Response:	
7. If the drilling activity requires provision of water (e.g. to mix drilling fluid or grout), where will the water be obtained from, and will it be of suitable quality (i.e. not saline)?	<i>Agree with the local community where the water will be obtained from, whether any payment will be required. Ensure that extraction of water will not infringe others' rights to the water and that the community and/or owner understand the quantities and timings of water usage.</i>
Response:	

8. How will any pumped water or drilling fluid from the borehole be disposed of?	<i>Usually disposal of such water in rural areas should not be problematic. Ensure that adequate pipe-work exists to remove the pumped fluids from the drilling site to a suitable recipient, without risk of local flooding or inundation of houses or areas regularly used by the local community. If chemical additives have been used in the drilling fluid, you should ensure that these are non-toxic and can be responsibly disposed to the intended recipient. If the pumped groundwater is saline, avoid disposing of it to arable fields or to recipients which have immediate potable water resource value.</i>
Response:	
9. How will any drilling cuttings be disposed of?	<i>Drilling cuttings are typically natural soils and should be able to be unproblematically disposed of to rural land in the vicinity of the drilling site. Avoid, however, unsightly piles of cuttings and heaps of material which may obstruct roads, tracks or pathways. If the drilling cuttings are saline, avoid disposing of these to arable land or in the vicinity of potable water sources.</i>
Response:	
10. Have you considered the impact of noise and fumes on nearby residents, businesses or institutions (schools, clinics)?	<i>Consider the impact of drilling noise and fumes on the local residents, schools etc. Talk to them and endeavour to agree a drilling plan which avoids unnecessary excessive disturbance.</i>
Response:	
11. How will fuel and oil products be managed?	<i>All fuel and oil products should be stored within a designated area, which should be outside the</i>

	<p>source protection zone of any water source. All storage containers should be robust, undamaged and free from leaks. Appropriate equipment should be provided for filling of equipment (rig, generators, compressors etc.), which minimises the risk of spillage and leaks. A response plan should be developed, which can be implemented in the case of serious spillage of hydrocarbons. If storage of hydrocarbons within a water source protection zone cannot be avoided, "double barrier" storage of hydrocarbons or other solvents should be implemented.</p>
<p>Response:</p>	
<p>12. How will solid waste from the site and drillers' camp be disposed of?</p>	<p>You should avoid any risk of unsanitary conditions or vermin, and any risk of litter. A responsible final and permanent solution to litter disposal should be sought. Safe and responsible "recycling" of non-contaminated materials or containers to the community may be an option.</p>
<p>Response:</p>	
<p>13. How will public access to the drilling site be restricted?</p>	<p>Drilling sites are dangerous places. Public access should be restricted. Develop a plan for how you will prevent public access to the drilling site or the vicinity of any mud pit. (As a rough rule of thumb, public access should be excluded from the "falling radius" of the drilling mast.)</p>
<p>Response:</p>	