



Borehole Siting in the Omauni Project Area
Ministry of Health and Social Services Project

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OAMUNI PHC CLINIC-BOREHOLE SITING REPORT

CONTENTS

1. INTRODUCTION	5
1.1 BACKGROUND	5
1.2 OBJECTIVES OF REPORT.....	5
2. BOREHOLE SITING	5
2.1 OMAUNI	6
2.1.1 OM-01 OMAUNI PHC CLINIC.....	6
2.1.2 DRILL SITE CO-ORDIDATES AND DRILLING RECOMMEDATION-OMAUNI PHC CLINIC	8
3. DRILLING, TEST PUMPING AND BOREHOLE INSTALLATION SPECIFICATIONS	8
4. REFERENCES	9

LIST OF TABLES

Table 1: Boreholes visited for hydrocensus purpose	8
Table 2: Drill site coordinates	8

LIST OF FIGURES

Figure 1: Satellite image showing general drainage system of the project area.....	6
Figure 2: Tree lines and other linear features identified in the project area. Yellow line indicates the approximate boundaries of the PHC clinic. The red line indicates linear features.	7
Figure 3: Preselected site and the actual position of the proposed borehole	7

ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used in this report

Acronyms / Abbreviations	Definition
GTC	Green Team Consultants
mm/a	Millimetre per annum
Mm	Millimetre
m ³ /h	Cubic metres per hour
RWL	Rest Water Level
h	Hour
Bgl	Below ground level
DPA	Discontinuous Perched Aquifer
MSAAN	Main Shallow Aquifer
MDAAN	Main Deep Aquifer
T	Transmissivity
M	Metre
Km	Kilometre
t(minute)	Time
AMSL	Above Mean Sea Level
ASL	Above Sea Level



OAMUNI PHC CLINIC-BOREHOLE SITING REPORT

1. INTRODUCTION

1.1 BACKGROUND

Green Team Consultants (GTC) CC was contracted by Ministry of Health and Social Services through Twali Construction CC to site a borehole at Omauni PHC clinic in the Ohangwena region. The project area is located in the Ohangwena region in the northern part of Namibia, some 69 km from Okongo. Garnet Engineering CC carried out needs assessment site visits and provided GTC with coordinates and site information. The pre-selected location is illustrated in figure 2.

Prior to siting activity desk study of the proposed borehole site was carried out including gathering of readily available data from various sources and the interpretation of satellite images and geological map. The desk study report was submitted earlier.

1.2 OBJECTIVES OF REPORT

The siting report summarises the borehole siting activities. Drilling, testing recommendations, installation specifications, detailed hydrogeological information, general settings and site characteristics can be found in desk study report.

2. BOREHOLE SITING

The communal areas of Ohangwena region are entirely covered by unconsolidated sediments of the Kalahari sequence. Metamorphic sediments and igneous rocks of the Damara sequence underlie the Kalahari sequence sediments. Groundwater is hosted Kalahari aquifers and fractured bedrock aquifers in the Owambo basin margins. In the project area, Kalahari aquifer is the main target when searching for groundwater. Due to the porous nature of the aquifer in the Ohangwena region borehole siting is not a critical factor and a successful borehole depends mainly on drilling depth and proper borehole construction. However areas with succession of clay may lead to poor yields. In areas were saturated Kalahari sequence is assumed including area of interest of this project, satellite interpretation, consideration of vegetation and surface feature are the factors on which siting is based on.

2.1 OMAUNI

2.1.1 OM-01 OMAUNI PHC CLINIC

According to borehole information gathered and interpolated as part of the pre siting activities, the Kalahari sequence is assumed to be saturated. Omauni PHC clinic is located about 1 km west from the local cuca shops along an old air strip. The borehole was initially sited near the southern west corner of the clinic which is also near a circular treeline that encircle the school premises. However with uncertainty on the location of the new building under construction within the school premises as well as recommendation from Mr Haitange of Tuli construction CC (personal communication), the borehole was sited in the northern side of the clinic premise considering the location of the water reservoir position.

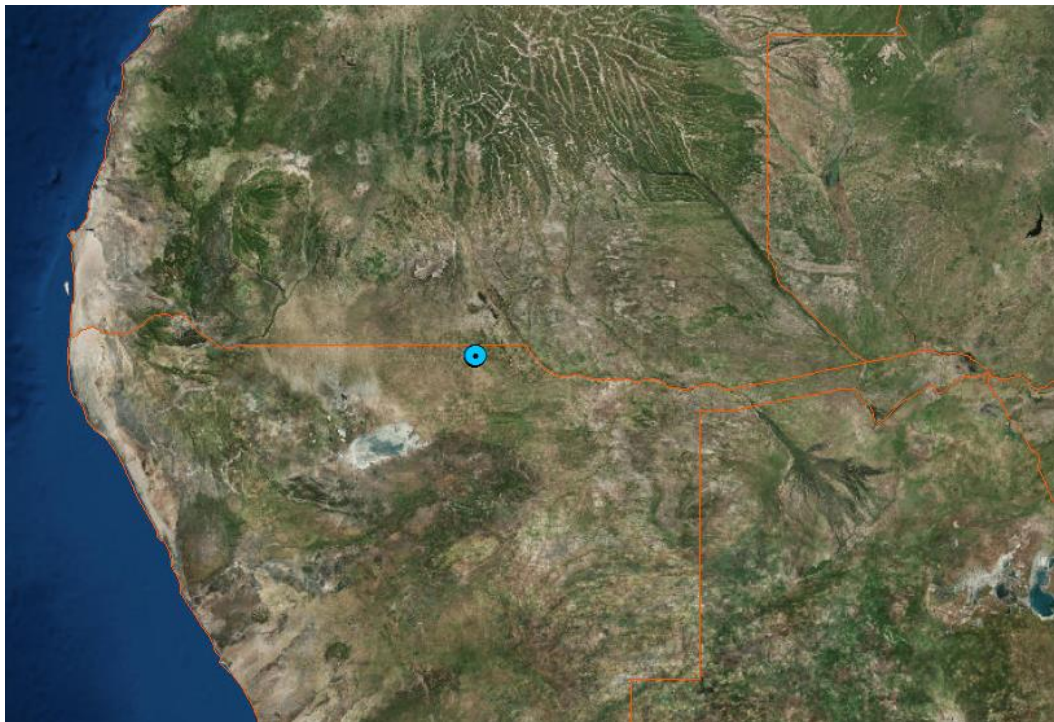


Figure 1: Satellite image showing general drainage system of the project area



Figure 2: Tree lines and other linear features identified in the project area. Yellow line indicates the approximate boundaries of the PHC clinic. The red line indicates linear features.



Figure 3: Preselected site and the actual position of the proposed borehole

WW Number	Owner/Location	lat	lon	Elevation(m)	BH Depth(m)	RWL(m)	Yield(m ³ /h)	Water Quality
34248	Community	-17.53999	17.71681	1147	unknown	unknown	3	good
41960	Nampol	-17.53932	17.71907	1147	unknown	unknown	4est	good
201121	Community	-17.57626	17.7118	1145	150	90	5	good
	NYC	-17.53919	17.68009	1152	unknown	unknown	Uknown	good
34246	Community	-17.53115	17.67872	1154	150	84	5	good
93438	Forestry DPT	-17.5398	17.71907	1147	-150	90	Uknown	good
203956	Vaccination point	-17.61645	17.81582	1141	154	86	6	good
Coordinate System: WGS1984								

Table 1: Boreholes visited for hydrocensus purpose

No EM survey was conducted thanks to the presences of metallic objects including fences as longer geophysical traverses are required. Another reason was the waterlogged soil in the project area.

The borehole shall be drilled applying the Mud rotary drilling method intersecting the Kalahari sequence with maximum depth of 160m.

2.1.2 DRILL SITE CO-ORDINATES AND DRILLING RECOMMEDATION-OMAUNI PHC CLINIC

Project Ref	Sub-location	Drill site coordinate[GCS WGS84]		Target	Drilling recommendations	
		Lat_dd	Lon_dd		Maxim depth[m]	Drilling method
OM-01	Omauni PHC clinic	-17.54363	17.71323	Saturated Kalahari Sequence	160	Mud Rotary

Table 2: Drill site coordinates

3. DRILLING, TEST PUMPING AND BOREHOLE INSTALLATION SPECIFICATIONS

Information on drilling, test pumping and borehole installation specification has been given in the desk study report.

4. REFERENCES

1. Miller (2008): The Geology of Namibia. Vol 1. Kalahari sequence. Ministry of Mines and Energy, Namibia
2. DWA (2001): Groundwater in Namibia. An explanation to the Hydrogeological Map. Department of Water Affairs, Namibia

24th April 2017

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Signed at.....