

POLYTECHNIC OF NAMIBIA

UNIVERSITY OF SCIENCE AND TECHNOLOGY



SCHOOL OF ENGINEERING AND INFORMATION TECHNOLOGY

Department of Civil Engineering

**Site Investigation Report: Orban Primary School Storm
Water Drainage Project**

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1. Introduction

Orban Primary School is experiencing a problem of water logging on the western side of one of the classroom's block. The group of students in the field of Civil Engineering and Land Surveying at the Polytechnic of Namibia is assigned to make a feasibility study of the site and come up with the amicable and cost effective solution(s) to the problem.

On the 18th of June 2012, the students and lecturers (experts) from the Civil engineering department visited the site for the investigation. This visit was extended to investigate the overall site layout, engineering properties and all the existing services. This investigation report summarizes the results of a Site inspection phase of a site investigation.

2. Aims and Objectives

The primary objectives of site investigation are:

- ✓ To identify the possible cause(s) of the problem the school is experiencing
- ✓ To investigate the geological and topographical formation of the site

3. Description of the site

3.1. Overall site layout

This site can be described as rocky and partly covered with relatively small bushes, grass and large trees can be observed around the site.

3.2. Site Topography

The site is hilly, one can also spot rather large rocks scattered at various places, proving that the terrain is quite rocky with the bedrock quite close to the surface.

3.3. Underground services

Since there are existing manholes on the site, one can make assumptions that there are existing underground sewer and storm water pipes.

3.4. Surface water

During the rainy season, storm water accumulates on the on the western side of one of the classroom's block from the runoff from hill nearby. This water does not drain because it does not seep underground due to the bedrock that is closer to the surface and there is no channel to divert water to the riverbed on the eastern side.

3.5. Existing structures and their performance

The existing buildings are not currently affected but are observed to be scoured. The existing canal that is diverting water from the gutters of the blocks is no longer effective because the slope is against the flow of storm water as the roots of the trees nearby have uplifted the canal. Soil erosion is another serious problem that is affecting some existing structures.

3.6. Photographic records



Fig.1: Aerial photograph of the site (critical area is highlighted)

3.7. Geology of the site

Quartz, Schist and Mica are the dominating types of rocks present on this site.

4. Discussion

The school is not only facing the water logging problem, but soil erosion and ground squirrels on most of the structures is another serious problem that has to be addressed. From the site investigation conducted the following solution is suggested. The existing canal will be redesigned because it is observed to be sloping against the flow of water to the riverbed due to the uplift by roots of the nearby trees. The northern part of this site will be filled up and well compacted with G5 (natural gravel) material, paved with interlocks and leveled to ensure that water flows to the new canal.

The solution to the problem of erosion is still to be thought of upon the agreement with the client (school) in terms of funding otherwise the focus can only be put on the problem of water logging on the pathway to the sport fields.



Fig.2: Scouring



Fig.3: Scouring and erosion



Fig.3: Effects of ground squirrels

5. Conclusion

The group got a general overview of the site. The way forward is to obtain the site layout map, contour maps, engineering drawings of the existing structures in question. Furthermore, it is planned that the group should consist of two (2) civil engineering students, two land surveying and one architecture students. Experts in these three fields should be helping the students to carry out the project works where necessary.