

**USE OF REMOTE SENSING TECHNIQUES FOR THE
EXPLORATION OF GROUNDWATER: A CASE STUDY
OF VOI DIVISION TAITA-TAVETA DISTRICT.**

BY

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ABSTRACT

This dissertation applies remote sensing techniques in groundwater exploration. Remote sensing techniques provide efficient real time methods for analysis of hydrologic issues and tools for water use planning and modelling. It also provides management of the current situation for multiple uses of natural resources and nature conservation. A case study of Voi Division Taita-Taveta District demonstrates that these techniques are useful in groundwater exploration and that the water shortages facing the residents are not attributable to the inadequacy of water resources especially groundwater resources but rather to its proper identification and exploitation. Remote sensing presents a quick approach to groundwater exploration to solve the existing water resource problems of the study area.

The dissertation/study is divided into five main chapters. Chapter one contains the general introduction to the study including the aims and objectives. The main objective is to use remote sensing techniques to identify areas of favourable concentration of groundwater. Chapter two gives the physical background where physical aspects of the area are described and social background where economic and population characteristics of the study area are highlighted. The general research methodologies used in this study together with methods of data analysis using satellite imagery are given in details in chapter three. Chapter four gives the details of data interpretation, results and discussion of the results while the last chapter gives conclusions and recommendations to various authorities including the government, donors, groundwater specialists and researchers and scholars. The research concludes that co-ordinated efforts to utilise groundwater resources in the Voi division of Taita-Taveta district through borehole and deep wells together with water harvesting can be resolved to provide the rural population with adequate water for their domestic requirements.