

University of Venda

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**AN EVALUATION OF URBAN HOUSEHOLD WATER DEMAND AND
CONSUMPTION IN VHEMBE DISTRICT: A CASE STUDY OF MAKHADO
LOCAL MUNICIPALITY, LIMPOPO, SOUTH AFRICA**

BY

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Abstract

Water demand already exceeds consumption in many parts of the world, and more and more areas are expected to experience this imbalance in the near future. Water is required for agricultural, industrial, household, recreational and environmental uses. Demand for water use is rapidly increasing due to continuously increasing populations, especially in the developing world and due to growing awareness of environmental, health and recreational issues. This study aims to evaluate urban household water demand and consumption in the Makhado Municipality. Vhembe District is endowed with water sources; however the municipality is facing challenges with supplying water to its residents. This study employed a mixed methodical design, including quantitative, qualitative and GIS. The methodology in chapter three is arranged according to objectives one to four. Self-administrated surveys were used to evaluate the nature of water demand and consumption; systematic sampling was used to obtain households where the questionnaires were administered. The extent of water consumption in the municipality was calculated using a calculation adapted from Garg, (2011). Key informant interviews were carried out; these involved open discussions with individuals who are very knowledgeable about the research problem. These included officials from the Vhembe District and Makhado Local Municipality. EPANET was used to assess the simulation of water distribution and improve the understanding of the movement of water within the municipality. A strategic framework for water supply was designed in order for the Makhado Local Municipality to achieve sustainable water supply.

Keywords: EPANET; Infrastructure; population growth; water consumption; water demand; water distribution systems; water supply