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## FINAL YEAR PROJECT

**TITLE: AN ASSESSMENT OF THE PERFORMANCE OF THE WATER  
TREATMENT PLANT IN KWEKWE**

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## ABSTRACT

Drinking water is fundamental to the health of people and animals. The major problems encountered are in the treatment where chemicals may be expensive to source, in its treatment where incompatible designs are made for the raw water and in its distribution where various challenges are encountered including topography. It is difficult to pump the water to higher elevations especially when pressure is being lost during the distribution. These problems may be alleviated by looking deeper into the processes of *abstraction*, *treatment* and *distribution* in order to improve its availability, quality and supply. The research assessed the performance of the water treatment plant in Kwekwe. The City experienced water shortages from the last quarter of 2008 to the first quarter of 2009. Speculations by consumers and stakeholders had it that operations at the treatment plant were not up to standard. In the project the plant was assessed in order to determine the cause of the problems. Data collection was through direct observation, physical examination of the plant components and desk study. The research established that most components had exceeded their design lives. The average design life of a pump is 15years and a few of them at the plant have been replaced. Most of them are repaired when they break down. The plant was established in 1949 over 60 years back from the time of this assessment. However, results indicated that a few components were in good condition. Water quality results indicated that the water was technically compatible with the design of the plant components. The plant was designed to treat water of turbidity less than 300NTU. Highest turbidity values recorded were around 90NTU. Ph values for raw water averaged between 5 and 8 and for treated water between 6 and 8. The water was also observed to be aesthetically pleasant although extremes were observed and recorded on some days. On the technical side, most valves in the distribution system were observed to be dilapidated causing massive water losses at the chambers. Various components were not functioning. This also resulted in the plant supplying about 50MI/day which is well below its rated capacity of 90MI/day. The local authority was recommended to make further assessments of the ponds that store water from the backwashing process. The major concern to be the water tightness to ensure no environmental harm was being done especially on groundwater pollution. It was also recommended to check all components for water tightness to reduce the water losses which were noted to be high considering treated water shortages which are periodically encountered in various parts of the city.