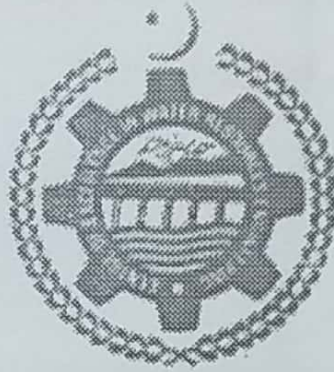


THESIS

**HARNESSING THE HYDRO POTENTIAL OF QARRUN-DUKAY
STREAM VALLEY BY INSTALLING MICRO POWER PLANT**



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ABSTRACT

Northern areas of Pakistan are endowed with vast hydropower generation potential. The proposed project has been designed on a stream in the Kalam Valley (Swat). Kalam Valley has numerous streams having adequate discharge and sufficient heads that can be easily harnessed to produce electricity. The proposed project has been designed to be installed at Qarrun-Dukay stream. The flow data of the stream was collected from SHYDO's (Peshawar office). A survey of the stream was undertaken to mark appropriate points for positioning of the power plant. Such points were marked which had large heads because greater the head, more is the capacity of the plant.

A favorable point on the right bank of the Qarrun-Dukay Stream was located, that is at an elevation of 1829 m above msl. The head obtained at this point is 12 m resulting in power generation of 288KW. The width of the stream at this point is 16.76 m. The design discharge was determined to be 3.5 cumecs. After determining these parameters, design of civil components was undertaken. The weir height was set to be at 1.82 m. The power channel dimensions were decided to be 2.6 m x 1.7 m. Forebay was designed according to the design discharge. Penstock diameter was kept to be 0.75 m. Kaplan vertical turbine was recommended to be used. Electrical components were also selected according to the specifications of the plant.