



RURAL AND RENEWABLE ENERGY AGENCY

KAIHA 2 HYDROPOWER PLANT AND TRANSMISSION GRID

INFORMATION BROCHURE



Multiconsult



1. INTRODUCTION

The Rural and Renewable Energy Agency (RREA) is proposing to develop a mini hydropower project on the Kaiha River in Lofa County. The project is referred to as Kaiha 2 and is intended to provide affordable electricity supply to rural and urban communities in Lofa County. The power will be evacuated via a transmission network to Kolahun, Foya and Voinjama with planned distribution to nearby towns.

2. THE HYDROPOWER PLANT

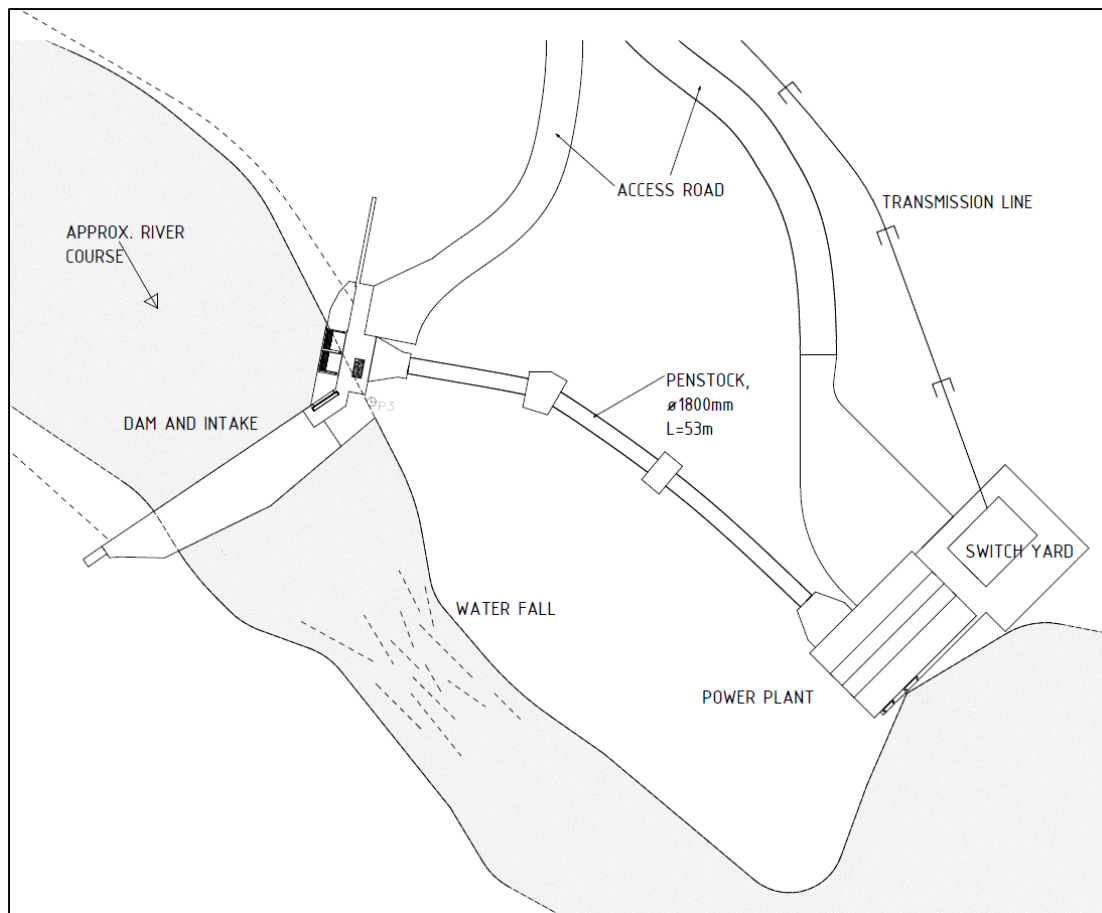
The Kaiha 2 hydropower plant will be located 45 km south of the district centre Kolahun town, following existing roads and foot paths. The nearest towns are Lukasu and Mbaloma (see map on last page).

The project site consists of smaller rapids and a concentrated waterfall over a length of approximately 50 m. The total vertical drop is approx. 8 m.

The proposed layout consists of a 5 m high dam upstream of the waterfall, a short penstock pipe (approx. 50 m) and a power station (1.6 MW) downstream of the waterfall and rapids.

The river flow will be diverted through an intake structure on the dam and be released back into the river immediately downstream of the powerhouse. High floods will be spilled over the dam.

The dam will create a small reservoir lifting the water level by approximately 5 m at the dam location and gradually reducing in depth for approximately 10 km upstream of the dam.



The general layout of the hydropower plant.

3. POWER PLANT OPERATION

The power station will be operated to allow for higher production of electricity at hours with peak demand (in the evenings). The water level behind the dam and in the downstream will therefore go up and down depending on how much of the river flow is diverted to the powerhouse.

To avoid that the river dries up in the downstream during filling of the reservoir, a minimum flow will always be released from the dam. This minimum flow will be defined based on the environmental and human demands for water in the downstream reaches of the river.

4. ACCESS ROAD

In order to access the project site, a new road will be constructed from near the Munwunya creek bridge to Kaiha 2. This road will have a length of approx. 2.5 km. In addition, the existing 40 km road between Mbaloma town and Kolahun town might need upgrade and maintenance during and after rainy seasons.

5. TRANSMISSION LINES

A 33 kV transmission network will connect the towns of Kolahun, Foya and Voinjama. The conductors will be strung on 12 m high steel poles. A series of transformers will be placed on poles along the line route in order to distribute electricity to the other smaller towns. The preliminary layout of the transmission network and transformers are shown in the map on the last page.

The line will be routed along the existing roads and at some distance from houses. Since the project will utilise the road reserve as much as possible, there will be little impact on land use. People will be allowed to continue using their land under the transmission line, though with some restrictions. Compensation for damaged crops during the construction phase will be provided for.

6. POWER DISTRIBUTION AND CONNECTIONS

The current project deals with the power production and transmission, as described above. Other studies are being conducted to plan for how the electricity will be distributed from the transformers to the customers.

