

## SUMMARY OF THE PROJECT

The Killing Hydro Electric Project on river Killing in Assam Meghalaya border is being developed as a run-of-river scheme and located in Karbi Anglong district of Assam and RiBhoi district of Meghalaya in the North-Eastern region of the country between latitude 25° 57' 29'24" N and longitude 92° 09'46.8" E.

The Killing river is known as Umiam in Meghalaya and it is one of the main tributaries of Kopili river. The Killing/Umiam flows through the states of Assam and Meghalaya. It is a north flowing river originating from the northern slopes of the Khasi hill range. The important tributaries of the Umiam river are the WahUmkhrah and the Umshyrpi, which flow through the city of Shillong from East-South towards West-North directions and join together below the city limits to form the WahRoro river before joining the Umiam river further downstream, feeding the Umiam reservoir. The river in downstream of Umium reservoir flows in north-eastern direction for some distance and then it flows towards northern direction as a border between Assam and Meghalaya up to confluence with Umsiang. After the joining of river Umsiang the river is known as Killing and outfalls at Kopili at Naldhara Noabil four kilometers up stream of the railway bridge over the Kopili. The catchment area up to the dam site is 426.0 Sq. Km. and the entire catchment is rain fed.

The dam site of the proposed Killing H.E. Project is connected from Assam side with a 4km long foot track from Karbihidi village near MikirPathar. Power House site is located on right bank on Assam side and can be approached from Nellie-Ulukunchi road. The installed capacity of the project is 55 MW shall produce an annual energy generation of 288 MU in a 90% dependable year.

### **Dam Site:**

The proposed dam site is located at longitude 92° 09' 46.8" E and latitude 25° 57' 29.24" N. and the nearest village to the dam site is Karbihidi village near MikirPathar. Karbihidi is approachable from Langerdang through a 16km long kutcha road. Langerdang is located at a distance of 28km from Nellie on Nellie-Ulukunchi road. Nellie is located on National Highway-37 at a distance of 66km from Guwahati. Alternately, the dam site can be approached from Meghalaya side from Topatoli on NH-37 to Korhadem village through a 27km long black topped road. A 4km long foot track connects Korhadem village and Dam site. Topatoli is 48km from Guwahati. The nearest BG rail head is located at Jagiroad and the nearest airport is at Guwahati.

The Killing Hydro Electric Project (55 MW) envisages construction of:

- A concrete gravity dam of 44m high from the deepest foundation level with low level spillway comprising 4 bays each with radial gate of size 16.00m (W) x 13.00m (H) to pass the design flood of 6000 cumecs.
- Temporary river diversion works with river channel alongwith upstream cofferdam of nominal height.

- A Power Intake with inclined trash rack on the right bank.
- Head Race System with 850m long 2.6m dia modified horse shoe shaped concrete tunnel and 7.3km long 2.6m dia circular Mild Steel Pipe.
- One number of restricted orifice type Surge Shaft of 8m dia and 55m high. Orifice diameter is 1.10m.
- One number of circular Penstock of 2.6m dia and 1900m long which bifurcates into 1.6m dia and 30m long penstock to feed two turbine units.
- A Surface Power House of 59.0m (L) x 24.3m (W) x 35.5m (H) housing two Vertical Axis Francis Turbines and Generator units of 27.5 MW each.
- One tail race channel of 6m wide and 35m long to discharge the water into the river.
- Necessary infrastructure e.g. approaches roads, buildings, etc.

### **Hydrology:**

The Umiam/Barapani reservoir (Storage Reservoir of Umiam Stage I Hydro Electric Project) is located 69.53 Km upstream of proposed Killing dam site. This project is the first stage in the series of cascade development planned on the rivers Umiam, Umtru and Khri, designed and constructed as a Hydro electric project to provide benefits of hydropower and drinking water supply. The five hydropower projects built by MeSEB, with Umiam stage I as the precursor, provide 185.2 MW of hydroelectric power to the state of Meghalaya. Inter-basin transfer of water to Umtru is involved in the development. Therefore, catchment limited to the downstream area of the Umiam reservoir has been considered for the Killing HE Project.

The catchment area upto proposed dam site from the existing dam at Umiam reservoir is 426 Sq.Km. The discharge of river Killing now consists of spilled water from Umiam Reservoir and the water from the catchment area in this portion.

A Gauge and Discharge (G & D) site was established at Gopal Krishna Tea Estate (GKTE) by Irrigation Department, Govt. of Assam. Records of discharge at this site, mostly in the form of monthly yield have been available, from May 1971 to April 2000, and from Sept 1976 to Dec 1978. Catchment area for G & D site at GKTE is 1074 Sq.Km.

Mass Curve of cumulative annual inflow volumes for the two periods (1971-80 to 1999-2000) in reverse chronological order brings out difference of slope, indicating internal inconsistency.

The Breaks in the mass curve may be due to changes in the method of data collection or due to shifting control. Therefore, only discharge data for the period 1983-84 to 1999-2000 has been considered for assessment of water availability.

There are two Flow Irrigation Projects in RiBhoi District of Meghalaya which draw water from Killing River upstream of Dam as follows:

a) Tyrso Village Flow Irrigation Project – Water Requirement-1.2 Cumecs (Being operational since early Eighties).

b) Pynthor Village Flow Irrigation Project – Water Requirement-0.72 Cumecs. (Under renovation stage).

The water series is exclusive of diversion of water for Tyrso Village Flow Irrigation Project. However to cater for future water requirement for Irrigation Projects and for the Pynthor Village Flow Irrigation Project, a release of 1.2 Cumec has been assumed in 90% dependable year.

The peak value of PMF for 1-day PMP for the Killing dam is estimated as 3,351 m<sup>3</sup>/s and its time to peak is computed as 30-hours. Since the Umiam/Barapani reservoir (Storage Reservoir of Umiam Stage I Hydro Electric Project) is located 69.53 Km upstream of proposed Killing dam site, flood release from this project will be added and in absence of routed flood Hydrograph of Umiam, Estimated Design Flood of 1840 m<sup>3</sup>/s for Umiam has been added directly. Thus, a conservative value of 6,000 m<sup>3</sup>/s is considered as the Probable Maximum Flood (PMF) for the Killing dam.

#### **Power Potential Studies:**

An installation of 55 MW comprising 2 generating units of 27.5 MW each has been proposed. With the proposed Installation of 55 MW shall produce an annual energy generation of 288 MU in a 90% dependable year.

The total cost of the Project including IDC is estimated at ₹ 682.47 Crores at August' 2014 price level. The levellised tariff has been calculated as ₹ 5.50/unit. The construction period for the project is 3 years from the date of CCEA clearance.