

## **ANNEXURE 11**

### **MAGO CHU HYDRO ELECTRIC PROJECT (96MW)**

#### **PROJECT SUMMARY**

Government of India has launched the "50000MW Hydro- Electric Initiative" and accordingly the Government of Arunachal Pradesh has earmarked certain Hydro Electric Projects for allocation to private developers for the development of HydroPower in the state. **SEW Energy Ltd.**, (having its registered office at 6-3-871, Snehalatha, Green lands Road, Begumpet, Hyderabad, -500016), has identified **Mago Chu Hydro Electric Project (96MW)**, in Tawang District for development, on Build, Own, Operate and Transfer (BOOT) basis and entered into a Memorandum of Agreement (MoA), with Government of Arunachal Pradesh on 21-2-2008. Copy enclosed as Annexure 12. The Executive Summary of Mago Chu H. E. Project is enclosed as **Annexure 12 A**.

As per the MOA, a Special Purpose Vehicle (SPV) for the implementation of the project by name "**SEW MAGO CHU POWER CORPORATION LTD**" has been incorporated and copy of Incorporation Certificate is enclosed as **Annexure 13**.

Required permission for conducting Survey & Investigations was issued by the Department of Environment & Forest, Government of Arunachal Pradesh, vide letter No: FOR.259/CONS/2009/4186-87 DT 19-3-2010. Copy enclosed as **Annexure 14**.

#### **Mago Chu Hydro Electric Project (96MW),**

Mago Chu H. E. Project is proposed to be developed as a run-of-the-river scheme on River Mago Chu, between elevations 2500 m and 2215 m, in Jang subdivision, under Social Forestry Range Jang and Social Forestry Division Tawang in Tawang District. The project does not envisage major storage of water at the proposed location. The gross storage capacity is only 0.332 MCM at FRL of 2472m. The total catchment area up to diversion site is 830 Sq.km.

#### **Project Location**

The Barrage is proposed at about 2.90 km upstream of the confluence of Mago Chu and Nyukcharong Chu (Latitude 27° 37' 42.30" N and Longitude 92° 02' 32.7" E) and the Power House is proposed near Marmang, about 250m upstream of the confluence. (Latitude 27° 37' 27.6" N, Longitude 92° 00' 53.8" E). The project is proposed in the limits of Rho and Yuthembu villages under Jang sub division in Tawang District. The entire land on either side of the river is classified as Unclassified State Forest (USF). Justification for proposing the project in the forest land is enclosed as **Annexure 6**. Details of alternate sites considered and selection of present locations

are explained in **Annexure 15** and the map showing the alternatives considered is enclosed as **Annexure 15A**

#### **Component Structures of the project**

A 20.5m high and 47.8m long barrage is proposed across Mago Chu and the water is proposed to be diverted through a concrete lined headrace tunnel of length 2773m and 4.8m dia followed by Surge Shaft 7m dia and a single Pressure Shaft of 3.70m diameter and 250.4m long, bifurcating near the power house in to two penstocks of diameter 3.00m and 2.20m having lengths 22.50m and 43.5m each. The 3m dia penstock again bifurcates in to two numbers of diameter 2.20m each and leading to an underground power house to be located on the right bank of Mago Chu. The salient features of the project, is enclosed as **Annexure-16**. The project lay out map is enclosed as **Annexure 16A**.

#### **Power Potential**

The Project with an installed capacity **96 MW** is estimated to generate an annual energy of **404.42 GWh** in a 90% dependable year with a machine availability of 95%. The power generated from the project is proposed to be evacuated through Tawang II pooling station proposed to be constructed by PGCIL.

#### **Estimated Cost of the project**

The total estimated cost of the project is **Rs.879.12 Crores** including Rs.131.47 Crore towards escalation and 129.47 Crores for IDC based on July, 2013 price level. The levelised tariff comes to Rs. 4.98/kWh. The detailed Cost Benefit analysis is enclosed as **Annexure- 7**.

#### **Back ground of the Proposal**

The proposal for the Diversion of **33.24 ha** of Forest Land required for Mago Chu HEP (96MW) was submitted with project Proposal No. **FP/AR/HYD/17213/2015**. But, the underground area proposed earlier for feeder tunnels and part of head works is now considered as surface area due to non-availability of bed rock in the location and the area has to be increased to provide cut and cover feeder tunnels. Further, due to the inclusion of the areas of the existing RWD road, nallah crossings (within the plots), and small portions of adjoining areas etc., the area proposed to be diverted has been increased to **37.35 ha**, as against **33.24 ha** proposed earlier. **There are no changes in the locations of component structures or locations of areas proposed for different purposes earlier.**

## **Revised Land requirement**

The requirement of land for various purposes/components of Mago Chu HEP is as follows;

### **A. Surface Forest Land**

Land is required for proposed surface structures / components of the Project like Labour colony, Reservoir Submergence area, Head works, Intake, Desanding chambers, Facility areas , Quarry areas , Muck dump yards , Stack yards, Magazline, Colony areas, Approach roads, Portal of Silt Flushing Tunnel (SFT), Portals of Adits etc. The total requirement of surface forest land for the above purposes comes to **31.48 ha.**

### **B. Notional Area for Underground Structures**

Notional Land is proposed for the proposed underground structures like Adits to various Underground structures, Feeder tunnels, Silt Flushing Tunnel, Head Race Tunnel, Power house, Pressure Shaft, Penstock, Main Access Tunnel, Tail Race Tunnel, etc. The total notional area required for the underground structures comes to **3.66 ha.** Thus the total bare minimum Forest land required for the project is as follows;

Surface area	31.48 ha
Notional area for underground structures	3.66 ha
River	2.21ha
<b>Total</b>	<b>37.35ha</b>

The purpose wise breakup of total requirement of land is enclosed as **Annexure 2.** The map of the forest area required for diversion showing the boundary of the adjoining forest land, to a scale of **1:50,000**, is enclosed as **Annexure 4.** Also the map indicating the land identified for various purposes/ component structures is enclosed as **Annexure 5.**

### **Environmental Clearance**

Required clearance for the Preconstruction activities along with Terms of Reference (TOR) for preparation of EIA/EMP report was accorded by MoEF. Subsequently, the EIA/EMP report was prepared and public hearing conducted on 3-2-2015, by the State Pollution Control Board and the final EIA/EMP report was approved and conditional Environmental Clearance accorded by the MoEF on 3.3.2016. Copy of Environmental Clearance is enclosed as **Annexure 8.** Copies of the CAT Plan and Muck Disposal Plan as provided in the approved EIA/EMP Report are enclosed as **Annexure 10** and **Annexure 17** respectively. Further, Mago Chu H E Project has been recommended for implementation in the report of NEHU on the Cumulative Impact Assessment and Carrying Capacity Study of Tawang River Basin approved by MoEF&CC.

### **Employment likely to be generated.**

At present, most of the local population sustain on agriculture and allied activities. There are no major industries or other means of occupation in this area. The project will open a large number of job opportunities to the local population both during construction and operation phases.

As per the MoA, preference shall be given to the local people and the following criteria will be followed, subject to the conditions that the incumbents fulfilling the requirements of qualification for the positions.

- Managerial/professional post: 25%
- Ministerial/clerical post: 50%
- Skilled jobs: 25%
- Unskilled jobs: 75%

During the construction period of 42 months a total of about 52500 man days will be created, including staff and labour, at an average of about 500 people per day assuming 25 working days per month. During project operation period of 40 years, allocated as per MOA, about 80 people (including staff and labour) are required on a regular basis.

### **Present stage of the project**

All the investigations, except drifting, have been completed and the Detailed Project Report (DPR) is under appraisal in CWC/CEA. The Techno Economic Clearance (TEC) from Central Electricity Authority (CEA) is expected shortly.

### **Undertakings**

All necessary undertakings including those to bear the cost of Compensatory Afforestation, Cost of NPV, Cost of Forest Produce and that the construction activities will not be started before Final Forest Clearance etc. are also enclosed. The details of all the Undertakings/Certificates /Documents furnished are shown in **Annexure A**.

**Signature:**

**Name:**

**Designation:**

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