SHORT NARRATIVE OF THE PROJECT

1. Project Details

I. Short narrative of the proposal and project/scheme for which the forestland is required

Government of Arunachal Pradesh (GOAP) has signed Memorandum of Agreement (MoA) with M/s. KVK Energy & Infrastructure Pvt. Ltd. on 26th December 2007 for the implementation of Par Hydroelectric (HE) Project on the Pare River, and located in between 27°14'33" and 27°13'16" and between longitude of 93°30'43" and 93°34'41". As per the terms of MOA, M/s. KVK Energy & Infrastructure Pvt. Ltd. has incorporated an SPV "KVK Par Power Pvt. Ltd." for the development of the Par HE Project. This project is being developed on Build-Own-Operate-Transfer (BOOT) basis.

Par HEP was initially identified by Central Electricity Authority (CEA), Ministry of Power under Prime Minister 50, 000 MW hydroelectric Power initiatives. The Project is located in the remote area of Papum Pare district of Arunachal Pradesh.

The River Pare originates at elevation of about 2850m as Pare nadi in the Lower Subansiri district. After flowing or about 24km from North to South, the Pare takes an eastward turn and flows for about 43km upto Sekhi. On the way, it passes through Sagalee. After the confluence of Kheel Nala from right Bank and Shu Nala from left bank the river is called Dikrong. The river (Pare/ Dikrong) then flows for about 18kms upto the Pare HEP Barrage site near Jampa. The river ultimately discharges into the Brahmaputra.

The Par Hydroelectric Project envisages utilization of water of river Pare by constructing a barrage near Sagalee village. The project site is approachable from Itanagar/ Naharlagun. The diversion site is approachable by road from Kheel village. The barrage site and power house site is about 30km and 17km away from the Kheel village respectively. The Kheel village is about 52km from Itanagar.

A 26.5m high barrage from the river bed at El.823.5m. FRL and MDDL is planned at El 848m and El 845m, respectively. The live storage between FRL and MDDL is 0.35 MCM. The spillway consists of 4 bays, with crest at El 823.5. An intake with bell mouth opening is proposed. The bottom level of intake at entry is kept at El. 849.m. Headrace tunnel, 4.5m modified horse shoe-shaped, about 8.636 km (including surface steel conduit of 3.6m dia) terminating in a Surge Shaft. An open to the surface Surge Shaft, 7.5m dia with top level at El 876.5m & bottom level at

795.5m. One number of 2.5m diameter pressure shaft bifurcating into two penstocks of diameter 1.8m. Surface Powerhouse located on the left bank of river Pare having 2 units of 26 MW, each, Francis type turbines designed for a gross head of 216.0m. Tail race channel to discharge the tail water back into the river with normal TWL of El. 630.0m in the collection gallery.

The power generated at 11 kV at Pare HEP will be stepped up to 132 kV by unit step up transformers. The power would be evacuated to the nearest pooling station/substation. Par Hydroelectric Project would afford Design Energy generation i.e. energy generation in 90% dependable year with 95% machine availability of 190.25 MU. Annual Load Factor is 42.04% and Lean Season Load Factor 26.35%.

The completed cost of the project works out to be Rs. 494.54 Crores. The project will be financed at a Debt: Equity ratio of 70:30. The interest rate for debt is considered to be 12.5% p.a. during construction period. The interest rate on working capital has been considered as 13%.

The project is scheduled to be completed in 54 months after receipt of all statutory clearances and financial closure.

Based on the preliminary survey and information's from secondary resources, the total land (including Forest, Community land with vegetation cover, Community Private Land), River bed area (submergence area etc) required for the construction of the project is about 63.21 ha. Total submergence will be 21.414 ha. The Catchment area up to project site is 420 Sq. km.

II. Cost of the Project

The capitalized completed cost of the project including escalation and IDC works out to 493.5 Crores at May, 2015 price level.

III. Cost Benefit Analysis

The cost benefit analysis in the prescribed format **(Annexure- II A and II B)** is enclosed. The capitalized completed cost of the project including escalation and IDC works out to Rs 494.54 Crores at May, 2015 price level, which is planned to be financed with an Equity Debt ratio of 30:70. The annual generation of the Project is about 195.25 MU. Government of Arunachal Pradesh would be benefited with the free energy revenue of about Rs 6365 crores (913.2 MU) during 40 years of project operation (at 90% dependable year assuming sale of power @ rate of Rs 6.97 per unit). After 40 years, project would be transferred to State Government free of cost. The State will gain immense benefits from the project in the form of free power from the project and the employment being generated by the project.

The project would also replace carbon emissions to the extent of green power generation, which is estimated to be about 150593 tCO2 per annum in a 90% dependable year. In addition to this environment friendly green power generation, the State of Arunachal Pradesh stands benefited from its share of free power. The project would not only generate much-needed permanent infrastructure, but also enhance the employment opportunities in the area.

IV. Employment likely to be generated

The Implementation of project will be helpful to generate employment opportunities for local people. Company shall reserve the following categories of posts against the project to be filled up by the local tribal people, subject to the incumbents fulfilling the job requirements and considered suitable by the company as per following criteria:

- Managerial/professional Post ----- 25%
- Ministerial/clerical Post ----- 50%
- Skilled Jobs ----- 25%
- Unskilled Jobs ----- 75%

During the construction of the approach roads, drainage, retaining walls etc. temporary employment will be generated for skilled and unskilled manpower. The locals of the project area will be able to directly associate with the construction works by way of petty contract works as well as supply of construction materials subjected to eligibility and requirements of work. About 25 people are likely to be employed permanently by the project authorities in various categories for operation and maintenance of the Project.

V. Project Geology

The project is located on the southern margin of Lesser Himalaya and exposes rocks belonging to Bomdila Group of Lesser Himalaya. Rocks belonging to Gondwana group as well as those belonging to Siwalik Group in Sub-Himalaya are also exposed in the south. Rocks belonging to Gondwana Group are separated from those belonging to Bomdila Group by a thrust and rocks belonging to Gondwana Group in turn are separated from the rocks belonging to Siwalik Group by Main Boundary Thrust (MBT). The area around the proposed project exposes granitic gneiss, quartzite gneiss, biotite gneiss with occasional thin intercalations and quartzo-feldspathic veins belonging to Ziro Gneiss of Bomdila Group.

VI. Details of displacement of people due to the Project, if any:

As per findings of the survey done for EIA/EMP Report (PFR), no family is losing homestead due to the project hence there is no displacement, however only partial land holding would be acquired for construction of project. Compensation would be paid to the PAFs, who are losing their land as per prevailing land revenue norms of State Government and provisions of NRRP-2007. These aspects are dealt with in detail as a part of EIA/EMP study of the Project.

It is also observed that there is no area of historical importance that falls in the vicinity of the Project area.

VII. Forest Types in the project area:

The forests of the project are classified as Tropical Semi – Evergreen forest type. The area is located in a heavy rainfall region. The main feature of these forests is the heterogeneous mixture of species. Structurally these forests cannot be differentiated into distinct stories. In general the top storey is open and composed of mixture of evergreen, semi evergreen and deciduous species. Pure patches of bamboos are also common and scattered all over the forest area. These forests can be grouped in **sub group- 2B Northern Tropical Semi Evergreen Forest** of Champion and Seth's (1968) Revised Survey of Forest Types of India. The forests can be described in the following sub-groups and types:

2B/C1a : Assam Alluvial Semi-Evergreen Forest

2B/C1b : Eastren Sub-montane Semi-Evergreen Forest

2B/C1/IS1 : Sub-Himalayan light Alluvial-Evergreen Forests

2B/2S1 : Secondary moist bamboo brakes.