

Site Inspection Report of Divisional Forest Officer, Kothamangalam for the Keezharkuth Small Hydro Electric Project in Kothamangalam Division area:

The project is to construct and operate the Keezharkuthu Power project (19.8 MW) in a forest area of 4.9054 Ha in the Thodupuzha Reserve Forest in Thodupuzha Range under Velloor Station area. It is a run of the river project in Keezhar, tributary of Kambar and a sub tributary of Kaliyar. The proposed project has 9 items,

1. **Ropeway (0.45 Ha, 1000m x 4.5m)** is to take construction materials to weir site and to bring back construction and other waste materials. 50 Trees need to be cut in this area. Even though the land is diverted, the company proposed to remove the rope way once the construction is over, hence a diverted area could be regenerated into natural forest, leading to de facto increase in Forest cover.
2. **Weir (0.89 Ha)** is 5 m Height and serves as water storage for Intake into tunnel for the power generation project. The total no of trees to be cut in this portion is 138 Trees including the submergence area.
3. **Tunnel intake (0.08 Ha)** is the area for tunnel intake. It is a rocky area which is proposed to be cut and tunnel made from here till the start of surge shaft.
4. **Power Tunnel (1600 m long, 0.48 Ha)** is entirely under ground till shaft site. No trees to be cut.
5. **Surge shaft site (0.27 Ha)** is located above ground and needs a clearing of 32 trees.
6. **Penstock (1400 m, 0.98 Ha)** is located in the RF area and LAF patta issued area, which also requires FCA clearance as Kerala Land Assignment (Regularisation of Occupation of Forest Land prior to 1-1-1977) Special Rules (1993) as 0.49 Ha and 0.49 Ha. Hence as per my direction it was also included for area for diversion. It requires clearing of 115 trees.
7. **Power house, Tailrace channel & Switchyard (1.0 Ha)** area is located entirely in LAF patta issued area, which also requires FCA clearance as Kerala Land Assignment (Regularisation of Occupation of Forest Land prior to 1-1-1977) Special Rules (1993). Under my direction it was also included in area proposed for diversion.
8. **Temporary Dumping yard-I (Near PH) (0.16 Ha)** area is located entirely in LAF patta issued area, which also requires FCA clearance as Kerala Land Assignment (Regularisation of Occupation of Forest Land prior to 1-1-1977) Special Rules (1993). Under my direction it was also included in area proposed for diversion.
9. **Working Area (Near PH) (0.55 Ha)** is located entirely in LAF patta issued area, which also requires FCA clearance as Kerala Land Assignment (Regularisation of Occupation of Forest Land prior to 1-1-1977) Special Rules (1993). Under my direction it was also included in area proposed for diversion.

Item no 6 (part), 7, 8 and 9 are located inside the rubber plantations hence no loss of natural forests occur even though it is included in area required for diversion.

After a clear understanding of the project document, the total diverted area is 4.9054 Ha, out of which 2.2 Ha is situated Land Assignment Of Forest land Patta issued under Kerala Land Assignment (Regularisation of Occupation of Forest Land prior to 1-1-1977) Special Rules (1993). It is under agriculture and plantation activities, hence impact will not be higher than in forest area. But as it is included in the diversion, compensatory afforestation land will be provided and it can be regenerated or planted into natural forests. Out of remaining 2.7054 Ha, Ropeway 0.45 Ha will be dismantled and could be regenerated into natural forests and hence similarly CA land is provided for this also and could be regenerated into natural forests. Penstock in natural forest area (0.49 Ha) and

Power tunnel (0.48 ha) is proposed completely underground and hence the impact into forest will be minimal.

The project is a modified after various meetings with Project officers, Forest officials and various other agencies starting from 2018 onwards. The project has been modified extensively to reduce the impact of natural ecosystems and the footprint of man and machines have been reduced as far as possible. Even though the legal diversion area is 4.9054 ha, the actual loss of forests is limited to nearly 2 Ha, and CA land is being provided for 4.9 Ha which will help in net increase of forests. The project does not affect local ecosystem as much as previous project proposal but mitigation measures are already imbued into the project after several rounds of discussion with Forest officials. Certain other mitigation measures are being proposed below.

1. There is a relocation of human settlement project under way for Kaithapara and Manayathadam settlements, the CA land proposed is the land from the same area and it will reduce the burden on the exchequer as the budget for relocation will be reduced as the User agency will buy and provide land to the tune of 4.9054 Ha from the Kaithapara settlement. However, the User agency should not permanently employ any local population to the same area as it will create dependency over the area and defeat the ultimate purpose of relocation. Temporary employment of the local people after the project is completed may be allowed as it may be necessary.
2. The roads leading to the start of ropeway and the power house are forest roads, they may be maintained to ensure smooth movement of construction vehicles but not to be made into pakka roads as it will lead to various other pressures into the forest area.
3. The muck or waste dumping area is to be properly demarcated. As the most of the project is underground, the muck or waste is expected to rocks and stones, it may not be used for any other purpose other than this project without approval of Forest department and payment of royalty which could be fixed by the Government or Forest department after detailed examination.
4. As a one of the environmentally conscious project proposal, which included various opinions from the forest and other officials, the user agency expressed their readiness to reduce the impact on environment as far as possible. Keeping the above mindset, the user agency may provide a proper timeline for construction and initiation of the project with joint monitoring of the project area.

The Total area proposed for diversion is 4.9054 Ha, out of which 2.2 Ha is area under Land Assignment Of Forest land Patta issued under Kerala Land Assignment (Regularisation of Occupation of Forest Land prior to 1-1-1977) Special Rules (1993). Out of remaining 2.7054 Ha, Ropeway 0.45 Ha will be dismantled and could be regenerated into natural forests and hence similarly CA land is provided for this also and could be regenerated into natural forests. Penstock in natural forest area (0.49 Ha) and Power tunnel (0.48 ha) is proposed completely underground and hence the impact into forest will be minimal. Hence the project is recommended for 4.9054 Ha.



Divisional Forest Officer
Kothamangalam Division