

F. No. J-12011/10/2020-IA.I (R)
Government of India
Ministry of Environment, Forests & Climate Change
(Impact Assessment Division)

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New Delhi – 110 003

Dated: 26th August, 2021

To,

The General Manager
M/s THDC India Limited
Gangotri Bhawan, Pragatipuram
Bypass Road, Rishikesh – 249 201
Uttarakhand
Email: s.ethdc@yahoo.com

Sub: Vishnugad-Pipalkoti Hydro-Electric Project of 444 MW in an area of 141.568ha by M/s THDC India Limited located at Village Haat, Tehsil Joshimath, District Chamoli, Uttarakhand - Environmental Clearances - Reg.

Sir,

This has reference to your online Proposal No. IA/UK/RIV/164607/2020 and letter no. THDCIL/RKSH/S&E/F-117/90(E) dated 8th July, 2021 submitted to the Ministry for Environmental Clearance to the project cited in the subject.

2. The Ministry of Environment, Forest and Climate Change has considered the application. It is noted that the proposal is for grant of Environmental Clearance to the Vishnugad-Pipalkoti Hydro-Electric Project of 444 MW in an area of 141.568 ha by M/s THDC India Limited located at village Haat, Tehsil Joshimath, District Chamoli.

3. The proposal was considered by the Expert Appraisal Committee (EAC) for River Valley & Hydroelectric Projects in its 15th EAC Meeting held on 27th July 2021. The comments and observations of EAC on the project may be seen in the Minutes of the meeting which are available on the web-site of this Ministry. The details of the project submitted by project proponent and ascertained from the document submitted are mentioned below:

- (i) M/s THDC India Limited, a schedule-A mini-Ratna PSU under the administrative control of Power Ministry, has signed a MoU with Govt. of Uttarakhand for the construction of 444MW Vishnugad-Pipalkoti Hydro-Electric project (VPHEP) in District Chamoli, Uttarakhand. VPHEP (4 x 111 MW) is located on river Alaknanda, a major tributary of river Ganga, in district Chamoli in the state of Uttarakhand.
- (ii) It is a run-of-the river hydro power project & envisages construction of a diversion dam of 65 m height near village Helong (79°29'30" E and 30°30'50" N). An underground power house is being constructed at village Haat (79°24'56" E and 30°25'31"N), 3 km from Pipalkoti. The nearest railway station is at Rishikesh about 225 km from project site.
- (iii) The project and all its major components are located on right bank of the river

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- Alaknanda. Project is accessible through National Highway NH-58 (Ghaziabad-Rishikesh Pipalkoti-Joshimath) which is located on the left bank of the river.
- (iv) VPHEP is suited to help in providing peaking power to the national grid. Once commissioned, the project will provide 1657.09 million units (with 95% machine availability) of electricity each year to the Northern Region to meet India's growing energy needs.
- (v) Environmental Clearance was granted to Vishnugad-Pipalkoti Hydro-Electric Project by MoEF&CC vide letter no. J-12011/29/2007-IA.I dated 22nd August 2007 for 10 years which was further extended vide letter no. J-12011/29/2007-IA.I dated 25th April 2018 and was valid upto 21st August, 2020. Also, MoEF&CC issued notification dated 18.01.2021 specified that the period from 1st April, 2020 to 31st March, 2021 shall not be considered for the purpose of calculation of the period of validity of Environmental Clearance in view of outbreak of Corona Virus (COVID-19).
- (vi) The Terms of Reference (ToR) for the Rapid EIA study based on one season has been issued vide MoEF&CC letter no. J-12011/10/2020-IA.I(R) dated 02nd March, 2021. In ToR Public hearing was exempted as project is in advanced stage of construction.
- (vii) **Salient features of the project:**

1. LOCATION	
Distt.	Chamoli
River	Alaknanda
Damsite	Near Village Helong (E- 79°29'30", N-30°30'50")
Power House (PH) site (underground)	Near Village Hat (E-79°24'56", N-30°25'31")
2. HYDROLOGY	
Catchment Area at Dam Site	4672km ²
Annual mean flow	5682.6Mcum
Submergence area	24.5ha
Design Flood	SPF6700m ³ /sec (For Design) PMF10840m ³ /sec (For Checking)
Diversion Flood (1:25yr Non-monsoon flood)	725m ³ /sec
3. RESERVOIR	
Full reservoir level	EL1267m
Maximum Water Level	EL1269.5 m(PMF)
Minimum Draw Down Level	EL1252.5 m
Gross storage at FRL	3.63Mcum
Storage at MDDL	1.16Mcum
Live storage	2.47Mcum
Surface Area at FRL	24.5ha
4. DIVERSION ARRANGEMENT	
A. Diversion Tunnel	
Location	Left bank
Length	559m (494m tunnel and 65m cut & cover)
Diameter	10.5 m, Circular

Design Discharge	725m ³ /sec
Gates	4mx10.5m, Vertical lift fixed wheel
Invert level at Entry	1224m
B.U/S Coffe Dam	
Type	Concrete
Length	60m
Height	24m
Top Elevation	EL1242m
C. D/SC offer dam	
Type	Rockfill
Length	40m
Height	7.5m
Top EL.	EL.1222.5 m
5.DIVERSION DAM	
Type of dam	Concrete, gravity dam
Height of dam above deepest foundation level	65m
Top of dam	EL1270m
River bed level	EL1225m
Foundation level	EL1205 m
Length	98.85m(NOF31.85 m, OF67m)
6.SPILLING ARRANGEMENT	
A. Sluices:	
Nos.	5
Design Flood	10840m ³ /sec
Size of sluice	7.8m (W) x 16m (H)
Type of gate	Radial Stoplog (1no. 7.8m x 22.5m)
Crest level of sluice	1233m
B. Diversion cum Spillway Tunnel	
Invert level at Entry	1249m
Length	100m
Design Discharge	1578m ³ /sec
Gate	2+1no., 4 mx10.5(Vertical lift fixed wheel Gate)
C. Spill Tunnel (12mΦ)	
Size	12mΦ, Circular
Invert level at Entry	1245m
Length	250m
Design Discharge	1618m ³ /sec
Gate	2+1no., 4.8mx12m(Vertical lift fixed wheel Gate)
6. POWER INTAKE	
Location	Right bank
Nos.	3
Type	Straight intake with bellmouth
Maximum discharge	274.63m ³ /sec
Intake invert level	EL1242.5m

Size	3+3nos.5.20mx 6.2 Horseshoe type
Gates	Vertical lift fixed wheel gate (service gate + emergency gate)
Silt lushing Tunnel (Below Intake)	
Size of Intake	3nos. of 3m x 3m
Size of SFT ducts	3 nos. of 2m x 5m
Gate	3+3nos. of 3m x 3m
Design Discharge Capacity	378cumec
7. DESILTING CHAMBER	
Nos.	3
Size	390m (L) x 16m (W) x 21.25m (H)
Particle size to be removed	0.2 mm & above
Gates	3nos.5.24m x 6 m (H),Vertical lift fixed wheel
Gate chamber	6m (W) x 9m (H) x 155 m (L)
Operation level	EL1270m
Silt Flushing Tunnel:	
Size	3.6mx4.0m (D shaped)
Flushing discharge	45.8m ³ /sec
Length	680m
Gates	3nos.1.8 m x2.12m,(Vertical lift slide Gate)
Gate chamber	4.8mx 4.8m x 118m
Operation level	EL1233.5 m
8. HEAD RACE TUNNEL	
Length	13.4km(1.4km by DBM & 12.0km TBM)
Diameter	8.8 m Circular
Design discharge	228.86m ³ /sec
Velocity	3.76m/sec
Bed slope(average)	1:222 (upstream of Maina River) 1:321(Downstream of Maina River)
No. of adits	2
9. UPSTREAM SURGE SHAFT	
Type	Restricted Orifice type
Diameter	15/22mΦ (15mΦ from EL.1165m to EL.1236m) (22mΦ from EL.1236m to EL.1309m)
Height (from HRT invert)	154m
Top EL	1309m
Orifice level	1165m
Orifice diameter	1.5m,3nos
Tunnel invert	EL1155m
Maximum surge level	1307.42 m
Minimum surge level	1209.24m
Pressure shaft gates	2nos.,4.2m x 5.2m
10. BUTTERFLY VALVE CHAMBER	
Size	50m (L) x 9.8m (W) x 19m (H)

Butterfly Valve	2nos.,5.2m
11.PRESSURE SHAFT	
Nos.	2/4
Type	Circular-vertical
Diameter	5.2m/3.65m
Length of each PS	466.4m/51m
Design velocity	5.39m/sec
12. POWERHOUSE	
Type	Underground
Size of P/H cavern	146m x 20.3m x 48m
Size of Transformer cavern	140.3m x15m x 25.5m
Nos. of units	4
Rated unit capacity	111MW
Installed capacity	4x 111 MW=444MW
Gross Head	237.0 m
Rated Head	212.46m
Centre line of unit	EL1022.0 m
Service bay level	EL1036m
Maximum flow through each unit	57.22m ³ /sec
Generator:	
Synchronous speed of Generator	250rpm
Power factor, Generator voltage	0.9,13.8 kV
Excitation system	Quick response static
Transformers-Type, Nos., No. of Phases,	OWF, 4, 3, single phase, 46MVA, 13.8/420/3kV.
Step-up voltage, Capacity	400kV
14. D/S SURGE TANK	
Type	Underground
Size	150m (L) x 13m (W) x 27m (H)
Maximum Surge level	1040.8m
Minimum Surge level	1022.37 m
15. TAIL RACE TUNNEL	
a)Size	9.1 m Φ , (circular)
b)Length	3.07km
c)Max.TWL	1030.0m(with all M/C running)
d)Min.TWL	1028.2 m(with 10% load)
e)TRT invert level	EL1020.6 (at Outlet) crest level of weir at outlet is1027m.
16.SWITCH YARD	
a)Type of Switch yard	GIS
b)No. of bays in the switch yard	7 bays
c)Voltage level	420kV
d)Size of pot yard	40mx84m
17. POWER GENERATION	
a)Firm power	74.69MW
b)Annual Energy	1677.40GWh
c)Load factor(lean flow)	16.82%

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d) Design Energy	1657.09GWh
18. PROJECT COST	
Total cost	Rs.3860.35Cr
19. TARIFF	
First year tariff	Rs.4.71 / kWh
Levelised tariff	Rs.4.52/ kWh

- (viii) **Ambient Air Quality:** The average concentration of PM10 at various monitoring stations ranged from 52.6 to 57.1 $\mu\text{g}/\text{m}^3$ in post-monsoon season. The highest PM10 value was recorded as 61.7 $\mu\text{g}/\text{m}^3$ at Fabrication Yard, Near Dam Site and lowest value of 47.5 $\mu\text{g}/\text{m}^3$ was recorded at Siyasain Club House. The average concentration of PM2.5 at various monitoring stations monitored ranged from 33.5 to 38.9 $\mu\text{g}/\text{m}^3$ in post-monsoon season. The highest PM2.5 value was recorded as 47.4 $\mu\text{g}/\text{m}^3$ at Durgapur Village, Near TRT Point and lowest value of 30 $\mu\text{g}/\text{m}^3$ was recorded at Gulabkoti Village, Near Dump Yard and Fabrication Yard, Near Dam Site. The average concentration of SO2 at various stations monitored ranged from 7.9 to 10.4.
- (ix) **Ambient Noise Levels:** The noise levels were monitored continuously from 6AM to 9PM at each location and hourly equivalent noise level was measured. The day time equivalent noise level at various sampling stations ranged from 51.32 to 54.82 dB(A) and night time equivalent noise level at various sampling stations ranged from 43.50 to 40.25 in post-monsoon season. The noise levels were observed to be well within permissible limit (55 dB(A)) specified for residential area.
- (x) **Soil:** The pH in various soil samples ranged from 6.98 to 7.84 in post-monsoon season, which indicates that neutral range having slight alkalinity. The low EC values ranging between 225 - 351 $\mu\text{S}/\text{cm}$ indicate lower salt content in soils. It is an important indicator of soil health as it affects crop yields, crop suitability, plant nutrient availability, and activity of soil microorganisms. Excess salts in soil hinder plant growth by disturbing the soil-water Balance. The texture of soil in the area is sandy loam.
- (xi) **Surface Water Quality:** The Electrical Conductivity (EC) in water samples ranged from 154 to 338 $\mu\text{S}/\text{cm}$ in the post-monsoon season. Overall, surface water has low electrical conductivity which is reflected from the low concentration of most of the ionic species which are well within the permissible limit used for drinking water. Hardness ranged from 52 to 115 mg/l in the post- monsoon season. The BOD and COD levels are quite low, which indicate the absence of organic pollution loading. This is mainly due to the low population density and absence of industries in the area. The heavy metal concentration in the study area is below the permissible limit used for drinking purposes. It can be concluded that water quality was observed to be quite good, as parameters are well below the permissible limits specified for meeting drinking requirements.
- (xii) **Flora:** During the floristic survey in the Post-Monsoon Season, a total of 247 plant species were recorded from the VPHE Project, Uttarakhand. Of these, Herbs (104), Tree (66), Shrubs (58), Climbers (12), Ferns (2), Grass (2), Bamboo (2) and Epiphyte (1) species recorded from the study area. While investigating VPHE Project, Uttarakhand, several Floristic compositions documented.
- (xiii) **Fauna:** The mammals encountered while surveying and discussion with local people include Jackal (*Canis aureus*), Rhesus monkey (*Macacamulatta*), Serow (*Capricornis sumatraensis*), Sambar (*Cervus unicolor*), Himalayan Marten (*Martes flavigula*), Himalayan Musk Deer (*Moschus chrysogaster*), Himalayan Hoary

bellied squirrel (*Callosciurus pygerythrus*), etc. The commonly observed bird species include Indian Myna, Indian Cuckoo, Chukor Partridge, House Crow, Black Drongo, Black Kite, Wood pecker, Grey Shrike, Pariah Kite etc. The commonly observed amphibians reported from the study area include Toad (*Bufo himalayanus*), Frog (*Rana* species), Ornamented Pygmy Frog (*Microhyla ornata*) and Common Toad (*Duttaphrynus melanostictus*). The commonly observed butterfly species in the study area were Tailed Punch (*Dodona eugenes*), Silverstripe (*Lathe baladeva*), Golden Emperor (*Dilipamorgiana*), Pale Green Sailor (*Neptis zaida*), Broadstick Sailor (*Neptis narayana*), etc. The reptiles reported in the study area include Asian house Gecko (*Hemidactylus frenatus*), Common Indian Lizard (*Varanus bengalensis*), Indian giant squirrel (*Ratufa indica*), Green Pit Viper (*Trimeresurus albolabris*), Himalayan Pit Viper (*Gloydius himalayanus*) and Cobra (*Bungarus caeruleus*). Phytoplankton species of different groups of community recorded to be growing in the study area is Bacillariophyceae, Chlorophyceae and Myxophyceae. A total of 23 species of different groups of Phytoplanktons were recorded to be growing in the Project area. Taxa of zooplanktons mainly comprised of Rotifers and Cladocera in the study area. Asplanchna species, Epiphanes species, Chydorus species, Macrothrix species, Eucyclops species were the common zooplanktons reported in the study area. The common macro-zoobenthos recorded from the study area were of order Ephemeroptera, Trichoptera, Diptera, Plecoptera and Neuropterans.

- (xiv) **Land Requirement:** The total land requirement for the project is 141.568 ha, out of which 100.390 forest land, 9.521 ha of Govt. land (PWD), and 31.639 ha of private land has already been acquired for the project requirements. Total area under submergence is about 24.5ha is mostly uninhabited forest land (already acquired) with very little or no vegetation.
- (xv) **Ecological Sensitive Area:** The dam site is about 5.20 Km from Kedarnath Wild Life Sanctuary (KWLS) boundary and its elevation is approximately 1900m above the dam. The horizontal distance of the powerhouse from sanctuary border is approximately 2km, the elevation of the sanctuary is about 2000m above Power house site. The sanctuary is inaccessible from project sites.
- (xvi) **Hydrology:** The catchment area is around 4672 sq. Km at Dam site with annual mean flow of 5680.6Mcum. The project is designed for SPF of 6700 cumec and PMF of 10840 cumec.
- (xvii) **Muck Disposal Areas:** Out of the 40.00 L cum (lakh cubic meter) of the total muck likely to be generated from the construction works of the project at least 14.00 L cum will be utilized for construction purposes of different project components, filling works and other infrastructure works. For dumping of the remaining muck i.e. 31.20 Lcum, four dump yards areas viz. (i) Haat, (ii) Jaisaal, (iii) Gulabkoti and (iv) Siyasain, have been earmarked adjacent to project components and are operational. In these 4 identified sites dumping will be done and further they will be restored and vegetated with proper landscaping.
- (xviii) **Rehabilitation and Resettlement Plan:** THDCIL has formulated a Rehabilitation & Resettlement policy (R&R Policy) for the Vishnugad-Pipalkoti Hydro Electric Project. For effective implementation of R&R policy, Rehabilitation Action Plan (RAP) has been formulated so that after reasonable transition period, the affected families improve, at least regain their previous standard of living, earning capacity and production levels. Rehabilitation & Resettlement policy (R&R Policy) for the Vishnugad-Pipalkoti Hydro Electric Project is approved by District Magistrate, Chamoli.

(xix) **Present Status:** The Implementation of Rehabilitation Action Plan (RAP) and R&R related Activities are presently under progress. Compensation has been provided by SLAO to PAFs whose land, assets etc. has been acquired for the project under LA Act 1894. Additional R&R grants/ Assistance have been provided by THDCIL as per the approved R&R policy.

Around 94% of Compensation amount has been disbursed by Special Land Acquisition Officer (SLAO) and approx. 88% R&R grant have been disbursed by THDCIL.

(xx) **Environmental Management Plan:** Different aspects of the EMP of VPHEP are under implementation by Three Agencies such as Forest Department, GoUK, THDCIL, and M/s HCC-the Contractor responsible for construction of VPHEP.

Items	EMP Cost (A+B+C)	Capital (lakh)	Total Recurring Cost (Lakh)
Bio-diversity Management Plan (A)	6267.51	6087.51	180
Under contractors Scope (B)	1528.09	1508.09	20
Other (C)	1227.56	331.46	896.1
Total	9023.16	7927.06	1096.1
Total Recurring Cost per Month			219.22

(xxi) **Catchment Area Treatment (Cat) Plan:** The CAT plan highlights the management techniques to control erosion in the catchment area. The Catchment Area Treatment Plan for VPHEP has been prepared by the Badrinath Forest Division, Gopeshwar; Garhwal Circle, Pauri, Uttarakhand. As various CAT plans are already under implementation in this catchment particularly Tapovan Vishnugad CAT plan, only 18 micro watershed in 2 sub watersheds namely Budhiganga and Nagoigad has been selected for treatment. The total area of selected catchment is 84085.00ha. Out of which, 12964.00 ha (15.42%) is rocky and snowbound. The remaining area of 71121.00 ha (84.58%) is treatable. The initial provision for the CAT plan that was kept under 2007 EMP of VPHEP was Rs. 271.7 lakhs. However, the provision was revised by the forest department in 2012 and demanded Rs. 47.00 Crore. This includes financial provision for the CAT plan of Rs. 234.3 Lakh and for the Eco-restoration plan the provision is Rs. 4466.6 lakh.

(xxii) **Fish Management Plan:** Snow trout (*Schizothoraxichthysprogastus* and *Schizothoraxrichardsonii*) is found in the project stretch. The fish management plan involves various options for management of Mahseer and Snow trout. Mahseer is a migratory fish and comes in the Alaknanda and its tributaries in search of feeding and breeding grounds. The catchment of Birahi River can be improved by plantation along the bank. The anthropogenic activity like extraction of sand, pebbles, gravels, stones and fishing activity in the river should be completely banned. A capital cost provision of Rs.10 lakhs were kept in 2009 EMP towards habitat restoration of Mahseer through improvement of the catchment of Birahi River and conservation of fish stock in the study stretch of Alaknanda. The Mahseer hatchery already constructed at the Tehri Dam on the Bhagirathi River is used for propagation of the Mahseer and will be utilized for VPHEP. For the management of the Snow trout (*Schizothoraxichthysprogastus*), THDC has been prepared a Fish management plan with consultation of Directorate of Cold Water Fisheries (DCFR), ICAR, Bhimtal. The budget provision kept under 2007 EMP was

only Rs. 65 lakhs. The same is proposed to be revised upto to Rs. 429.0 lakh, out of that 279 lakhs has already been incurred till date

- (xxiii) **Environmental Cost and Benefits:** The environment cost and benefits of the project has been carried out. It is manifest that the cost to environment is Rs. 18020.84 lakh whereas the annual benefits are Rs 83499.83 lakh and for useful life of project these are projected as Rs. 2490595.8 lakh, with benefit cost ratio of 138.20:1.
- (xxiv) **E-flow:** The Environmental flow (E-flow) at VPHEP shall be governed by the latest Gazette Notification dated 09th Oct, 2018 of GoI, regarding maintaining a minimum environmental flow in River Ganga up to Unnao, (UP). In dry season i.e. Nov to March 20 % of average flow of preceding 10 daily period will be maintained. During Lean season i.e. Oct, April and May 20 % and in High flow i.e. June to September 30% of average flow of preceding 10 daily period will be maintained.
- (xxv) **Project benefit:** The Project benefits of VPHEP are as follows:
- Capacity addition of 444 MW in the Northern Region, reducing peaking power shortage in the region. Annual Design Energy of 1657.09 MU (with 95% machine availability).
 - Integrated Development of Chamoli/ Garhwal region in the areas of employment, communication, education, health, tourism, development of flora & fauna etc.
 - Out of 13% free power to the home state Uttarakhand, 1% shall be utilized for contribution towards local area development.
- (xxvi) **Public hearing:** The commitments made by the Project during Public Hearing held on 09.01.2007 are all fulfilled by the project and compliance of the same is being shared with the MoEF&CC through six monthly compliance report. Also, MoEF&CC vide its letter dated 01.06.2021 grant exemption to under construction VPHEP project from any repeat Public Hearing.
- (xxvii) **Status of other statutory clearances:** The forest clearance (Stage I and Stage 2) has been granted to VPHEP vide letter dated 03.06.2011 and 28.05.2013 respectively. The Wildlife Clearance (WC) was accorded by NBWL vide letter F. No. 6-43/2007 WL-I (27th Meeting) dated 20.12.2012. Consent to Establishment (CTE) has been obtained from UKPCB vide letter No. UEPPSB/HO/NOC-CH-15/07/13 dt. 10.04.2007.

4. The sectoral Expert Appraisal Committee after detailed deliberations in its 15th meeting held on 27th July, 2021 through Video conferencing on the information submitted and as presented recommended the proposal for Environmental Clearance. Based on recommendation of EAC, Ministry, hereby accords approval for grant of Environmental Clearance to Vishnugad-Pipalkoti Hydro-Electric Project of 444 MW in an area of 141.568 ha by M/s THDC India Limited located at village Haat, Tehsil Joshimath, District Chamoli, under the provisions of EIA Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the following additional terms & conditions/ specific conditions for environmental safeguards:

- (i) The Environmental Management Plan (EMP) shall be strictly adhered to as submitted in the EIA/EMP report. The budgetary provisions for implementation of EMP, shall be fully utilized and not to be diverted to any other purpose. In case of revision of the project cost or due to price level change, the cost of EMP shall also be updated proportionately.

- (ii) Environment matrix provided in EMP be revised if any data change. Number and period of stocking of Fish be incorporated in EMP.
- (iii) Separate budget shall be allocated for fish hatcheries and herbal and the same shall be implement in stipulated time period.
- (iv) The contract clause limiting the No. of vehicles used during excavation and transportation shall followed scrupulously and the same shall informed to the ministry.
- (v) Pasture Development Plan be revised in terms of Rate of plantation and their Cost.
- (vi) After 5 years of the commissioning of the project, a study shall be undertaken regarding impact of the project on the environment. The study shall be undertaken by an independent agency.
- (vii) Geological changes or catastrophic event within 10km region, every two-year data shall be submitted to RO, MoEF&CC. The same shall be obtained from Geological Survey of India. If any major events which can affect the dam, management plan shall be prepared and submit to the RO, MoEF&CC.
- (viii) Solid waste generated, especially plastic waste, etc. should not be disposed of as landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.
- (ix) PP shall ensure the Ambient Air Quality Monitoring Stations for real time data display and regularly submit to respective Ro, MoEF&CC.
- (x) Land acquired for the project shall be suitably compensated in accordance with the law of the land with the prevailing guidelines. Private land shall be acquired as per provisions of Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- (xi) PP shall procure construction material only from those Organizations having all valid legal/statutory clearances/permissions or necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and as amended thereof.
- (xii) An institutional mechanism to be developed to ensure the preference of jobs to PAFs and also a policy for preferential treatment for award of sundry works to the PAFs and their dependents.
- (xiii) Necessary control measures such as water sprinkling arrangements, and construction of paved roads leading to muck disposal sites etc. shall be taken up on priority to arrest fugitive dust at all the construction sites.
- (xiv) Stabilization of muck disposal sites using biological and engineering measures shall be taken up immediately to ensure that muck does not roll down the slopes and shall be disposed safely and that it does not pollute the natural streams and water bodies in surrounding area. Report of the same to be submitted to Ministry and its Regional office.
- (xv) A multi-specialty hospital to cater the need of people living within 10 km radius of the project shall be established.
- (xvi) Solar lights for illumination alongwith associated Solar panels to be provided to the families living in rural areas within 10 km radius of project.
- (xvii) The e-flow shall continue to be released as per the previous EC granted to the project.
- (xviii) Computer labs with internet facility shall be established in primary schools within 10 km radius of project.
- (xix) Sport complex with multi- sport facility shall be established. The children's from economically weaker section shall be given free of cost sport facility.



- (xx) A time bound action plan for compliance of each of the above condition will be submitted to RO, MoEF&CC within 3months.
- (xxi) Observations raised by RO, MoEF&CC in certified compliance report shall be complied with and if not done in stipulated time/ before commencement of Project, Environmental Clearance will be withdrawn.
- (xxii) The Multi-Disciplinary Committee needs to be reconstituted and the meeting needs to be held at regular interval
- (xxiii) PP should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground. A dedicated team to oversee environment management shall be setup which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis.
- (xxiv) All the specific conditions mentioned in the EC dated 22ndAugust 2007 shall be complied within stipulated time.

5. Standard EC Conditions for River Valley and Hydroelectric projects

I. Statutory compliance:

- i. The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
- ii. The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
- iii. The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan/ Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (incase of the presence of schedule-I species in the study area)
- iv. The project proponent shall obtain Consent to Establish/ Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee.
- v. NOC shall be obtained from National Commission of Seismic Design Parameters (NCSDS) of CWC.
- vi. Necessary approval of CEA shall be obtained for those projects having the project cost more than Rs. 1,000 crore.

II. Air quality monitoring and preservation

- i. Regular monitoring of various environmental parameters viz., Water Quality, Ambient Air Quality and Noise levels as per the CPCB guidelines at designated locations shall be carried out on monthly basis and a detailed database of the same shall be prepared and recorded. This shall be used as a baseline data for post construction EIA/ Monitoring purposes.
- ii. Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed standards.
- iii. Necessary control measures such as water sprinkling arrangements, etc. betaken up to arrest fugitive dust at all the construction sites.

III. Water quality monitoring and preservation

- i. Conjunctive use of surface water to be planned in the project to check water logging as well as to increase crops productivity. The field drains shall be connected with natural drainage system.
- ii. Remodelling of existing natural drains (link drains) and connecting them with irrigated land through constructed field drains, collector drains, etc. are to be ensured on priority basis.
- iii. Before impounding of the water, Cofferdams for both at the upstream and downstream are to be decommissioned as per EIA/EMP report so that once the project is commissioned; cofferdam should not create any adverse impact on water environment including the rock mass and muck used for the Cofferdam.
- iv. As the reservoir will be acting as balancing reservoir and there would be fluctuation of water level during peaking period, efforts be made to reduce impact on aquatic life including impacts during spawning period both at the upstream and downstream of the project
- v. Water depth sensors shall be installed at suitable locations to monitor e-flow. Hourly data to be collected and converted to discharge data. The Gauge and Discharge data in the form of Excel Sheet be submitted to the Regional Office, MoEF&CC and to the CWC on weekly basis.
- vi. Mixed irrigation shall be practised and necessary awareness be given to all the farmers and trained in the use of such systems. Proper crops selection shall be carried out for making irrigation facility more effective.
- vii. On Farm Development (OFD) works like landscaping, land levelling, drainage facilities, field irrigation channels and farm roads, etc. should be taken up in phased manner prior to the start of irrigation in the entire command area. The Command Area Development Plan should be strictly implemented as proposed in the EIA/EMP report

IV. Noise monitoring and prevention

- i. All the equipment likely to generate high noise shall be appropriately enclosed or inbuilt noise enclosures be provided so as to meet the ambient noise standards as notified under the Noise Pollution (Regulation and Control) Rules, 2000, as amended in 2010 under the Environment Protection Act (EPA), 1986.
- ii. The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time

V. Catchment Area Treatment Plan

- i. Catchment Area Treatment (CAT) Plan as proposed in the EIA/EMP report shall be implemented in consultation with the State Forest Department and shall be implemented in synchronization with the construction of the project.

VI. Waste management

- i. Muck disposal be carried out only in the approved and earmarked sites. The dumping sites shall be located sufficiently away from the HFL of the river. Efforts be made to reuse the muck for construction and other filling purposes and balanced be disposed of at the designated disposal sites. Once the muck

- disposal sites are inactive, proper treatment measures like both engineering and biological measures be carried out so that sites are stabilized quickly.
- ii. Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead be used for various purposes as envisaged in the EIA/EMP reports. Efforts be made to avoid one time use of plastics.

VII. Green Belt, EMP Cost, Fisheries and Wildlife Management

- i. Based on the recommendation of Cumulative Impact Assessment and Carrying capacity study of river basin or as per the ToR conditions or minimum 15% of the average flow of four consecutive leanest months, whichever value is higher, shall be released as environmental flow.
- ii. Detailed information on species composition particular to fish species from previous study/literature be inventorized and proper management plan shall be prepared for insitu conservation in the streams, tributaries of river and the main river itself for which adequate budget provision be made and followed strictly.
- iii. Wildlife Conservation Plan prepared for both core and buffer zones shall be implemented in consultation with the local State Forest Department.
- iv. To enrich the habitat of the project site, plantation shall be raised as envisaged in the EIA/EMP report. Plantation to be developed along the periphery of the reservoir in multi-layers with local indigenous species in consultation with the local State Forest Department.
- v. Compensatory afforestation programme shall be implemented as per the plan approved.
- vi. Fish ladder/pass as envisaged in the EIA/EMP report shall be provided for migration of fishes. Regular monitoring of this facility be carried out to ensure its effectiveness.

VIII. Public hearing and Human health issues

- i. Resettlement & Rehabilitation plan be implemented in consultation with the State Govt. as approved by the State Govt.
- ii. Budget provisions made for the community and social development plan including community welfare schemes shall be implemented in toto.
- iii. Preventive measures viz. fuming and spraying of mosquito control shall be done in and around the labour colonies, affected villages, stagnated pools, etc. Provisions be made to not to create any stagnated pools to avoid creation of breeding grounds of the vector borne diseases
- iv. Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
- v. Labourforce to be engaged for construction works shall be examined thoroughly and adequately treated before issuing them work permit. Medical facilities shall be provided at the construction sites.
- vi. Early Warning Telemetric system shall be installed in the upper catchment area of the project for advance intimation of flood forecast.
- vii. Emergency preparedness plan be made for any eventuality of the dam failure and shall be implemented as per the Dam Break Analysis

IX. Corporate Environment Responsibility

- i. The project proponent shall comply with the provisions contained in this Ministry's OM vide F. No. 22-65/2017-IA.III dated 1st May, 2018, as applicable, regarding Corporate Environment Responsibility.
- ii. Skill mapping be undertaken for the youths of the affected project area and based on the skill mapping, necessary trainings to the youths be provided for their long time livelihood generation
- iii. The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/ deviation/ violation of the environmental/ forest/ wildlife norms/ conditions. The company shall have defined system of reporting infringements/ deviation/ violation of the environmental/ forest/ wildlife norms/ conditions and/ or shareholders/ stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.
- iv. A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
- v. Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/ Regional Office along with the Six Monthly Compliance Report.
- vi. Post EIA and SIA be prepared for the project through a third party and evaluation report be submitted to the Ministry after five years of commissioning of the project.
- vii. Multi-Disciplinary Committee (MDC) be constituted with experts from Ecology, Forestry, Wildlife, Sociology, Soil Conservation, Fisheries, NGO, etc. to oversee implementation of various environmental safeguards proposed in EIA/EMP report during construction of the project. The monitoring report of the Committee shall be uploaded in the website of the Company.
- viii. Formation of Water User Association/ Co-operative be made involment of the whole community be ensured for discipline use of available water for irrigation purposes

X. Miscellaneous

- i. The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by 5 prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
- ii. The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.

- iii. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
- iv. The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
- v. The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
- vi. The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project. vii. The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government. viii. The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
- vii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).
- viii. Concealing factual data or submission of false/ fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- ix. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
- x. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
- xi. The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/ information/ monitoring reports.
- xii. The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India/ High Courts and any other Court of Law relating to the subject matter.
- xiii. Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010

6. All the terms and conditions of the Environment Clearance stipulated in previous EC and amendments dated 22nd August, 2007, 18th January, 2008 and 30th November, 2012 shall remain unchanged.

7. This issues with the approval of the Competent Authority.

Yours faithfully,



(Lalit Kumar Bokolia)
Scientist 'F'

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Copy to:

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi - 110 001.
2. The Secretary, Ministry of Water Resources, RD&GR, Shram Shakti Bhawan, Rafi Marg, New Delhi - 110 001.
3. The Principal Secretary (Irrigation & Power), Government of Uttarakhand, Dehradun - 248 006.
4. The Chief Engineer, Project Appraisal Directorate, Central Electricity Authority, Sewa Bhawan, R. K. Puram, New Delhi - 110 066.
5. The DDG (Central), Ministry of Environment, Forest and Climate Change, Regional Office (NCZ), Pearson Road, P. O. New Forest, Forest Research Institute (FRI) Campus, Dehradun - 248 006.
6. The Member Secretary, Uttarakhand Environment Protection & Pollution Control Board, Paryavaran Bhawan, E-1 15, Nehru Colony, Dehradun.
7. Guard File



(Lalit Kumar Bokolia)
Scientist 'F'