



**No. J-12011/13/2013-IA. I (R)**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**

3<sup>rd</sup> Floor, Vayu Block,  
Indira Paryavaran Bhawan, Jor Bagh Road,  
Aliganj, New Delhi-110003

Dated: 02.07.2018

To

The Chief Engineer  
**M/s. West Bengal State Electricity Company Ltd.**  
Planning Investigation & Design Department  
Vidyut Bhavan, 5<sup>th</sup> Floor,  
Block-DJ, Sector-II, Salt Lake  
Kolkata-700091.

**Sub: 1000 MW (4x250 MW) Turga Pumped Storage project on Turga Nalla in Purulia District of West Bengal by M/s West Bengal State Electricity Distribution Company Ltd.- reg. Environmental Clearance.**

Sir,

The undersigned is directed to refer to your online application No. **IA/WB/RIV/53589/2013** dated 09.05.2016 and online submission dated 8.5.2018 on the above subject. Terms of Reference (ToR)/Scoping Clearance for the above mentioned project has been issued vide Ministry's letter dated 4.11.2013.

2. It has been noted that you have proposed Turga Pumped Storage Project on Turga nala, is located in Purulia district of West Bengal with installed power generation of 1000 MW. The Turga Pumped Storage Scheme envisages utilization of the water of the river Turga in Ayodhya hills for peak power generation on a Pumped storage type development. The coordinates of Upper Dam site are 23°12'47"N and 86°04'20"E. Coordinates of the lower Dam site are 23°11'49"N and 86°04'13"E. The project site is approachable by a jeepable road taking off from Balarampur – Baghmundi state highway. The nearest rail head is located at Barabhum and nearest airport is located at Ranchi.

3. The project envisages construction of Upper Dam (C.A. 8.29 Sq. km) across Turga nalla, a tributary of Subarnarekha river and a water conductor system with an underground Power House on the downstream of Upper Dam and a Lower main and saddle dams for the lower reservoir having intermediate catchment of 4.37 sq. km (total C.A. 12.66 sq. km). It is proposed to increase the gross storage capacity to 18 MCM (Live storage of 14.2 MCM at FRL: 316.5 m) by constructing the lower main dam just downstream of the existing Irrigation Dam and a Right Saddle Dam. The upper reservoir will have the gross storage capacity of 21.6 MCM (Live storage of 14.2 and pondage at MDDL is 3.8 MCM at FRL: 464.0 m). The Spillway for Upper Dam is proposed near the left abutment on the original course of Turga nala. Considering the small design flood of 280 m<sup>3</sup>/s, an un-gated ogee overflow Spillway has been considered. The upper dam is a rock fill type dam with central impervious core and filter materials, rockshell material, etc. having length of 732 m maximum of height of 63.5 m. Main lower dam is a concrete gravity dam with dimensions of 872 m length and 64 m height. Further, lower

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saddle dam is a rock fill central impervious core with dimensions of 595 m length and 50 m height. Further, diversion tunnel, power intake, headrace tunnel, penstock, Power house (four units of pump turbine and motor-generator), tailrace tunnel will be built to cater to the installed power capacity of 4x250 MW with maximum of turbine discharge of 197 m<sup>3</sup>/s.

4. Land requirement for the proposed project is 292 ha out of which 234 ha is forest land. In-principle approval for diversion of 234.0 ha forest land has been accorded by the Ministry vide letter No.8-51/2017-FC dated 12.4.2018. Out of remaining 58 ha non-forest land/private land, 34 ha will be transferred from I & W Directorate, Government of West Bengal to Turga Pumped Storage Project. Remaining 24 ha of land to be arranged temporarily on leased basis. No family will be losing homestead. Some minimum private land is to be acquired on temporary basis and no permanent acquisition of private land is envisaged. Thus, issues related to Resettlement and Rehabilitation are not envisaged in the proposed Project. Further, there are no national parks, wildlife sanctuaries, eco-sensitive zone/areas and other protected areas within 10 km radius of the project.

5. The estimated requirement of construction material for the project are as below:

S.No.	Structure	Core Material (Lakh m <sup>3</sup> )	Filter Material (Lakh m <sup>3</sup> )	Rockfill Material (Lakh m <sup>3</sup> )	Fine Aggregate (Lakh m <sup>3</sup> )	Coarse aggregate (Lakh m <sup>3</sup> )
1	Upper Dam	5.5	2.23	28.80	0.21	0.42
2	Lower Dam	-	-	-	3.78	7.55
3	Lower Saddle Dam	2.90	1.40	14.97	-	-
4	Power House and Turbine House	-	-	--	0.25	0.50
5	Waterway	-	-	-	0.36	0.72
Total		8.4	3.63	43.77	4.60	9.19

6. The total quantity of muck expected to be generated has been estimated to be of the order of 32 lakh m<sup>3</sup>. Considering, 25% swelling factor, the total muck to be handled is 40 lakh m<sup>3</sup>. About 50% material shall be used as construction material. Remaining 20 lakh m<sup>3</sup> of muck is planned to be disposed. The muck will be disposed in 3 muck disposal sites. The area of muck disposal sites is 11.04 ha with the capacity of 11.04 lakh m<sup>3</sup>. The remaining muck of 8.96 lakh m<sup>3</sup> will be disposed in Kudna and Dulgubera Quarry areas, which have a total capacity of 9.7 lakh m<sup>3</sup>.

7. Primary environmental baseline data has been collected for three seasons (Winter: December- January, 2014; Summer: April, 2014 and Monsoon: August-September, 2014).

8. The recommended environmental flows for Upper reservoir and lower reservoir are as below:

Month/Season	Flow in 90% Dependable Year 1975 (MCM)	Environmental Release (MCM)	Percentage of inflow as Environmental Flow

<b>Upper Reservoir</b>			
June	0.11	0.03	30%
July	0.38	0.011	30%
August	0.02	0.006	30%
September	1.55	0.47	30%
October	0.56	0.17	30%
Monsoon (Total-A)	2.63	0.786	30%
Non-monsoon (Total-B)	0.29	0.0725	25%
<b>Annual (A+B)</b>	<b>2.92 MCM</b>	<b>0.8585 MCM</b>	
<b>Lower Reservoir</b>			
June	0.17	0.05	30%
July	0.58	0.17	30%
August	0.04	0.01	30%
September	2.37	0.71	30%
October	0.86	0.26	30%
Monsoon (Total-A)	4.01	1.20	30%
Non-monsoon (Total-B)	0.44	0.11	25%
<b>Annual (A+B)</b>	<b>4.45 MCM</b>	<b>1.3 MCM</b>	

9. The cost of environmental management plan is as below:

<b>Sr.No.</b>	<b>Activity</b>	<b>Cost in Rs. Lakhs</b>
1	Catchment Area Treatment Plan	409.65
2	Compensatory Afforestation and Bio-diversity Conservation	483.5
3	Fisheries Management	88.7
4	Greenbelt Development	16.8
5	Water, air and noise pollution control measures	20
6	Environmental Management in Labour Camps (Solid Waste Management)	204.75
7	Public Health Delivery System	308.23
8	Muck Disposal Plan	120
9	Restoration, Stabilisation and landscaping of quarry sites	60
10	Restoration, Stabilisation and landscaping of construction sites	20
11	Environmental Management in road construction	40

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12	Energy Conservation Measures	312.37
13	Disaster Management Plan	40
14	Local Area Development Plan which includes infrastructure development as committed during Public Hearing.	2204
15	Plan to Preserve Cultural identity of the locals	98.12
16	Environmental Monitoring during construction phase	187.23
17	Purchase of Meteorological Instruments	4.5
18	Purchase of Noise Meters	1
Total cost of Environmental Management Plan		Rs.46.12 Crores

10. Public Hearing for the proposed project has been conducted by West Bengal Pollution Control Board at Banabitan Meeting Hall, Vill. & P.O Baghmundi, District Purulia on 2.2.2016. During Public Hearing, local people demanded few new infrastructure facilities such as Potable Water Supply (Digging new Wells), digging new ponds, development of play ground in three villages and development & renovation of two temples (Ram Mandir and Vaishno Devi Mandir).

11. The proposal has been considered in the 94<sup>th</sup> meeting of EAC (RV & HEP) held during 2-3.06.2016 and 14<sup>th</sup> meeting of Re-constituted EAC (RV & HEP) held on 28.5.2018. The Committee has recommended for increasing the cost for Local Area Development Plan from Rs.22.04 Crores to Rs.44.12 Crores. Cost for infrastructure development and Corpus fund for maintaining the infrastructure will be Rs.29.12 Crores and Rs. 15.0 Crores, respectively. Accordingly, the increased cost of budget for Environmental Management Plan is Rs. 68.30 Crores. Estimated Project Cost is Rs. 5,141.49 Crores. The estimated employment during construction phase is 1000 persons.

12. In acceptance of the recommendations of the EAC (RV&HEP) in its meeting held during 2-3.6.2016 & 28.5.2018, and in view of the clarifications/documents furnished, **the Ministry hereby accords the prior Environmental Clearance under 1(C): River Valley Projects of Schedule of EIA Notification, 2006 and subsequent amendments issued time to time for the proposed project**, subject to compliance of following conditions:

**Part A: Specific Conditions**

- i. Free Fuel / Energy Conservation Plan to be implemented as envisaged in the EIA / EMP report.
- 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 appropriate engagements in the Project.
- iii. Solid waste management should be planned in details. Land filling of plastic waste shall be avoided and instead proposal for various uses may be made in the revised EIA/EMP report.
- iv. Environmental Clearance for stone quarries shall be obtained separately. After extraction of stones, the quarry void shall be reclaimed with the soil preferably muck generated from the project and planted with the local species.

- v. The Catchment Area Treatment (CAT) Plan as proposed in EIA/EMP (Sections 2.7 and 2.8; April, 2016) shall be implemented with biological and engineering measures in consultation with West Bengal Forest Department. The CAT proposed for the area of 20.95 sq.km (8.29 sq.km for upper dam and 12.66 sq.km for lower dam) with the budgetary provision of Rs.4.1 Crores shall be fully implemented and not to be diverted for any other purposes.

A.	Biological Treatment Measures	Year		Total
		I	II	
i.	Afforestation (ha)	7	8	15
ii.	Enrichment Plantation (ha)	20	20	40
iii.	Pasture Development (ha)	10	10	20
iv.	Nursery Development (No.)	2	--	2
v.	Vegetative Fencing (km)	3	2	5
vi.	Rim Plantation (Rs. in lakh)	25	25	50.00
vii.	Social Forestry (Rs. in lakh)	5	5	10.00
<b>B.</b>	<b>Soil &amp; Water Conservation Works</b>			
i.	Check Dams (No.)	6	5	11
ii.	Drainage line treatment (Rs. in lakh)	10	10	20
<b>C.</b>	<b>Silt Observation Points (Rs.)</b>			23.86
<b>D.</b>	<b>Infrastructure Development (Rs. in lakh)</b>			318.21

\* In case of change in CAT plan is envisaged in future, prior approval of the Ministry shall be taken for its implementation.

- vi. The project involves 292 ha out of which 234 ha is forest land and 58 ha is private/non-forest land. The R&R benefits for the land losers will have to comply with 'The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013' as applicable. Adequate publicity of the compensation package should be circulated in the affected villages.
- vii. A monitoring Committee for R&R shall be constituted which shall include representatives of project affected persons including representative from SC/ST category and a woman beneficiaries.
- viii. All the conditions stipulated in the forest clearance for diversion of 234.0 ha forest land for the proposed project issued vide Ministry's letter dated 12.4.2018 shall be complied with.
- ix. All commitments made during the Public Hearing should be fulfilled completely by the project proponent and records be maintained.
- x. Consolidation and compaction of the generated muck should be carried out at the muck dumping sites. As proposed in the muck disposal plan, out of total muck generation of 40 lakh m<sup>3</sup>, 20 lakh m<sup>3</sup> shall be utilised in the construction and remaining 20 lakh m<sup>3</sup> shall be disposed at three muck disposal sites and Kudna & Dulgubera Quarry areas. The available volume of the three muck disposal sites is about 11.04 lakh m<sup>3</sup> and volume of the both quarries is about 9.7 lakh m<sup>3</sup>.

- xi. The proposed compensatory afforestation programme in 234 ha non-forest land shall be developed in consultation with State Forest Department. An amount of **Rs.2.2512 Crores** has been allocated for this purpose and should be fully utilized and not to be diverted for any other purposes.
- xii. The Fisheries Development and Management Plan as proposed in the EIA/EMP report (April, 2016) for conservation of fish in river/Nallah & reservoir shall be implemented in consultation with the State Fishery Department. A budget of **Rs.88.7 Lakhs** earmarked for fisheries management plan shall be utilized fully for the purpose and not to be diverted for any other purposes.
- xiii. The Biodiversity Conservation and Management Plan as proposed in the EIA/EMP report (April, 2016) should be implemented in consultation with State Forest Department. The allocated grant of **Rs. 2.584 Crores** should be fully utilized for this purpose and not to be diverted for any other purposes.
- xiv. Occurrence of stagnant pools/slow moving water channels during construction and operation of the project provide the breeding source for vector mosquitoes and other parasites. The river should be properly channelized so that no small pools and puddles are formed. Even after taking precautions, due to unforeseen situations, breeding of mosquito and resultant malaria or mosquitoes borne disease can increase. If such a situation arises, it will be the responsibility of project proponent to take all steps, i.e. residual insecticidal spray in all the project area and its surrounding of 3 km area keeping the flight range of mosquitoes in consideration.
- xv. The equipment likely to generate high noise levels during the construction period or otherwise shall meet the Ambient Noise Level standards as notified under the Noise Pollution (Regulation and Control) Rules, 2000 as amended in 2010 under the Environment (Protection) Act, 1986. Ambient Noise level monitoring shall be conducted on a monthly basis during the period of construction at suitable locations and copy of the test reports shall be submitted to concerned Regional Office on six monthly basis.
- xvi. Any other clearance from other organizations/departments, if required, should be obtained as and when necessary.

**Part B: General Conditions:**

- i. Adequate arrangements for providing free fuel like LPG/kerosene shall be made at the project cost for the labour force engaged during the construction work so that felling of trees located adjacent to the proposed project site is avoided.
- ii. Medical facilities as well as recreational facilities shall be provided to the labourers at the construction sites. First aid facility at the project site shall also be provided with proper signage.
- iii. The labourers to be engaged for construction works shall be thoroughly examined by health personnel and adequately treated before issuing them work permit to avoid contraction of any diseases to the local population.
- iv. Water sprinkling arrangements shall be made to control the fugitive dust, and ambient air quality, etc. be monitored during the period of construction according to the CPCB guidelines to meet the NAAQ standards.
- v. Potable drinking water and proper sanitary facilities shall be provided for the labour force. Any solid wastes generated at the colony of the labour force shall be collected and suitably disposed off.

- vi. Restoration of construction areas including muck dumping sites of excavated materials shall be ensured by leveling, filling up of borrow pits landscaping, etc. The area should be properly treated with suitable plant species preferable local indigenous species for better survival of plants and also to enrich the local habitat.
- vii. Environmental parameters shall be monitored and “six monthly monitoring reports” shall be submitted to the concerned Regional office of the Ministry as per guidelines.
13. The project Proponent shall provide full cooperation and all required documents/data shall be provided to the Officer (s) of the concerned Regional Office of the Ministry who would be monitoring the implementation of environmental safeguards.
14. The responsibility of implementation of environmental safeguards and carrying out environmental monitoring rests fully with the **M/s West Bengal State Electricity Distribution Company Ltd.**
15. Besides the above stated conditions, the Project Proponent shall also implement all environmental monitoring safeguards, as proposed in the EIA/EMP report and other reports from time to time. The concerned Regional Offices, MoEF&CC shall monitor implementation of EMP at regular intervals.
16. The Environmental Management Plan (EMP) shall be strictly adhered to. The total cost of implementation of mitigation measures as per EMP is **Rs. 68.30 Crores which includes budget of Rs. 44.12 Crores for Local Area Development Plan**, shall be fully utilized and shall not be diverted for 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.
17. In case of change in the scope of the project, the same shall be intimated to the Ministry and fresh approval, if required, shall be taken from the Ministry accordingly.
18. The Ministry reserves the right to add additional safeguard measures subsequently, if found necessary and to take action including revoking of the clearance under the provisions of the Environment (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time-bound and satisfactory manner.
19. The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in vernacular language of the locality concerned informing that the project has been accorded environmental clearance and copies of clearance letters are available with the State Pollution Control Board/ Committee and may also be seen at the website of the Ministry of Environment, Forest & Climate Change at <http://www.moef.nic.in>.
20. A copy of the clearance letter shall be marked to concerned Panchayat/Zilla Parishad/Municipal Corporation, Urban local body and local NGO, if any, from whom any suggestion/representations, were received while processing the proposal. The clearance letter shall also be put in the website by the project proponent. Compliance to the conditions shall be ensured by the project and intimated to the state accordingly.
21. State Pollution Control Board/Committee shall display a copy of the clearance letter at the Regional Office, District Industries Centre and Collector’s/ Tehsildar’s Office for 30 days.

22. **The Environmental Clearance is valid for a period of 10 years** from the date of issue of this letter for commissioning of the project.

23. After 5 years of the commissioning of the Project, a study shall be undertaken regarding impact of the project on the environment and downstream ecology. The Study shall be undertaken by an independent agency, decided in consultation with the Ministry.

24. The project proponent shall also submit six monthly reports on the status of compliance of stipulated EC conditions including the results of monthly monitored data (both in hard copies as well as by email) to the Regional Office of MoEF&CC, Bhubaneswar.

25. A multi-disciplinary Committee (MDC) for monitoring the implementation of environmental safeguards during construction shall be constituted by the Project Proponent (PP) in consultation with the Ministry as early as possible. A panel may be proposed by the PP and submitted to Ministry and the Government of West Bengal. The project proponent shall organize six monthly meetings of the Committee and submit the monitoring report the Ministry. The MDC will monitor specifically the stability and effectiveness of muck dumping sites during all visits and suggest remedial measures, if so required.

26. Any appeal against this environmental clearance shall lie solely with the National Green Tribunal, if preferred, within a period of 30 days from the date of issue, as prescribed under Section-16 of the National Green Tribunal Act, 2010.

This issues with the approval of the Competent Authority.

Yours faithfully,



**(Dr. S. Kerketta)**  
**Director, IA.I**

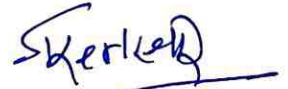
**Telefax: 011 24695314**

*Copy to:*

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
3. The Chairman, Central Water Commission, Sewa Bhawan, R.K. Puram, New Delhi-110606.
4. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
5. The Additional Principal Chief Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (EZ), A/3, Chandrasekharpur, Bhubaneswar - 751023.
6. The Secretary, Department of Environment, 5th Floor, Pranisampad Bhawan, Block LB-II, Salt Lake, Sector III, Bidhannagar, Kolkata - 700 106
7. The Member Secretary, West Bengal Pollution Control Board, Paribesh Bhavan, 10A, Block-L.A., Sector-III, Salt Lake City, Calcutta - 700 106.



8. The District Collector, District Purulia, Office of The District Magistrate and Collectorate, Government of West Bengal, Purulia, West Bengal- 723101.
9. Guard/Monitoring file.
10. Website of MoEF&CC.



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