No. J-12011/22/2019-IA-I
Government of India
Ministry of Environment, Forest & Climate Change
(IA.I Division)

Indira Paryavaran Bhawan
3rd Floor, Vayu Wing
Jor Bagh Road
New Delhi-110 003

Dated: 28th February, 2020

To

M/s Greenko Energies Private Limited
Plot No. 1071, Road No. 44
Jubilee Hills, Hyderabad-500033
Telangana

Sub: MP 30 Gandhi Sagar Standalone Pumped Storage Project (1360 MW), District Neemuch, Madhya Pradesh Greenko Energies Pvt. Ltd.-reg. Fresh ToR.

Sir,

This has reference to your, online Proposal No. IA/MP/RIV/124890/2019, and letter no MP/SPSP/MoEF&CC /ToR/ 20191111 Dated 11.11.2019 submitted to the Ministry for ToR to the project on the above-mentioned subject.

2. The above referred proposal was considered by the Expert Appraisal Committee (EAC) for River Valley & Hydroelectric projects in its 29th meeting held on 05.12.2019. 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.

3. Greenko Energies Pvt. Ltd. proposes to develop Standalone Pumped Storage Project (PSP) in Khemla Block (V), Rampura (T) of Neemuch (D) in the State of Madhya Pradesh. The MP 30 Gandhi Sagar Standalone PSP Project will comprise of two reservoirs i.e. Gandhi Sagar lower reservoir (already existing) and MP 30 Gandhi Sagar Upper Reservoir (to be constructed newly).

4. This scheme envisages non-consumptive re-utilization of 1.07 TMC of water of Gandhi Sagar reservoir by recirculation. The water in Gandhi Sagar reservoir (existing lower reservoir) will be pumped up and stored in the proposed Standalone Pumped Storage Project of MP 30 Gandhi Sagar Upper reservoir and will be utilized for power generation. The gross storage capacity of Gandhi Sagar reservoir is 258.47 TMC. The Geographical co-ordinates of the proposed MP 30 Gandhi Sagar Standalone Pumped Storage Project component of upper reservoir is at latitude 24°31'19.90" North and Longitude is 75°31'8.54" East and that of Gandhi Sagar lower reservoir (existing) are 24°31'5.40" North and 75°32'5.28" East.

5. Depending upon actual Peak demand capacity and peaking duration requirement of State Government / Central utility, Project configuration can be changed to 1020MW for 8 hours by keeping overall daily storage capacity same. The peak demand capacity and peaking duration

requirement will be studied prior to completion of DPR and accordingly final configuration either of two i.e. 1360 MW for 6 hours or 1020 MW for 8 hours will be adopted. However, the proposed upper reservoir capacity and water utilization and the MWH generated will remain same in both cases.

6. Proposed scheme involves construction of 33m high rockfill embankment for creation of MP30 Gandhi Sagar Standalone PSP upper reservoir of 1.12 TMC gross storage capacity. Water conductor system consists of 8 nos. each of 621 m long and 7.0 m dia. surface circular steel lined Penstock / Pressure Shaft (i.e. consisting of 441.43 m long surface penstock, 100.23 m long vertical pressure shaft and 78.87 m long Horizontal pressure shaft) to feed 8 units of 170 MW. As such, the proposed project will generate 1360 MW by utilizing design discharge of 1391 cumecs with rated head of 113 m. A surface Power house having an installation of Eight nos. reversible Francis turbine each of 170MW capacity (4 units of fixed speed and 4 units of variable speed turbines) operating under a rated head of 113.00 m in generating mode and 122.00 m in pumping mode. Tailrace channel of about 1056.00 m long is connecting to the Existing Gandhi Sagar.

7. Total land required for construction of various components, including infrastructure facilities and muck disposal area is estimated to be around 282.46 ha, involving 69.63 ha of forestland and 212.83 ha of non-forest land. Total estimated cost of the project is Rs. 6,054.06 Crores.

8. The above proposal was appraised by the EAC in 29th meeting on 05.12.2019. The EAC after detailed presentation on the project observed that the water in the Gandhi Sagar reservoir (existing lower reservoir) will be pumped up and stored in the proposed Standalone Pumped Storage Project of MP 30 Gandhi Sagar Upper reservoir and will be utilized for power generation. EAC further observed that instant project being the Pump storage project and standalone in nature and upper reservoir is located away from the existing natural water systems and have no/negligible catchment area therefore CAT Plan, RIM treatment, L-section of river and Environmental flow study will not be required under EMP. EAC in the 29th meeting after detailed scrutiny and deliberations on the information submitted and as presented by the Project Proponent, **recommended** the proposal for grant of fresh ToR/Scoping clearance for Standalone Pumped Storage Project (PSP) in Khemla Block (V), Rampura (T) of Neemuch (D) in the State of Madhya Pradesh.

9. Based on recommendations of the EAC, the Ministry of Environment Forest & Climate Change hereby **accords** a fresh Terms of Reference (TOR) as per the **Standard ToR** (Hydro projects) for activities at the proposed site as per the provisions of the Environmental Impact Assessment Notification, 2006 and as amended time to time along with the following **additional ToR** for preparation of EIA/EMP report:

i. The EIA/EMP report should contain the information in accordance with provisions & stipulations as given in the **Standard ToR for hydro projects:** (http://environmentclearance.nic.in/writereaddata/standardtorreference.pdf)

ii. The consultant engaged for preparation of EIA/EMP report has to be registered with Quality Council of India (QCI/ NABET) under the scheme of Accreditation & Registration of MoEF& CC. This is a pre-requisite.

iii. Consultant shall include a "Certificate" in EIA/EMP report regarding portion of EIA/EMP prepared by them and data provided by other organization(s)/ laboratories including status of approval of such laboratories. Declaration by the Consultant that

information submitted in the EIA/EMP is factually correct and shall be submitted along with EIA/EMP reports.

iv. An undertaking as a part of the EIA report from Project proponent, owning the contents (information and data) of the EIA report with the declaration about the contents of the EIA report pertaining to a project have not been copied from other EIA reports.

v. Consolidated EIA/EMP report is to be submitted as per the generic structure (Appendix III & IIIA) given in the EIA Notification, 2006.

vi. 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.

vii. The project involves diversion of about 69.63 ha of forestland. Forest clearance shall be obtained as per the prevailing norms of Forest (Conservation) Act, 1980.

viii. Application to obtain prior approval of Central Government under the Forest (Conservation) Act, 1980 for diversion of forestland required should be submitted as soon as the actual extent of forestland required for the project is known, and in any case, within six months of issuance of this letter.

ix. The draft EIA/EMP report prepared as per the Generic Structure (Appendix III of EIA Notification, 2006) incorporating information as per the Standard ToR, should be submitted to the State Pollution Control Board for conducting Public Consultation as per the provisions stipulated in EIA Notification, 2006. Public Hearing, which is a part of Public Consultation, shall be held district wise at the site or in its close proximity as prescribed in Appendix (IV) of EIA Notification, 2006. The draft EIA/EMP report is to be submitted to SPCB sufficient before the expiry of the ToR validity so that necessary amendments in EIA/EMP can be undertaken based on public hearing and the same is to be submitted to MoEF&CC before expiry of validity of ToR.

x. All the tasks including conducting public hearing shall be done as per the provisions of EIA Notification, 2006 and as amended time to time. Public hearing issues raised and compliance of the same shall be incorporated in the EIA/EMP report in the relevant chapter.

xi. Funds allocation for Corporate Environment Responsibility (CER) shall be made as per O.M. No. 22-65/2017-IA.III dated 01.05.2018 for various activities therein.

xii. The details of funds allocation and activities for CER shall be incorporated in EIA/EMP report.

xiii. Conservation plan for the Scheduled I species, if any, in the project study area shall be prepared and submitted to the Competent Authority for approval.

xiv. Pre-DPR Chapters viz., Hydrology and Layout Map and Power Potential Studies duly approved by CWC/CEA be submitted.

xv. Dam break analysis and Disaster Management Plan be prepared and submitted in the EIA/EMP report.

xvi. Environmental matrix during construction and operational phase needs to be submitted.

xvii. Both capital and recurring expenditure under EMP shall be submitted.

xviii. Certificate from the Chief Wild Life Warden that all the project components are outside the notified Eco-Sensitive zone of Gandhi Sagar Wildlife Sanctuary.

xix. Impact of developmental activity/project on the wildlife habitat within 10 km of the project boundary shall be studied.

xx. Detailed hydrological studies of the existing nearby reservoir which will be used to fill up the proposed reservoir.

xxi. The ToR will remain valid for a period of 4 years from the date of issue of this letter for submission of EIA/EMP report along with public consultation. The ToR will stand lapsed after completion of 4 years in case final EIA/EMP is not submitted and the validity is not extended.

xxii. In case the validity is to be extended, necessary application is to be submitted to the Regulatory Authority before expiry of validity period along with an updated Form-I based on proper justification.

xxiii. Baseline data and public consultation shall not be older than 3 years, at the time of submission of the proposal, for grant of Environmental Clearance.

xxiv. In case of any change in the scope of the project such as capacity enhancement, change in submergence, etc., fresh scoping clearance has to be obtained.

xxv. The PP should submit a copy of TEC of the DPR along with EIA/EMP report.

xxvi. The EIA report should clearly mention activity wise EMP and CER cost details and should earmarked clear break-up of the capital and recurring cost along with the timeline for incurring the capital cost.

xxvii. Details of the name and number of posts to be engaged by the project proponent for implementation and monitoring of environmental parameters be specified in the EIA report.

xxviii. The EIA/ EMP report must contain an Index showing details of compliance of all ToR conditions. The Index will comprise of page No. etc., vide which compliance of a specific ToR is available. It may be noted that without this index, EIA/ EMP report will not be accepted.

xxix. The PP should complete all the tasks as per the provisions of EIA Notification, 2006 and as amended time to time) and submit the application for final clearance within the stipulated time.

xxx. Appropriate Biodiversity Conservation and Management plan for the Native, Rare & Endangered floral and faunal species getting affected due to the project shall be prepared.

This has approval of the Competent Authority.

Yours faithfully,

(Dr. S. Kerketta)
Director

Copy to:

1. The Secretary, Ministry of Water Resources, RD & GR, Shram Shakti, Bhawan, Rafi Marg, New Delhi - 110 001.
2. The Principal Secretary (Water Resources Department), Government of Madhya Pradesh, Secretariat, Bhopal -462 016.
3. The Secretary, Department of Environment, Government of Madhya Pradesh, Secretariat, Bhopal - 462 016.
4. The Chief Engineer, Project Appraisal Directorate, Central Water Commission, Sewa Bhawan, R.K. Puram, New Delhi-110 066.
5. The Deputy Director General of Forests (C), Regional Office (WR), Ministry of Environment, Forest & Climate Change, Kendriya Paryavaran Bhavan, Link Raoad No-3, Ravi ShankerNager, Bhopal - 462 016.
6. The Member Secretary, Madhya Pradesh State Pollution Control Board, Paryavaran Parisar, E-5, Arera Colony, Bhopal - 462 016.
7. NIC Cell - uploading in MoEFCC's website.
8. PPS to JS (GM)
9. Guard file.

(Director)

Minutes of the 4th Meeting of the Expert Appraisal Committee for River Valley and Hydroelectric Projects held on 02nd December, 2020 from 11 a.m. - 05:00 p.m. through video conference.

In the 4th meeting of the re-constituted EAC for River Valley & Hydroelectric Projects which was held on 02/12/2020 under the Chairmanship of Dr. Uday Kumar R.Y. (Acting) in the Ministry of Environment, Forest & Climate Change through video conference (VC). The following members participated in the video conference:

1.	Dr. Uday Kumar R.Y.	-	Chairman (Acting)
2.	Dr. N. Lakshman	-	Member
3.	Dr. Mukesh Sharma	-	Member
4.	Dr. Chandrahas Deshpande	-	Member
5.	Dr. B.K. Panigrahi	-	Member
6.	Dr. A.K. Malhotra	-	Member
7.	Dr. Narayan Shenoy K.	-	Member
8.	Shri Balraj Joshi	-	Member
9.	Shri Sharvan Kumar	-	Representative of CEA
10.	Shri A.K. Singh	-	Representative of CWC
11.	Dr. J.A. Johnson	-	Representative of WII
12.	Dr. A.K. Sahoo	-	Representative of CIFRI
13.	Dr. S. Kerketta	-	Member Secretary

Due to pre-occupation, Dr. K. Gopakumar, Dr. Vijay Kumar, Dr. A. Johnson and Dr. A.K. Sahoo couldn't attend the meeting through video conference.

Item No. 4.0 Confirmation of the minutes of 3rd EAC meeting.

Item No. 3.1.5, Page 24

EAC deliberated on the information and noted EC granted on 03.10.2002 was having validity of 5 years for **commissioning** of the project,…..

Shall be read as

EAC deliberated on the information and noted EC granted on 03.10.2002 was having validity of 5 years for **commencing** the project construction work, …..

Item No. 4.1 Discussion on Project Proposals

Item No. 4.1.1 Completion of Balance Works of Two Units (2x115 MW) at Lower Sileru Hydro Power House and Improvement of Power Canal Works in East Godavari, Andhra Pradesh by V. Surya Lakshmi Regarding ToR. Proposal No. IA/AP/RIV/183996/2020; File No. J-12011/15/2020-IA-1 (R)

Project Proponent along with the consultant (R.S Envirolink) made the detailed presentation on the project and provided the following information to the EAC:

Also, by the end of June 2019, 830 hectare (1030 hectare crop area) has been created in Shirala taluka under this project. Thus a total of 3030 ha (3802 ha) of crop area has been created.

In Part-II, water will be lifted in Single stage to irrigate 15760 ha. Preliminary work for the Part-II is completed. The designing of the part-II is in process. The total expenditure of Rs.211.67 crore is incurred on the Project up to march 2020.

Observation and recommendation of the EAC in the present meeting

EAC after detailed presentation by the Project Proponent observed that the Ministry of Environment & Forest, New Delhi has granted environmental clearance vide letter No. J-12011/48/008-IA-1 dated 19th August 2010 for Wakurde Lift irrigation Scheme in Sangli District in Maharashtra.

The scheme involves Part-I and Part-II. In Part-I water is being lifted from km No. 24 of Warna Left Bank Canal and In Part-II water is being lifted from Km. No.68 of Warna Left Bank Canal. Total command area is 28035 ha. EAC deliberated on the validity extension of existing EC beyond ten years within the regulatory provisions. EAC after detailed deliberation **recommended** granting another three years of validity of extension of EC dated 19.08.2010.

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Item No. 4.1.5 **MP 30 Gandhi Sagar Off-Stream Pumped Storage Project, District Neemuch, Madhya Pradesh by M/s Greenko Energies Private Limited – Regarding Amendment in ToR Proposal No. IA/MP/RIV/184197/2020; File No. J-12011/22/2019-IA-I (R)**

Project Proponent along with the consultant (R.S. Envirolink) made the detailed presentation on the project and provided the following information to the EAC:

Greenko Group through its subsidiary - Greenko Energies Pvt. Ltd., hereinafter referred as GEPL, proposes to develop MP 30 Gandhi Sagar Off Stream Pumped Storage Project (PSP) in Khemla Block (V), Rampura (T) of Neemuch (D) in the state of Madhya Pradesh.

The total capacity of proposed PSP is 1440 MW (10411.2MWH) and envisages non-consumptive utilization of 1.22 TMC of water from existing Gandhi Sagar Reservoir by re-circulation. The gross storage capacity of Gandhi Sagar reservoirs is 258.47 TMC. As such, the proposed project involves creation of upper reservoir at 24° 31' 6.89" North and Longitude is 75° 30' 56.12" East and the existing Gandhi Sagar reservoir at 24° 31' 5.40" North and 75° 32' 5.28" East will be used as lower reservoir. Water from Gandhi Sagar reservoir will be pumped and stored in the upper reservoir which will be used for power generation.

The proposed scheme involves construction of rock fill embankment (upper reservoir) - 35.0 m in height for gross storage of 1.80 TMC water. Water conductor system consists of 6 Nos. wherein 1 No. Independent Pressure shaft bifurcated into 2 for Smaller units. The Powerhouse will be equipped with Five Vertical-axis Reversible Francis type units composed each of generator/motor and a pump/turbine having generated/pumping capacity of eight units of 240 MW / 251 MW and Two Vertical- axis Reversible Francis type units of 120 MW / 135 MW, respectively. As such, the proposed project will generate 1440 MW by utilizing design discharge of 220.91 & 111.10 Cumec

with a rated head of 121.70 m and 121.00 m, respectively for each unit of 240 MW and 120 MW, respectively.

The total land required for construction of various components including infrastructure facilities and muck disposal area is estimated to be around 387.50 ha, involving 282.05 ha of reserved forestland and 105.45 ha of non-forest land. The proposed PSP is located around 3.4 km (South) from the notified eco-sensitive boundary of Gandhi Sagar Wildlife Sanctuary.

GEPL envisages completing the construction of project within a period of 3.5 years at an estimated cost of INR 6991.25Crores. The project was accorded TOR on dated 28.02.2020. An online application for amendment in ToR/EC was submitted on dated 20-11-2020 requesting the Ministry for an amendment in TOR because of following reason:

- After the grant of TOR ground survey was taken up at site, on evaluation of actual data it was observed that actual surveyed contours showed difference of 3-5m i.e. actual elevations observed were higher than the earlier data considered.

- Based on the market survey and energy needs of the DISCOMS, it was observed that number of hours of storage requirement is around 7 hours as against 6 hours earlier envisaged.

- Based on above the optimization of project was taken up and revised PFR has been prepared, major changes in the revised proposal is as below:

1 Based on the optimization of project, the capacity of the project has increased from 1360 to 1440 MW because of availability of higher head i.e. 121.7 as against earlier 113.0.
2 Project Affected families will be greatly reduced to about 50%. However, the exact details shall be provided in the final EIA/EMP studies. (for old proposal-PAFs- about 140 & new proposal PAFs-about 60).
3 Above optimization process has resulted in the slight shift in the location of project components and marginal changes in the sizing of components.
4 Owing to more storage hour requirements of around 7 hours (7.23 hours now in our case) the water requirement for live storage has increased to 1.22 TMC from 1.07, this has also impacted the sizing of components.

The comparative statement with reference to earlier proposal and revised proposal is to be given in table format:

SALIENT FEATURES OF THE PROJECT

		NAME OF THE PROJECT	**MP 30 GANDHI SAGAR Standalone Pumped Storage Project (As per ToR Granted)**	**MP 30 GANDHI SAGAR Off-Stream Pumped Storage Project (Proposed new layout)**
1		**Location**		
	a	Country	India	India
	b	State	Madhya Pradesh	Madhya Pradesh
	c	District	Neemach	Neemach

		NAME OF THE PROJECT	**MP 30 GANDHI SAGAR Standalone Pumped Storage Project (As per ToR Granted)**	**MP 30 GANDHI SAGAR Off-Stream Pumped Storage Project (Proposed new layout)**
	d	Village near Powerhouse	Khemla Block, Rampura Taluk	Khemla Block, Rampura Taluk
2		**Geographical Co-Ordinates**		
	a	Upper Reservoir - (Now Proposed)		
		Latitude	24° 31' 19.90" N	24°31'6.89"N
		Longitude	75° 31' 8.54" E	75°30'56.12"E
	b	**Gandhi Sagar reservoir Reservoir – Lower (Existing)**		
		Latitude	24° 31' 5.4" N	24° 31' 5.4" N
		Longitude	75° 32' 5.28" E	75° 32' 5.28" E
3		**Access to Project Site**		
	a	Airport	Neemach, 85Km from project site	Neemach, 85Km from project site
	b	Rail head	Neemach, 67 Km from project site	Neemach, 67 Km from project site
	c	Road	SH 31A	SH 31A
	d	Port	Navlakhi	Navlakhi
4		**Project**		
	a	Type	Standalone Pumped Storage Project	Off-Stream Pumped Storage Project
	b	Storage Capacity	8160 MWH	10411.20 MWH
	c	Rating	1360 MW	1440 MW
	d	Peak operation duration	6 Hours daily	7.23 Hours daily
5		**Upper Reservoir (Now proposed)**		
	a	Live Storage	1.07 TMC	1.22 TMC
	b	Dead Storage	0.05 TMC	0.58 TMC
	c	Gross Storage	1.12 TMC	1.80 TMC
	d	Full Reservoir level (FRL)	EL +520.00 m	EL +523.00 m
	e	Minimum Draw Down Level	EL +495.00 m	EL +508.00 m

		NAME OF THE PROJECT	MP 30 GANDHI SAGAR Standalone Pumped Storage Project (As per ToR Granted)	MP 30 GANDHI SAGAR Off-Stream Pumped Storage Project (Proposed new layout)
		(MDDL)		
	f	Top Bund Level (TBL)	EL +523.00 m	EL +526.00 m
	g	Foundation Level	EL +490.00 m	EL +491.00 m
	h	Max Height of Embankment	33.00 m	35.00 m
	i	Length of Embankment	5285.00 m	5561.131 m
6		**Gandhi Sagar reservoir – Lower Reservoir – (Existing)**		
	a	Type of Dam	Masonry Gravity Dam	Masonry Gravity Dam
	b	Full Reservoir Level (FRL)	EL 400.00 m	EL 400.00 m
	c	Minimum Draw Down Level (MDDL)	EL 381.00 m	EL 381.00 m
	d	Height of Dam above deepest bed level	63.70 m	63.70 m
	e	Length of Dam	514.00 m	514.00 m
	f	Gross Storage Capacity	258.47 TMC	258.47 TMC
7		**RCC intake Structure**		
	a	Type	Open Semi Circular	Diffuser Type
	b	Elevation of Intake center line	EL +483.87 m	EL +495.50 m
	c	Elevation of bell mouth bottom	EL +478.33 m	EL +491.05 m
8		**Penstock /Pressure Shafts**		
	a	Type	Finished steel lined - circular	Finished steel lined - circular
	b	Number of Penstocks	8 No. of Independent Penstocks	6 Nos., wherein one No. Independent Pressure shaft bifurcated in to 2 for Smaller units
	c	Diameter of penstock	7.0 m - main Penstock	7.5 m - main Penstock 5.3 m – Branch Penstock
	d	Length of penstock/Pressure Shaft	621 m	For 5 nos. - 683.48 m each (Main Penstock) for 5 larger units For 1 No. – 607.23 m long (Main Penstock) and 76.25 m each Branch Penstock for 2

		NAME OF THE PROJECT	MP 30 GANDHI SAGAR Standalone Pumped Storage Project (As per ToR Granted)	MP 30 GANDHI SAGAR Off-Stream Pumped Storage Project (Proposed new layout)
				smaller units.
9		**Powerhouse**		
	a	Type	Surface Powerhouse	Surface Powerhouse
	b	Dimensions (Excluding Service Bay)	201.00 m (L) x 24.00 m (W) x 58.00 m (H)	181.20 m (L) x 25.50 m (W) x 56.10 m (H)
10		**Tail Race Channel**		
	a	Type & Shape	Concrete lined & Trapezoidal	Concrete lined & Trapezoidal
	b	Length of the channel	1056.00 m	860.00 m
	c	Bed Width	90.00 m	85.00 m
	d	Full supply depth	6.0 m	6.0 m
	e	Bed slope	1 in 7200	1 in 7000
11		**Tailrace Outlet Structure**		
	a	Type	Open Semi Circular	Diffuser Type
	b	Elevation of outlet centre line	EL +342.33 m	EL +370.71 m
12		**Hydro-Mechanical Equipment**		
	a	**RCC Intake Structure**		
		Trash Rack		
		No. of Trash racks	8 nos.	6 nos.
		No. of bays in each trash rack	7 Nos. each of size 3.58m (W) x 18.81m (H)	2 nos. of 7.75 m (W) x 10.97 m (H) & 1 no. of 8.5 m (W) x 10.97 m (H) for each unit
		Intake Service Gate	Size – 5.80 m (W) x 7.0 m (H) – 8 Nos. With Rope Drum Hoist	Size – 6.20m (W) x 7.50 m (H) – 6 Nos. With Rope Drum Hoist
		Intake Stop log Gate	Size – 5.80 m (W) x 7.0 m (H) – 2 Nos. with Moving Gantry	Size – 6.20m (W) x 7.50 m (H) – 1 No. with Moving Gantry
	b	**Draft Tube Gates**	High pressure steel type slide gates	High pressure steel type slide gates
		No. of Service gates per unit	Total – 16 nos. 2 per unit each of size W 5.75m X H 5.75 m (Vertical lift fixed wheel type) with Hydraulic Hoist	5 Nos. - 7.0 m (W) x 8.5 m (H) for Larger Units & 2 Nos. - 5.1 m (W) x 6.2 m (H) for Smaller Units with

		NAME OF THE PROJECT	MP 30 GANDHI SAGAR Standalone Pumped Storage Project (As per ToR Granted)	MP 30 GANDHI SAGAR Off-Stream Pumped Storage Project (Proposed new layout)
				Independent Hydraulic Hoist
		No of Stoplog gates per unit	Total – 4 nos. 2 per unit each of size W 5.75 m x H 5.75 m (Vertical lift fixed wheel type) with Rope drum Hoist	1 No. – 7.0 m (W) x 8.5 m (H) for Larger Units & 1 No. - 5.1 m (W) x 6.2 m (H) for Smaller Units with Moving Gantry Crane
	c	**Tailrace Outlet Structure**		
		No. of Trash racks	8 nos.	7 nos.
		No. of bays in each trash rack	2 bays each of size 5.70 m (W) x 41.55 m (H)	2 no's of 6.65m(W) x 10.87 m (H) & 1 no of 6.70 m (W) x 10.87 m (H) for each larger unit& 2 no's of 5.20m(W) x 6.73 m (H) + 1 no of 6.60 m (W) x 6.73 m (H) for each smaller unit
13		**Electro Mechanical Equipment**		
		Pump Turbine	Francis type, vertical shaft reversible pump turbine	Francis type, vertical shaft reversible pump turbine
		Total No of units	8 nos. (8 X 170MW)	7 no's (5x240 MW & 2x120 MW)
		Total Design Discharge (Turbine Mode)	1391 Cumec	1326.75 Cumec
		Rated Head in Turbine mode	113.00 m	121.70 m for larger unit& 121.00 m for smaller unit
	a	**240MW Turbines**		
		Total No of units	8 Units (4Nos. with variable speed & 4 Nos. with Fixed Speed)	5 Units (Fixed speed)
		Turbine Design Discharge	173.88 Cumec	220.91 Cumec
		Pump Capacity	200 MW	251 MW
		Rated Pumping Head	122 m	127.90 m
		Rated Pump Discharge	149.73Cumec	183.86 Cumec
		Synchronous speed	150 rpm	136.36 rpm
	i	**Generator-Motor**		
	a	Type	Three (3) phase, alternating current	Three(3) phase, alternating current synchronous generator

		NAME OF THE PROJECT	MP 30 GANDHI SAGAR Standalone Pumped Storage Project (As per ToR Granted)	MP 30 GANDHI SAGAR Off-Stream Pumped Storage Project (Proposed new layout)
			synchronous/asynchronous generator motor semi umbrella type with vertical shaft	motor semi umbrella type with vertical shaft
	b	Number of units	8 Units (4 Fixed + 4 Variable)	5 Units
	c	Rated Capacity	Generator – 170 MW; Pump Input – 200 MW	Generator – 240 MW; Pump Input – 251 MW
	d	Rated Voltage	15.00 KV	18.00 KV
	ii	**Main Power Transformer**		
	a	Type	Three Single Phase Power transformers with Off-Circuit tap changer (OCTC)	Three Single Phase Power transformers with Off-Circuit tap changer (OCTC)
	b	Number of units	24 Numbers (i.e. 3 Nos./Unit)	15 Numbers (i.e. 3 Nos./Unit)
	c	Rated Capacity of each unit	Single Phase, 15KV/400 KV, 80 MVA	Single Phase, 18KV/400 KV, 100 MVA
	d	Rated Voltage	Primary – 15 kV; Secondary - 400 kV adjustable range of the secondary voltage: - 10% to +10%(3kV/tap)	Primary – 18 kV; Secondary - 400 kV adjustable range of the secondary voltage: - 10% to +10%(3kV/tap)
	b	**120MW Turbines**		
		Total No of units	-	2 Units (Variable speed)
		Turbine Design Discharge	-	111.10 Cumec
		Pump Capacity	-	135 MW
		Rated Pumping Head	-	128.70 m
		Rated Pump Discharge	-	98.16 Cumec
		Synchronous speed	-	187.50 rpm
	i	**Generator-Motor**		
	a	Type	-	Three (3) phase, alternating current asynchronous generator motor semi umbrella type with vertical shaft
	b	Number of units	-	2 Units
	c	Rated Capacity	-	Generator – 120 MW Pump Input – 135 MW
	d	Rated Voltage	-	18 KV

		NAME OF THE PROJECT	**MP 30 GANDHI SAGAR Standalone Pumped Storage Project (As per ToR Granted)**	**MP 30 GANDHI SAGAR Off-Stream Pumped Storage Project (Proposed new layout)**
	ii	**Main Power Transformer**		
	a	Type	-	Indoor, 3-Ph power transformers with Off-Circuit tap changer (OCTC)
	b	Number of units	-	2 Units
	c	Rated Capacity of each unit	-	Each 160 MVA, 18 kV/400kV rating power transformers.
	d	Rated Voltage	-	Primary – 18 kV; Secondary - 400 kV adjustable range of the secondary voltage:-10% to +10%(3kV/tap)
14		**400 KV Gas Insulated Switchgear**		
	a	Type of GIS	Indoor Type	Indoor Type
	b	No. of GIS units	One No.	One No.
	c	Location	Inside GIS Building above ground	Inside GIS Building above Ground
	d	Scheme	Double Busbar Arrangement with bus coupler	Double Busbar Arrangement with coupler
15		**Power Evacuation**		
	a	Voltage Level (KV)	400 KV	400 KV
	b	No. of Transmission lines	One 400 KV transmission line with double circuit.	One 400 KV transmission line with double circuit.
	c	Total Length	400 KV Double Circuit Transmission Lines with Moose conductor of length 50 Kms from PSP will be connected to **400 / 220 KV MPEB substation** at **Neemuch** or to 400/765 kV PGCIL substation at Chittorgarh of Rajasthan State which is about 133Km for evacuation of generated Power and for Supply of power during pumping mode	One 400 KV Double Circuit Transmission Lines with Moose conductor of length **81 Kms (app)** from PSP will be connected to 400/220 kV PGCIL substation at Kota of Rajasthan State for evacuation of generated Power and for Supply of power during pumping mode.
16		**ESTIMATED COST**		

		NAME OF THE PROJECT	MP 30 GANDHI SAGAR Standalone Pumped Storage Project (As per ToR Granted)	MP 30 GANDHI SAGAR Off-Stream Pumped Storage Project (Proposed new layout)
	a	Civil Works	2422.83 Cr.	2797.67 Cr.
	b	E&M Works incl. Transmission line	1986.00 Cr.	1930.50 Cr.
	c	IDC & Others	1645.23 Cr.	2263.08 Cr.
		Total Project Cost with IDC	**6054.06 Cr.**	**6991.25 Cr.**

Observation and recommendation of the EAC in the present meeting:

EAC after detailed presentation by the Project Proponent along with the consultant observed that he project was accorded TOR on dated 28.02.2020 for 1360 MW installed capacity. After the grant of TOR ground survey was taken up at site by the PP and on evaluation of actual data it was observed that actual surveyed contours showed difference of 3-5m i.e. actual elevations observed were higher than the earlier data considered. Based on the market survey and energy needs of the Discoms and on the optimization of project, the capacity of the project has increased from 1360 to 1440 MW because of availability of higher head i.e. 121.7 as against earlier 113.0.EAC further noted that due to revised proposal Project Affected families will be greatly reduced to about 50%. EAC deliberated on the salient features of the revised project and after detailed deliberation **recommended the project for grant of Amendment in ToR** which was granted vide Ministrys letter dated 28.02.2020 to the proposed MP 30 Gandhi Sagar Off-Stream Pumped Storage Project in district Neemuch, Madhya Pradesh.

Item No. 4.1.6 Badaun Lift Canal Project district Badun, Uttar Pradesh by M/s Eastern Ganga Canal, Irrigation Department, Uttar Pradesh - regarding re-consideration of EC Proposal No. IA/UP/RIV/26603/2015; File No. J-12011/02/2015-IA.I (R)

Project Proponent along with the consultant (Enviro Infra Solutions Pvt. Ltd. Ghaziabad) made the detailed presentation on the project and provided the following information to the EAC:

The proposed canal head regulator shall be located on the left bank of Narora barrage at a distance of 12 m from the upstream edge of left bank return wall. It is located on the left bank of the Ganga and is about 5 km from Gunnaur on NH-509.Geographical locations of project area i.e. canal headwork and command area are covered under Survey of India Toposheet No. 53 L/8, L/11, L/12, L/15, L/16; 53P /3 and 53 P /4;54I/9, I/13and 54M/1. The command area of Badaun Lift Canal Irrigation project lies between coordinates (Long 78º24'20" E Lat28º11'40" N) (Long 78º56'40" E, Lat 28º23'20" N) (Long 79º11'20" E, Lat 28º07'00" N) (Long 78º51'40" E, Lat 27º58'20" N). The command of the Badaun lift irrigation scheme falls in five tehsils namely Gunnaur, Sahaswan, Bisauli, Bilsi and Sadar. Sahaswan, Bisauli, Bilsi and Sadar tehsils are in Badaun district and Gunnaur tehsil is in Sambhal district.

The project envisages utilizing 102 cumecs of surplus monsoon discharge at Narora for irrigating upland of Badaun and Sambhaldistrict. The scheme envisages construction of a canal head regulator on upstream left bank of Narora Barrage to divert 102 cumec of water from the pond to 20.05 km long gravity main canal up to village Dhanwara followed by lifting by 15 m across MahawaNadi into balance