

MP30 OSPSP/MoEF&CC-SMR/211223

Date: 21.12.2023

To

The Deputy Director General of Forests (C),  
Ministry of Environment Forest & Climate Change  
Integrated Regional Office, E-5 Kendriya Paryavaran Bhawan  
E-5 Arera Colony, Link Road-3  
Ravishankar Nagar, Bhopal-462016 (MP),

**Sub:** MP 30 Gandhi Sagar Off Stream Pumped Storage Project (1440 MW) in Neemuch District, Madhya Pradesh by M/s Greenko MP01 IREP Pvt. Ltd - Submission of Half Yearly (Six Monthly) Compliance Report for the period April 2023 - September 2023 -reg

**Ref:** Environmental Clearance Letter No. J-12011/22/2019-IA.I.(R) Dated: 01-12-2021 and its amendment Dated: 13-02-2023.

Dear Sir,

Environmental clearance was accorded to MP30 Gandhi Sagar Off stream Pumped Storage Project 1440 Mw. With reference to the above-cited letter, we are herewith submitting the half-yearly EC compliance report for the period from April 2023 to September 2023 as per the EIA notification of 2006 on the Parivesh portal.

We trust that the measures taken towards environmental safeguards comply with the stipulated environmental conditions. We look forward to your further guidance, which will certainly help us in our endeavour to further improve our environmental management practices.

Thanking You

Yours Sincerely

For **Greenko MP01 IREP Pvt. Ltd.**

Authorized Signatory



Encl: Compliance report along with annexures

- Cc:
1. The Director, Environment impact Assessment Division (River Valley & Hydro Electric Projects) MoEF&CC, Indira Paryavaran Bhavan, Vayu Wing, Jor Bagh Road, New Delhi-110003.
  2. The Member Secretary, State Pollution Control Board, E-5, Arera Colony, Paryavaran Parisar, Bhopal - 462 016.
  3. The Regional Officer, Regional office MPPCB, Ujjain- 456001 (MP).

**HALF YEARLY COMPLIANCE TO THE CONDITIONS  
STIPULATED IN ENVIRONMENTAL CLEARANCE ISSUED  
BY MOEF&CC  
VIDE ORDER NO. J-12011/22/2019-IA-I (R)  
Dated: 1<sup>st</sup> December,2021 & TRANSFER OF  
ENVIRONMENTAL CLEARANCE (AMENDMENT) Dated: 13<sup>th</sup>  
February,2023.**

**Period: Apr 2023 to Sep 2023**

By

**GREENKO MP01 IREP PRIVATE LIMITED**

**(MP30 GANDHI SAGAR OFF STREAM PUMPED**

**STORAGE PROJECT**

**(1440 MW)**

***Khemla Block village, Rampur Tehsil,  
Neemuch District, Madhya Pradesh***

## **1. INTRODUCTION**

MP 30 Gandhi Sagar is an Off-Stream pumped Storage Project comprising of two reservoirs i.e., Gandhi Sagar lower reservoir (already existing) and MP 30 Gandhi Sagar Upper Reservoir (to be constructed). The project is called Off-Stream project because the proposed reservoir is not located on any river course and the existing Gandhi Sagar reservoir is located across River Chambal. Power generated from the proposed project will be pooled into common pooling station and connected to PGCIL/CTU sub-station for further supply into the National Grid.

Environmental Clearance has been obtained for MP30 Off stream Standalone Pumped Storage component vide order no. J-12011/22/2019-IA.I.(R) dated: 01-12-2021 and its amendment Transfer of EC with dated: 13-02-2023.

## **2. DETAILS OF THE PROJECT**

Proposed MP 30 Gandhi Sagar Off-Stream Pumped Storage Project is in Neemuch District of Madhya Pradesh. It envisages creation of upper reservoir which is located away from all existing natural systems. The project is about 78 Kms from district headquarters Neemuch via MP SH 31A. Nearest railhead and airport are located at Neemuch and Udaipur, respectively. The nearest village to the project is Khemla block about 0.5 Km, which comes under, Rampura tehsil, Neemuch District.

The MP 30 Gandhi Sagar Off stream Pumped Storage project envisages the construction of rockfill embankment with height of 35m for the length of 5561.13m for creation of MP 30 Gandhi Sagar Off-Stream PSP upper reservoir with a 1.80 TMC gross capacity. The Gandhi Sagar reservoir (existing) will be utilised as lower reservoir that is under operation with a gross storage capacity of 258.47 TMC and MP 30 Gandhi Sagar Off Stream PSP is proposed for the live storage capacity of 1.22 TMC. Six nos. of independent Penstock / Pressure Shafts will be taking off from Intake structure provided with Trash rack and Gates located in MP 30 Gandhi Sagar Off-Stream PSP upper reservoir. Surface Powerhouse will be located on the downstream of the intake structure and shall be equipped with Seven Vertical-axis Reversible Francis type units composed each of generator/motor and a

pump/turbine having generated/pumping capacity of Five units of 240 MW / 251 MW and Two Vertical axis Reversible Francis type units of 120 MW / 135 MW, respectively.

### 3. STATUS OF IMPLEMENTATION OF PROJECT

The company has obtained all statutory permissions for initiating the construction works. The construction works for the proposed project has been initiated and excavation works are in progress.

### 4. COMPLIANCE TO THE CONDITIONS OF ENVIRONMENTAL CLEARANCE

S. No.	EC Conditions	Status of Compliance
<b>Part-A: Additional Conditions</b>		
(i)	Safe and secured passage to empty the reservoir in case of leakage or any catastrophic events shall be carried out.	Appropriate Disaster management Plan has been incorporated in the EIA/EMP. Which shall be followed in to.to. the same will be updated in the ERDMP report.
(ii)	Rainwater harvesting shall be carried out. Surpluse water and harvested rainwater shall be used as irrigation in area.	Noted, the harvested rainwater and the surplus water shall be used for irrigation
(iii)	Compensatory afforestation done by Forest Department; the survival rate of plant shall maintain more than 95%.	CA Scheme shall be implemented by State Forest Department. PP shall co-ordinate with Forest Department for its effective implementation.
(iv)	PP shall ensure the Ambient Air Quality Monitoring Stations for real time data display and regularly submit to respective Ro, MoEF&CC	Noted, air quality monitoring shall be carried by third party NABL/QCI and the same will be submitted to respective Ro, MoEF&CC.
(v)	The Environment 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.	Noted. An EMP cost 11944.74 Lakhs has been earmarked towards EMP. The same shall be utilized during the construction/ operation of project.

<b>S. No.</b>	<b>EC Conditions</b>	<b>Status of Compliance</b>
(vi)	The status of compliance will be submitted to the regional Office of the Ministry along with six monthly compliance report.	Noted. Shall be complied
(vii)	A multi-specialty hospital to cater the need of people living within 10km radius of the project shall be established.	This provision shall be taken up under the section for Local Area development plan in consultation with the District Administration / Gram Panchayat.
(viii)	Solar lights and associated solar panels be provided to the families living in rural areas within 10km radius of project.	This provision shall be taken up under the section for Local Area development plan in consultation with the District Administration / Gram Panchayat.
(ix)	Computer labs with internet facility shall be established in primary schools within 10km radius of project.	Implemented under the LADP plan
(x)	Sport complex with multi- sport facility shall be established. The children's from economically weaker section shall be given free of cost spot facility.	This provision shall be taken up under the Local Area development plan in consultation with the District Administration / Gram Panchayat.
(xi)	The Multi-Disciplinary Committee needs to be constituted and the meeting needs to be held at regular interval.	Noted. Shall be complied
(xii)	PP should establish in house (at project site) environment laboratory for measuring 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.	Prior start of construction, dedicated team will be set up to oversee the environmental safeguards and implementation of environmental management. Necessary environmental monitoring will be conducted by NABL & QCI accredited third parties.
(xiii)	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.	As stipulated, post ESIA will be conducted through third party.
(xiv)	Solid waste generated, especially plastic waste, etc. should not be disposed of as	As stipulated, land filling of the plastic waste will be avoided.

S. No.	EC Conditions	Status of Compliance
	landfill material. It should be treated with scientific approach and recycled. Use of single-use plastics may be discouraged.	
(xv)	Necessary permission to be obtained for quarrying construction materials for the project as per the EIA Notification, 2006 and subsequent amendments thereof.	Noted. Shall be complied
(xvi)	Disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery to minimize the impacts of the generated construction muck shall be taken up pari-passu with construction work.	Muck shall be disposed off at the sites earmarked, and measures listed in the EIA/EMP will be followed to minimize the impacts.
(xvii)	After detailed geological study of muck, re-utilization of muck during the construction of dam is to be carried out.	Utilisation of muck generated during construction has been detailed in muck management plan.
(xviii)	A detailed ecological monitoring and survey covering forestry, fisheries, wildlife and its habitat shall be done once in two years. Monitoring report shall be uploaded on the Parivesh Portal and a copy of the same be submitted to the Regional Office of MoEF&CC.	Shall be implemented, and the same will be updated along with a half-yearly compliance report.
(xix)	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.	Noted, the private land required for the project is proposed to be purchased through a voluntary sale with a willing buyer and seller process. The process is undertaken through direct negotiations between landowners and Project Proponent with no obligation on the seller.
<b>Part-B: Annexure-I</b>		
<b>(Standard EC Conditions for River Valley and Hydroelectric projects)</b>		
(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.	We have obtained Stage-II, the Ministry of Environment, Forest & Climate change had issued Stage-II approval for diversion of 301.96 Ha Forest land for construction of pumped storage project

S. No.	EC Conditions	Status of Compliance
		in Neemuch Forest Division, Neemuch District of Madhya Pradesh in Favor of M/s Greenko Energies Pvt. Limited on 09.06.2023. Enclosed as <b>Annexure-1</b>
(ii)	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable	The project is falling outside from the ESZ boundary of Gandhi Sagar WLS. Hence NBWL clearance is not applicable. Necessary confirmation has been obtained on dated 12.02.2021. Copy Enclosed as <b>Annexure-2</b>
(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, (in case of the presence of Schedule-I Species in the study area).	Approved Wildlife Conservation Plan with a budget of Rs 211.90 Lakhs has been deposited in the State CAMPA account. Bank Challans Enclosed as <b>Annexure-3</b>
(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.	Consent to Establish has been obtained from State Pollution Control Board vide Consent No: CTE-57735 dated: 03.03.2023. Copy of the same is enclosed as <b>Annexure-4</b> .
(v)	NOC shall be obtained from National Commission of Seismic Design Parameters (NCSDP) of CWC.	Presented in 37th NCSDS meeting-approval is awaiting.
(vi)	Necessary approval of CEA shall be obtained for those projects having the project cost more than Rs.1,000 crores.	Pre DPR approvals has been obtained, CEA excavation permission obtained and final concurrence of DPR is in process.
<b>II. Air quality monitoring and preservation</b>		

S. No.	EC Conditions	Status of Compliance
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.	As the project is Standalone PSP and as mentioned in EIA to conduct Seasonal Monitoring of Air quality, Water quality and noise levels is being carried out as per stipulation and copies of the same will be submitted from time to time.
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.	Air pollution control measures like dust suppression, providing all dust control equipment's for batching plants will be followed.
iii.	Necessary control measures such as water sprinkling arrangements, etc. be taken up to arrest fugitive dust at all the construction sites.	Necessary control measures like water sprinkling arrangements will be taken up to mitigate fugitive dust at all the construction sites
<b>III. Water quality monitoring and preservation</b>		
i.	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.	Not Applicable, as the project is an Off-Stream Pumped Storage Project and not a run-off river project.
ii.	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.	Not Applicable, as the project is an Off-Stream Pumped Storage Project and not a run-off river project.
<b>IV. Noise monitoring and prevention</b>		
i	All the equipment likely to generate high noise shall be appropriately enclosed or inbuilt noise enclosures be provided so	Shall be Complied.



S. No.	EC Conditions	Status of Compliance
	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 daytime and 70dB(A) during nighttime.	Shall be Complied.
<b>V. Waste management</b>		
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.	Muck is being disposed to the sites earmarked. We hereby assure that we will make efforts to reuse the muck for Embarkment construction and other filling purposes.
ii	Solid waste management should be planned in detail. 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.	As stipulated land filling of plastic waste will be avoided.
<b>VI. Green Belt and wildlife Management</b>		
i	Wildlife Conservation Plan approved by the Chief Wildlife Warden shall be implemented in consultation with the local State Forest Department.	We hereby assure that we will implement the Wildlife Conservation Plan approved by the Chief Conservator of Forest. Orders Issued vide: No. F4/23/2021/10-11/1355 dated 5-04-23. (Copy of the same is enclosed as <b>Annexure- 5</b> )
ii	To enrich the habitat of the project site, plantation shall be raised as envisaged in the EIA/EMP report. Plantation to be	We are in the process of developing the necessary plantations as stipulated in FC Stage II approval with the consultation

S. No.	EC Conditions	Status of Compliance
	developed along the periphery of the reservoir in multi-layers with local indigenous species in consultation with the local State Forest Department.	of the local State Forest Department.
iii	Compensatory afforestation programme shall be implemented as per the plan approved.	Implementation of the afforestation programme shall be undertaken by the State Forest Department.
<b>VII. Public hearing and Human health issues</b>		
i	Resettlement & Rehabilitation plan be implemented in consultation with the State Govt. as approved by the State Govt, if any.	There is no displacement involved in the project. Hence no resettlement is involved. Only partial land holding is being acquired and Rehabilitation provisions have been earmarked in the EMP report.
ii	Budget provisions made for the community and social development plan including community welfare schemes shall be implemented in toto.	Being Complied. Status of LADP is enclosed as <b>Annexure-6</b> .
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.	As stipulated, we will implement preventive measures stipulated for mosquito control.
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, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	As per the stipulation, provision has been made for housing of labour and necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc are being provided.
v	Labour force 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	Pre-Medical examination will be done before deputing them for construction works

S. No.	EC Conditions	Status of Compliance
	construction sites.	
vi	Early Warning Telemetric system shall be installed in the upper catchment area of the project for advance intimation of flood forecast.	Not Applicable, since the project is an Off-Stream Pumped Storage Project and not a run-off river project.
vii	Emergency preparedness plan be made for any eventuality of the dam failure and shall be implemented as per the Disaster Management Plan	Emergency preparedness response plan prepared and approved by the management attached as enclosed copy <b>Annexure-7.</b>
<b>VIII. Corporate Environment Responsibility</b>		
i	The Project Proponent shall comply with the provisions contained in this Ministry's OM Vide F.No. 22-06/2017-1 A. III dated 01.05.2018, as applicable regarding Corporate Environmental Responsibility.	We hereby assure that we will undertake activities as per CER
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 longtime livelihood generation	Skill Development training for the local youth is planned under the LADP. This year 25 Youth are proposed for the above programme.
iii	The Company shall have a well laid down environmental policy duly approved 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.	Noted.
iv	A separate Environmental Cell both at	Implemented.

S. No.	EC Conditions	Status of Compliance
	the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly report 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.	Noted, Shall be complied.
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.	As stipulated, we will prepare Post EIA and SIA through Third party 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 on the website of the Company.	We are in the process of forming a committee with experts from Ecology, Forestry, Wildlife, Sociology, Soil Conservation, Fisheries, NGO, etc for monitoring the implementation of various environmental safeguards proposed in EIA/EMP report during construction of the project.
	<b>IX. Miscellaneous</b>	
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 prominently advertising it at least in two local	Complied, abstract of Environmental Clearance was published in two widely circulated daily newspapers one in vernacular language i.e. Hindi in Malwa Today dt. 24.12.2021, one in English language i.e The Times dt. 05.01.2022 in

S. No.	EC Conditions	Status of Compliance
	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.	main edition. The copy of the same is enclosed as <b>Annexure-8</b> .
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.	Complied, copies of the Environmental clearance letters were submitted to the local bodies and displayed for 30 days. Copy of the same is enclosed as <b>Annexure-9</b> .
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.	As stipulated, we will submit the status of compliance of the stipulated environment clearance conditions from time to time
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.	Noted
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.	We will submit Form – V as stipulated to SPCB during the operation of the project
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	As stipulated, we will inform the Regional Office as well as the Ministry, the milestones of the project through Half – yearly compliance reports

S. No.	EC Conditions	Status of Compliance
	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.	We hereby assure that we will 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.	Noted, shall be complied. Status of LADP is Enclosed as <b>Annexure-6.</b>
ix	No further expansions or modifications in the plant shall be carried out without prior approval of the Ministry of Environmental, Forest and Climate Change (MOEF&CC).	Shall be Complied.
x	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.	Shall be complied.
xi	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Noted.
xii	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.	Shall be complied.
xiii	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.	We hereby assure that we will extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports for monitoring the compliance of the stipulated conditions
xiv	The above conditions shall be enforced,	Noted.

<b>S. No.</b>	<b>EC Conditions</b>	<b>Status of Compliance</b>
	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.	
xv	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.	Noted.

## ANNEXURES

Annexure no.	Annexure
1	Forest clearance copy
2	Clarification on distance between ESZ to Project boundary
3	Challans generated for payment against conservation plan
4	CTE copy
5	Approved conservation plan
6	Status of LADP activities
7	EMRDP Report
8	Copy of the paper advertisement
9	Letter submitted to local bodies for display of EC copy



**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Forest Conservation Division)**  
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**Indira Paryavaran Bhawan,**  
Aliganj, Jor Bagh Road,  
New Delhi – 110003.  
**Dated: 9th June, 2023**

To,

**The Principal Secretary (Forests),**  
Government of Madhya Pradesh,  
Bhopal.

**Subject: Diversion of 301.96 ha forest land for the construction of MP-30 Gandhi Sagar off-stream Pumped Storage Project (1440 MW) by M/s Greenko Energies Private Limited, Hyderabad in Neemuch Forest Division, Neemuch District of Madhya Pradesh State (Online No. FPIMP/HYD/116943/2020) - regarding.**

Madam/Sir,

I am directed to refer to the Addl. Principal Chief conservator of Forests (Land Management) and Nodal Officer, Forest (Conservation) Act, 1980, Government of Madhya Pradesh's letter No. F4/23/2021/10-11/2058 dated 28.06.2021 on the above mentioned subject, seeking prior approval of Central Government under Section-2(ii) of the Forest (Conservation) Act, 1980. After careful consideration of the proposal by the Forest Advisory Committee constituted by the Central Government under Section-3 of the said Act, '*In-principle /Stage -I* approval to the proposal was accorded vide this Ministry's letter of even number dated 24.08.2021 subject to fulfillment of certain conditions prescribed therein. The State Government has furnished compliance report in respect of the conditions stipulated in the in-principle approval and has requested the Central Government to grant final approval.

2. In this connection, I am directed to say that on the basis of the compliance report furnished by the Government of Madhya Pradesh vide letter no. F-4/23/2021/10-11/648 dated 10.02.2023, letter no. F-4/23/2021/10-11/1419 dated 10.04.2023, and letter no. F-4/23/2021/10-11/1971 dated 16.05.2023 '**Final/Stage-II approval**' of the Central Government is hereby accorded under Section-2(ii) of the Forest (Conservation) Act, 1980 for non-forest use of 301.96 ha reserved forest land for the construction of MP-30 Gandhi Sagar off-stream Pumped Storage Project (1440 MW) by M/s Greenko Energies Private Limited, Hyderabad in Neemuch Forest Division, Neemuch District of Madhya Pradesh State subject to the following conditions:

**A: Conditions which need to be complied prior to handing over of forest land**


  
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**to user agency by the State Govt.:-**

- i. The State Government shall ensure that the notification of non-forest land 303.482 ha identified for Compensatory Afforestation (*which has been notified as Protected Forest under the relevant provisions of the Indian Forest Act-1927 by the State Government against this proposal vide notification no. 318/R-1083750/2023/10-3 dated 08.02.2023*) as Protected Forest is published in the Official Gazette prior to handing over of forest land to user agency;
- ii. The State Government shall ensure that the user agency implements the R&R Plan as per the R&R Policy of State Government in consonance with National R&R Policy, Government of India before the commencement of the project work and implementation. The said R&R Plan will be monitored by the State Government/Regional Office of MoEF&CC along with indicators for monitoring and expected observable milestones;
- iii. The State Government shall ensure that compliance of Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 has been completed in accordance with the relevant Rules and Guidelines issued by the MoEF&CC in this regard, before handing over of forest land to the user agency;
- iv. The State Government shall ensure that proposed forest land i.e. 301.96 ha shall be handed over to the user agency only when the user agency has acquired the required non-forest land, if any, for the project.

**B: Conditions which need to be complied after handing over of forest land to the user agency by the State Govt.:-**

- i. Legal status of the forest land shall remain unchanged;
- ii. The State Government shall ensure that the Wildlife Conservation Plan approved by CWLW in consultation with WII shall be implemented at the cost of the user agency with an added focus on compensating the lost habitat of schedule species, especially Schedule-I reptilians (e.g. Indian Rock Python, Indian Monitor Lizard, etc.) and avi-fauna, and their improvement in the adjoining forest areas along with creation of alternative water resources in the adjoining forests to minimize the chances of such accidental death of wild animals;
- iii. The State Government shall ensure that the comprehensive plan regarding the protection, conservation and improvement of areas surrounding the reservoir, roads and other components of the project shall be implemented at the cost of the user agency with an added focus on regeneration/plantation of vulnerable species found in the area, such as *Pterocarpus marsupium* which is in IUCN Red List of 'Near Threatened' species. Furthermore, such plan should also improve the drainage to augment water supply to the nearby village tank. In addition, trees of such species will be planted and maintained at project cost on either side of the roads and other areas, wherever possible;
- iv. The State Government shall also ensure strict implementation of the muck management plan;
- v. The State Government shall ensure that no cultivation is allowed in the areas proposed for CA and adequate arrangements are made to ensure that there

  
09/06/23

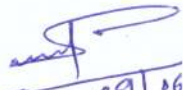
is no resultant encroachment in the adjoining forest area. Same principle shall be applied for forest land to be diverted;

- vi. The State Government shall ensure that the evacuation and transmission of power system should pass through non-forest land or that the barest minimum forest land shall be used or existing infrastructure shall be used up to technically feasible extent. Further, it is made clear that the prior-approval of this instant project proposal shall in no way create a *fate-accompli* situation for a later evacuation/transmission project proposal, and the Govt. of India shall be under no obligation to necessarily approve such a proposal whenever such a proposal for forest land diversion is submitted by the State Government;
- vii. The State Govt. shall ensure that as per the recommendation of CWLW, the fencing near the reservoir and the construction of underpasses along the roads shall be carried out by the user agency at its own cost.
- viii. Compensatory Afforestation shall be raised over identified non-forest land 303.482 ha (*which has been notified as Protected Forest under the relevant provisions of the Indian Forest Act-1927 by the State Government against this proposal vide notification no. 318/R-1083750/2023/10-3 dated 08.02.2023*) within a period of three years with effect from the date of issue of Stage-II approval and maintained thereafter in accordance with the approved Plan in consultation with the Forest Department at the cost of the user agency. As far as practicable a mixture of local indigenous species will be planted and mono-culture of a species has to be avoided;
- ix. Additional amount of the NPV of the diverted forest land, if any, becoming due after finalization of the same by the Hon'ble Supreme Court of India on receipt of the report from the Expert Committee, shall be charged by the State Government from the User Agency;
- x. User agency shall restrict the felling of trees to minimum number in the diverted forest land and the trees shall be felled under the strict supervision of the State Forest Department;
- xi. The felling of trees shall be restricted to FRL-4 meter only and felling of trees shall be carried out by the State Forest Department. Number of trees to be removed shall be kept at barest minimum during the execution of the project.;
- xii. User agency shall undertake afforestation along the periphery of the reservoir;
- xiii. User Agency shall obtain Environmental Clearance as per the provisions of the Environmental (Protection) Act, 1986, if applicable;
- xiv. The layout plan of the proposal shall not be changed without prior approval of Central Government;
- xv. No labour camp shall be established on the forest land;
- xvi. Sufficient firewood, preferably the alternate fuel, shall be provided by the User Agency to the labour after purchasing the same from the State Forest Department or the Forest Development Corporation or any other legal source of alternate fuel;
- xvii. The boundary of the diverted forest land shall be suitably demarcated on ground at the project cost, as per the directions of the concerned Divisional Forest Officer;
- xviii. No additional or new path will be constructed inside the forest area for transportation of construction materials for execution of the project work;

  
09/06/23

- xix. The period of diversion under this approval shall be co-terminus with the period of lease to be granted in favour of the user agency or the project life, whichever is less;
- xx. The User Agency and the State Government shall ensure compliance of all the Court orders, provisions, rules, regulations and guidelines for the time being in force as applicable to the project;
- xxi. The forest land shall not be used for any purpose other than that specified in the project proposal;
- xxii. User agency shall provide free water for forestry related activities/ projects;
- xxiii. The forest land proposed to be diverted shall under no circumstances be transferred to any other agencies, department or person without prior approval of Govt. of India;
- xxiv. Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as prescribed in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act, 1980 as issued by this Ministry's letter No. 5-2/2017-FC dated 28.03.2019;
- xxv. Any other condition that the Ministry of Environment, Forests & Climate Change may stipulate from time to time in the interest of conservation, protection and development of forests & wildlife;
- xxvi. The State Government and User Agency shall ensure compliance of all conditions stipulated in the Stage-I approval letter of even number dated 24.08.2021 for which undertakings have been obtained from the user agency and also the provisions of the all Acts, Rules, Regulations and Guidelines, relevant Hon'ble Court Order (S) and NGT Order (S), if any, pertaining to this project for the time being in force, as applicable to the project.

Yours sincerely,

  
(Suneet Bhardwaj) 09/06/23

**Assistant Inspector General of Forests**

**Copy to:**

1. The PCCF (HoFF), Department of Forest, Government of Madhya Pradesh, Bhopal;
2. The Regional Officer, Integrated Regional Office, MoEF&CC, Bhopal;
3. The Nodal Officer (FCA), Department of Forest, Government of Madhya Pradesh, Bhopal;
4. User Agency;
5. Monitoring Cell, FC Division, MoEF & CC, New Delhi for uploading on PARIVESH portal.

## कार्यालय प्रधान मुख्य वन संरक्षक (वन्यप्राणी), मध्य प्रदेश

प्रगति भवन, भोपाल विकास प्राधिकरण, तृतीय तल, एम.पी.नगर, भोपाल

दूरभाष : 0755-2674318, 2674337, फ़ैक्स : 0755-2766315

E-mail : pccfwl@mp.gov.in

क्रमांक/व.प्रा./मा.चि./GEN-270/ 1224  
प्रति,

भोपाल, दिनांक 12-2-2021

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

**विषय :- MP 30 Gandhi Sagar Off-Stream Pumped Storage Project (1440 MW) and ESZ boundaries of Gandhi Sagar WLS.**

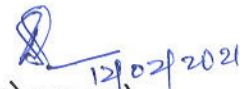
**संदर्भ :-** 1. आपका पत्र क्रमांक GEPL/MP03GSPS/EC/CWLW/202022 dated 22.12.2020,  
2. संचालक, भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय (I.A. I Division) नई दिल्ली का पत्र क्रमांक J-12011/22/2019 IA-I दिनांक 28.02.2020

—00—

उपरोक्त विषयांतर्गत संदर्भित पत्र क्रमांक-1 से आपके द्वारा ग्रीनको एनर्जी प्रायवेट लिमिटेड, हैदराबाद के नीमच जिले में गांधी सागर स्टैंडलोन पम्पड स्टोरेज प्रोजेक्ट संबंधी प्रकरण में भारत सरकार द्वारा संदर्भित पत्र क्रमांक-2 से जारी टी.ओ.आर. दिनांक 28.02.2020 के बिन्दु क्रमांक 9(xviii) में उल्लेखित शर्त अनुसार मुख्य वन्यप्राणी अभिरक्षक का योजना स्थल गांधी सागर अभयारण्य के ईको सेंसेटिव जोन के बाहर होने संबंधी प्रमाण-पत्र एवं अभिप्रमाणित मानचित्र चाहा गया है।

उपरोक्त संबंध में वनमण्डलाधिकारी, सामान्य वनमण्डल मंदसौर द्वारा पत्र क्रमांक/मा.चि./2021/1040 दिनांक 08.02.2021 से अभिप्रमाणित मानचित्र सहित प्रतिवेदन प्रेषित किया गया है। प्रतिवेदन अनुसार ग्रीनको एनर्जी प्रायवेट लिमिटेड, हैदराबाद के स्टैंडलोन पम्पड स्टोरेज प्रोजेक्ट हेतु प्रस्तावित स्थल की गांधी सागर अभयारण्य के दक्षिणी कक्ष क्रमांक-936 के बाहरी क्षेत्र जी.पी.एस रीडिंग N 24°34'15.00" E-75°31'05.00" से प्रस्तावित कार्य स्थल के सबसे निकटतम कार्यस्थल मैगनिज (बारूद गोडाऊन) जी.पी.एस. रीडिंग N 24°32'4.00" E-75°30'55.00" की न्यूनतम दूरी (एरियल डिस्टेंस) लगभग 4 कि.मी. है। भारत सरकार द्वारा दिनांक 05.12.2016 को गांधी सागर अभयारण्य के ईको-सेंसेटिव जोन की जारी अंतिम अधिसूचना अनुसार ईको-सेंसेटिव जोन की सीमा अभयारण्य की सीमा से 3 कि.मी. तक अधिसूचित की गई है। इस प्रकार प्रस्तावित क्षेत्र ईको-सेंसेटिव जोन की सीमा से लगभग 1 कि.मी. बाहर स्थित है। अभिप्रमाणित मानचित्र की 02 प्रतियां संलग्न कर आवश्यक कार्यवाही हेतु प्रेषित प्रेषित है।

संलग्न :- उपरोक्तानुसार।



(आलोक कुमार)

न8मुख्य वन्यप्राणी अभिरक्षक एवं  
प्रधान मुख्य वन संरक्षक (व.प्रा.), म.प्र.

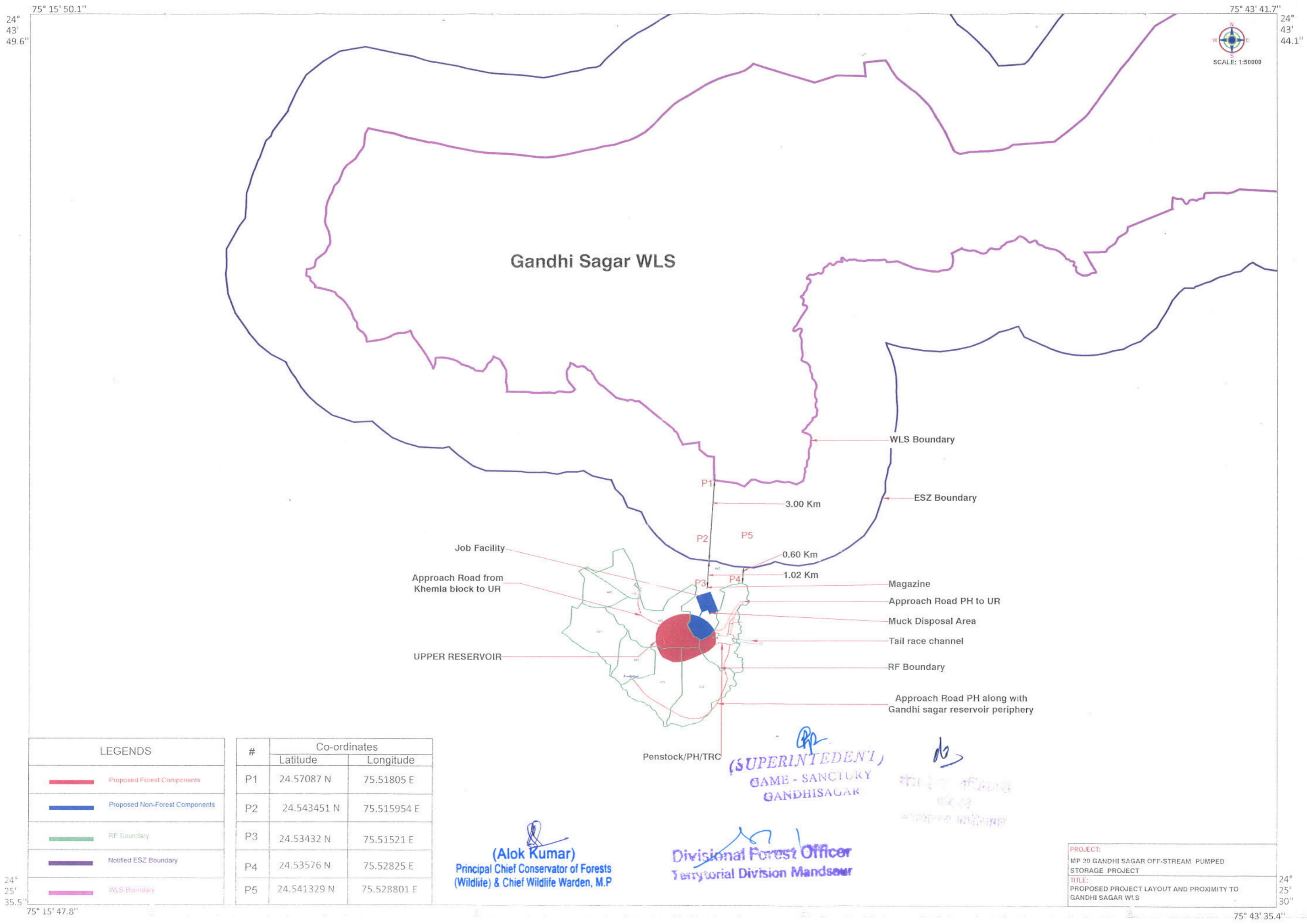
भोपाल, दिनांक 12-2-2021

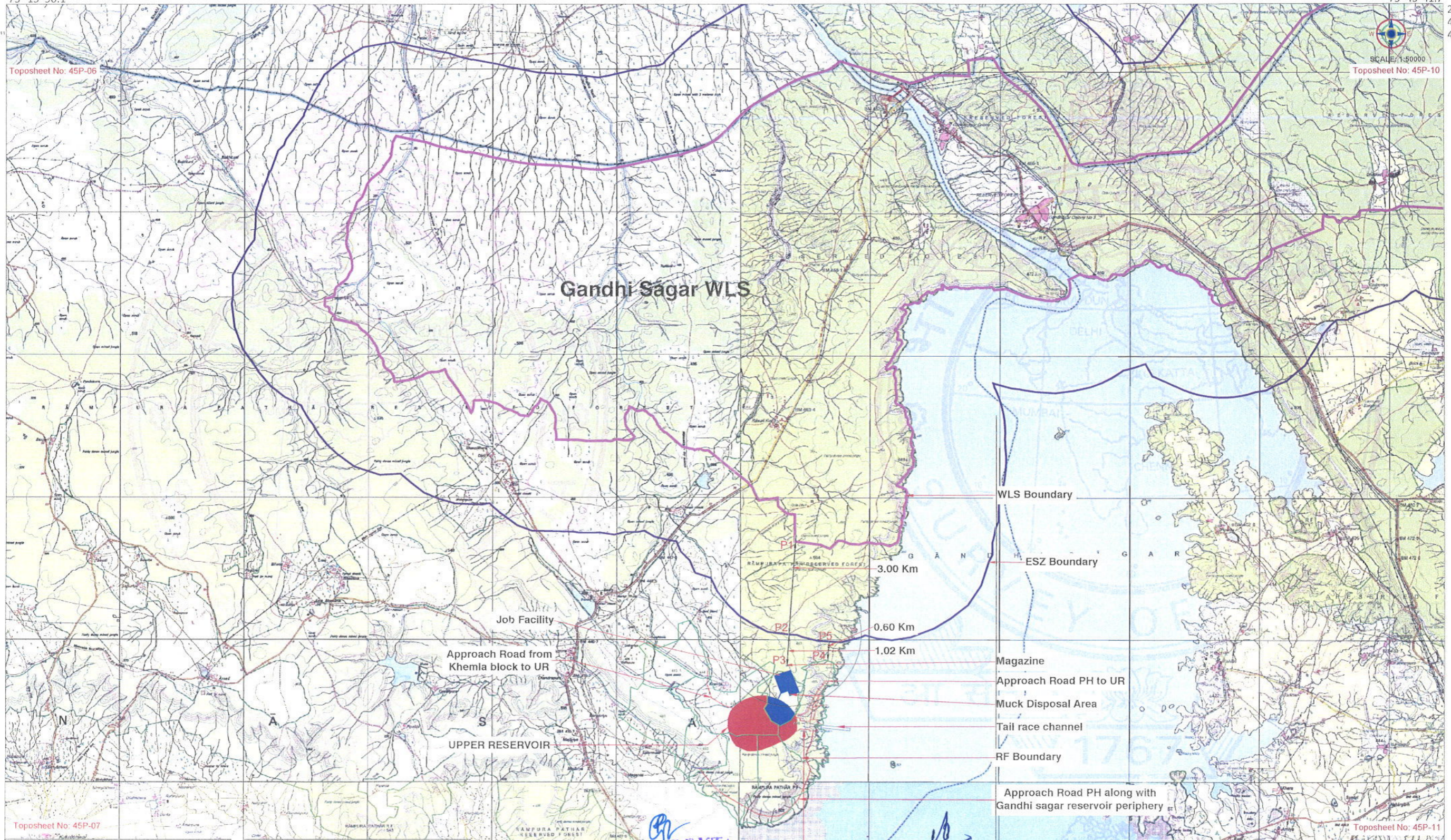
पृ0 क्रमांक/व.प्रा./मा.चि./GEN-270/ 1225  
प्रतिलिपि :-

1. संचालक, भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय (I.A. I Division) इंदिरा पर्यावरण भवन, तीसरी मंजिल, वायु विंग, जोर बाग रोड़, नई दिल्ली ओर आपके संदर्भित पत्र दिनांक 28.02.2020 के क्रम में सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
2. मुख्य वन संरक्षक, उज्जैन वृत्त उज्जैन की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
3. वनमण्डलाधिकारी, सामान्य वनमण्डल मंदसौर की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।



मुख्य वन्यप्राणी अभिरक्षक एवं  
प्रधान मुख्य वन संरक्षक (व.प्रा.), म.प्र.





LEGENDS

- Proposed Forest Components
- Proposed Non-Forest Components
- RF Boundary
- Notified ESZ Boundary
- WLS Boundary

#	Co-ordinates	
	Latitude	Longitude
P1	24.57087 N	75.51805 E
P2	24.543451 N	75.515954 E
P3	24.53432 N	75.51521 E
P4	24.53576 N	75.52825 E
P5	24.541329 N	75.528801 E

(SUPERINTENDENT)  
GAME SANCTUARY  
GANDHISAGAR

(Alok Kumar)  
Principal Chief Conservator of Forests  
(Wildlife) & Chief Wildlife Warden, M.P

Divisional Forest Officer  
Territorial Division Mandsaur

गैम रेंज अधिकारी  
परिचय  
विद्यारण्य गांधीसागर

GREENKO ENERGIES PVT. LTD.

PROJECT:  
MP 30 GANDHI SAGAR OFF-STREAM PUMPED STORAGE PROJECT

TITLE:  
PROPOSED PROJECT LAYOUT AND PROXIMITY  
GANDHI SAGAR WLS

AUTHORIZED SIGNATORY:  
*Rahul Adhikari*

PAPER SIZE : A3 PREPARED BY : MJ

## NEFT RTGS CHALLAN

AGENCY COPY



NEFT / RTGS CHALLAN for CAMPA Funds  
Date : 05-12-2022

Agency Name.	GREENKO ENERGIES PRIVATE LIMITED
Application No.	56116943355
MoEF/SG File No.	8-18/2021-FC
Location.	MADHYA PRADESH
Address.	Plot no-1071, Road No-44, Jubilee Hills, HyderabadHyderabad
Amount(in Rs)	397313766/-




Amount in Words :Thirty-Nine Crore Seventy-Three Lakh Thirteen Thousand Seven Hundred and Sixty-Six Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	MADHYA PRADESH CAMPA
IFSC Code:	UBIN0996335
Pay to Account No.	1507656116943355 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India FCS Centre,21/1, III Floor, Jelitta Towers, Mission Road, Bengaluru-560027

\* This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

NEFT / RTGS CHALLAN for CAMPA Funds  
Date : 05-12-2022

Agency Name.	GREENKO ENERGIES PRIVATE LIMITED
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Notes:After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date and reference id to Email: fcsblr@unionbankofindia.bank , epurse@unionbankofindia.bank, ubin0903710@unionbankofindia.bank



UTR: ICICR52022120900492130

INR: 39,73,766



**AGENCY COPY**

**यूनियन बैंक Union Bank of India**

NEFT / RTGS CHALLAN for CAMPA Funds  
Date : 16-05-2023

Agency Name:	GREENKO ENERGIES PRIVATE LIMITED
Application No.	58116943746
MoEF/SG File No.	8-18/2021-FC
Location:	MADHYA PRADESH
Address:	Plot no-1071, Road No-44, Jubilee Hills, HyderabadHyderabad
Amount(in Rs)	25591525/-

Amount in Words : Two Crore Fifty-Five Lakh Ninety-One Thousand Five Hundred and Twenty-Five Rupees Only

**NEFT/RTGS to be made as per following details;**

Beneficiary Name:	MADHYA PRADESH CAMPA
IFSC Code:	UBIN0996335
Pay to Account No.	1507656116943746 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India FCS Centre, 21/1, III Floor, Jelitta Towers, Mission Road, Bengaluru-560027

\* This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

**BANK COPY**

**यूनियन बैंक Union Bank of India**

NEFT / RTGS CHALLAN for CAMPA Funds  
Date : 16-05-2023

Agency Name:	GREENKO ENERGIES PRIVATE LIMITED
Application No.	58116943746
MoEF/SG File No.	8-18/2021-FC
Location:	MADHYA PRADESH
Address:	Plot no-1071, Road No-44, Jubilee Hills, Hyderabad Hyderabad
Amount(in Rs)	25591525/-

Amount in Words : Two Crore Fifty-Five Lakh Ninety-One Thousand Five Hundred and Twenty-Five Rupees Only

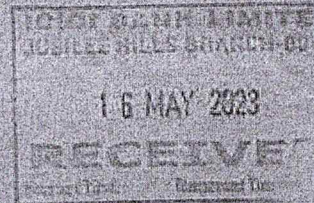
**NEFT/RTGS to be made as per following details;**

Beneficiary Name:	MADHYA PRADESH CAMPA
IFSC Code:	UBIN0996335
Pay to Account No.	1507656116943746 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India FCS Centre, 21/1, III Floor, Jelitta Towers, Mission Road, Bengaluru-560027

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UTR NO: ICICR52023051600877962





# Consent Order

M.P. Pollution Control Board  
E-5, Arera Colony  
Paryavaran Parisar, Bhopal - 16 MP  
Tele : 0755-2466191, Fax-0755-2463742

RED-LARGE	CTE-Fresh Validity(A/W): 31.01.2028	CONSENT NO: ***	PCB ID: 152517
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Outward No:117570,03/03/2023

Consent No:CTE-57735

To,

The Occupier,  
M/s Greenko MP01 IREP Private Limited,  
MP30 Gandhi Sagar Off-Stream Pumped Storage Project,  
Khemala block, Tal: Rampura(T),  
Dist : Neemuch (M.P.)- 458118

**Subject:** Grant of Consent to Establish under section 25 of the Water (Prevention & Control of Pollution) Act,1974 & under section 21 of the Air (Prevention & Control of Pollution) Act,1981

**Ref:** Your Application Receipt No. 1258382 Dt. 06/02/2023 and last communication received on Dt.01/02/2023

Without prejudice to the powers of this Board under section 25 of the Water (Prevention & Control of Pollution) Act,1974 under section 21 of the Air (Prevention & Control of Pollution) Act,1981 and without reducing your responsibilities under the said Acts in any way, this is to inform you that this Board grants Consent to Establish for setting up of an off-stream Pumped Storage Project for Hydro Power at Khemala block, Tal: Rampura(T), Dist : Neemuch (M.P.)- 458118

### SUBJECT TO THE FOLLOWING CONDITIONS :-

- a. Location: Khemala block, Tal: Rampura(T), Dist : Neemuch (M.P.)- 458118
- b. The capital investment: Rs. 8100.21Crs
- c. Product & Production Capacity:

Product	Applied Qty
Off-Stream Pumped Storage Project (Hydro Power Generation)	10411.200 MWH (1440 MW)

The consent (for operation) as required shall be granted to your industry after fulfillment of all the conditions mentioned above. For this purpose you shall have to make an application to this Board in the prescribed proforma at least two months before the expected date of commissioning of your Plant. The applicant shall not operate the unit without obtaining consent for operation from the Board and shall not bring in to use any out let for the discharge of effluent and gaseous emission.

### Enclosures:-

- \* Conditions under Water Act
- \* Conditions under Air Act
- \* General conditions

By the order of Chairman, MPPCB



Signature Not Verified  
Digitally Signed by : Chandra  
Mohan Thakur,IAS  
Date: 03/03/2023 07:30:22 PM

CHANDRA MOHAN THAKUR  
Member Secretary

(Organic Authentication on AADHAR from UIDAI Server)  
TPAV # YUI1K6S4GJ



## CONDITIONS PERTAINING TO WATER (PREVENTION & CONTROL OF POLLUTION) ACT 1974 :-

1. The daily quantity of trade effluent of the unit shall be Nil, and the daily quantity of sewage of the unit shall not exceed **72.0 KL/day**.

### 2. Trade Effluent Treatment:-

The applicant shall provide comprehensive effluent treatment system (if required) to achieve following standards-

pH	Between	5.5 – 9.0	TDS	Not exceed	2100 mg/l.
Suspended Solids	Not exceed	100 mg/l.	Chlorides	Not exceed	1000 mg/l.
BOD 3 Days 270C	Not exceed	30 mg/l.			
COD	Not exceed	250 mg/l.			
Oil and grease	Not exceed	10 mg/l.			

*For other parameters general standards of discharge as notified under EP Act 1986 notified by MPPCB from time to time shall be applicable.*

### 3. Sewage Treatment :-

The applicant shall provide comprehensive sewage treatment plant to achieve following standards-

pH	Between	6.5 – 9.0
Suspended Solids	Not exceed	100 mg/l.
BOD <sub>5</sub> Days 27 °C	Not exceed	30 mg/l.
COD	Not exceed	250 mg/l.
Oil and grease	Not exceed	10 mg/l.
Fecal Coliform (MPN/100ml)	Not exceed	1000

4. The domestic effluent shall be treated up to prescribed Standards and reuse in the process within premises. Hence **zero discharge condition** shall be practiced. In no case treated effluent shall be discharged outside of industry/unit premises.

5. Water meter preferably electromagnetic/ultrasonic type with digital flow recording facilities shall be installed separately for category wise consumption of water for process & domestic purposes and data shall be submitted online through XGN monthly patrak/statements. The unit shall also monitor the treated wastewater flow and report the same online through monthly patrak/statements.

Sr	Water Code (Qty in KLD)	WC : 90.0	WWG : 72.0	Water Source
1	Domestic Purpose	90.0	72.0	Tankers

6. Any change in production capacity, process and for any enhancement of the above prior permission of the Board shall be obtained. All authorized discharges shall be consistent with terms and conditions of this consent. Facility expansions, production increases or process modifications which result new or increased discharges of pollutants must be reported by submission of a fresh consent application for prior permission of the Board.

7. All treatment/control facilities/systems installed or used by the applicant shall be regularly maintained in good working order and operate effectively/efficiently to achieve compliance of the terms and conditions of this consent.

8. The specific effluent limitations and pollution control systems applicable to the discharge permitted herein are set forth as above conditions.

### 9. Compilation of Monitoring data-

- Samples and measurements taken to meet the monitoring requirements specified above shall be representative of the volume and nature of monitored discharge.
- Following promulgation of guidelines establishing test procedures for the analysis of pollutants, all sampling and analytical methods used to meet the monitoring requirements specified above shall conform to such guidelines unless otherwise specified sampling and analytical methods shall conform to the latest edition of the Indian Standard specifications and where it is not specified the guidelines as per standard methods for the examination of Water and Waste latest edition of the American Public Health Association, New York U.S.A. shall be used.
- The applicant shall take samples and measurement to meet the monthly requirements specified above and report online through XGN the same to the Board.

### 10. Recording of Monitoring Activities & Results-

- The applicant shall make and maintain online records of all information resulting from monitoring activities by this Consent.

**Consent No:CTE-57735**



ii. The applicant shall record for each measurement of samples taken pursuant to the requirements of this Consent as follows:

- (i) The date, exact place and time of sampling
- (ii) The dates on which analysis were performed
- (iii) Who performed the analysis?
- (iv) The analytical techniques or methods used and
- (v) The result of all required analysis

iii. If the applicant monitors any Pollutant more frequently as is by this Consent he shall include the results of such monitoring in the calculation and reporting of values required in the discharge monitoring reports which may be prescribed by the Board. Such increased frequency shall be indicated on the Discharge Monitoring Report Form.

iv. The applicant shall retain for a minimum of 3 years all records of monitoring activities including all records of Calibration and maintenance of instrumentation and original strip chart regarding continuous monitoring instrumentation. The period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the applicant or when requested by Central or State Board or the court.

### **11. Reporting of Monitoring Results:-**

Monitoring Information required by this Consent shall be summarized and reported by submitting a Discharge Monitoring report on line to the Board.

### **12. Limitation of discharge of oil Hazardous Substance in harmful quantities:-**

The applicant shall not discharge oil or other hazardous substances in quantities defined as harmful in relevant regulations into natural water course. Nothing in this Consent shall be deemed to preclude the institution of any legal action nor relieve the applicant from any responsibilities, liabilities, or penalties to which the applicant is or may be subject to clauses.

### **13. Limitation of visible floating solids and foam:-**

During the period beginning date of issuance the applicant shall not discharge floating solids or visible foam.

### **14. Disposal of Collected Solid waste/sludge-**

All hazardous waste/sludge shall be disposed of as per the Authorization issued under Hazardous & other waste (M&TM) Rules 2016. And/other Solids Sludges, dirt, silt or other pollutant separated from or resulting from treatment shall be disposed of in such a manner as to prevent any pollutant from such materials from entering any such water Any live fish, Shall fish or other animal collected or trapped as a result of intake water screening or treatment may be returned to eaters body habitat.

### **15. Provision for Electric Power Failure-**

The applicant shall assure to the consent issuing authority that the applicant has installed or provided for an alternative electric power source sufficient to operate all facilities utilized by the applicant to maintain compliance with the terms and conditions of the Consent.

### **16. Prohibition of By pass system of treatment facilities-**

The diversion or by-pass of any discharge from facilities utilized by the applicant to maintain compliance with the terms and conditions of this Consent is prohibited except:

- i. where unavoidable to prevent loss of life or severe property damage, or
- ii. Where excessive storm drainage or run off would damage any facilities necessary for compliance with the terms and conditions of this Consent. The applicant shall immediately notify the consent issuing authorities in writing of each such diversion or by-pass in accordance with the procedure specified above for reporting non-compliance.

17. Unit management shall submit the information online through XGN in reference to compliance of consent conditions.

### **Additional Water condition:- (if any) :-**



## **Consent Order**

**M.P. Pollution Control Board**  
**E-5, Arera Colony**  
**Paryavaran Parisar, Bhopal - 16 MP**  
**Tele : 0755-2466191, Fax-0755-2463742**

### **CONDITIONS PERTAINING TO AIR (PREVENTION & CONTROL OF POLLUTION) ACT 1981 :-**

1. The applicant shall provide comprehensive air pollution control system consisting of control equipments as per the proposal submitted to the Board with reference to generation of emission and same shall be operated & maintained continuously so as to achieve the level of pollutants to the following standards:-

Name of section	Capacity	Stack height (m)	Fuel	Control equipment to be installed	P.M, SO <sub>x</sub> , NO <sub>x</sub> (mg/NM <sup>3</sup> )
D.G. Sets	415 KVA	3	Diesel- 45 Lit/hr	Acoustic enclosure	As per CPCB/MoEF&CC Notifications
D.G. Sets	500 KVA	3	Diesel- 60 Lit/hr	Acoustic enclosure	
D.G. Sets	415 KVA	3	Diesel- 45 Lit/hr	Acoustic enclosure	
D.G. Sets	500 KVA	3	Diesel- 60 Lit/hr	Acoustic enclosure	

2. Ambient air quality at the boundary of the industry/unit premises shall be monitored and reported to the Board regularly on quarterly basis: The Ambient air quality norms are prescribed in MoEF gazette notification no. GSR/826(E), dated: 16/11/09. Some of the parameters are as follows:

- Particulate Matter (less than 10 micron) - 100 µg/m<sup>3</sup> (PM10 µg/m<sup>3</sup> 24 hrs. basis)
- Particulate Matter (less than 2.5 micron) - 60 µg/m<sup>3</sup> (PM2.5 µg/m<sup>3</sup> 24 hrs. basis)
- Sulphur Dioxide [SO<sub>2</sub>] (24 hrs. Basis) - 80 µg/m<sup>3</sup>
- Nitrogen Oxides [NO<sub>x</sub>] (24 hrs. Basis) - 80 µg/m<sup>3</sup>
- Carbon Monoxide [CO] (8 hrs. Basis) - 2000 µg/m<sup>3</sup>

3. The unit shall take adequate measures for control of noise level generated from industrial activities within the premises less than 75 dB(A) during day time and 70 dB(A) during night time.

4. The unit shall make the necessary arrangements for control of the fugitive emission from any source of emission/section/activities.

5. All other fugitive emission sources such as leakages, seepages, spillages etc shall be ensured to be plugged or sealed or made airtight to avoid the public nuisance.

6. The unit shall ensure all necessary arrangements for control of odour nuisance from the industrial activities or process within premises

7. All the internal roads shall be made pucca to control the fugitive emissions of particulate matter generated due to transportation and internal movements. Good housekeeping practices shall be adopted to avoid leakages, seepages, spillages etc.

8. Unit shall take effective steps for extensive tree plantation preferably of the local tree species within or around the unit premises for general improvement of environmental condition.

**Additional Air condition:- (if any) :-**



## Consent Order

M.P. Pollution Control Board  
E-5, Arera Colony  
Paryavaran Parisar, Bhopal - 16 MP  
Tele : 0755-2466191, Fax-0755-2463742

### **GENERAL CONDITIONS:**

1. The non hazardous solid waste arresting in the unit premises sweeping, etc. be disposed off scientifically so as not to cause any nuisance/pollution. The applicant shall take necessary permission from civic authorities for disposal to dumping site. If required.

#### **Non Hazardous Solid wastes:-**

Type of waste	Quantity	Disposal
Scrap/ Plastic packing material wood, card board, gunny begs etc	Record should be maintained	Sale to authorized party/As Per CPCB. MoEF Guide lines / Others.

2. The applicant shall allow the staff of Madhya Pradesh Pollution Control Board and/or their authorized representative, upon the representation of credentials:

- To inspect raw material stock, manufacturing processes, reactors, premises etc to perform the functions of the Board.
- To enter upon the applicant's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this Consent.
- To have access at reasonable times to any records required to be kept under the terms and conditions of this Consent.
- To inspect at reasonable times any monitoring equipment or monitoring method required in this Consent: or,
- To sample at reasonable times any discharge or pollutants.

3. This consent is transferable in nature, in case of any change in ownership / management, the new owner / partner / directors / proprietor shall immediately apply for the consent with new requisite information.

4. The issuance of this Consent does not convey any property rights in either real or personal property or any exclusive privileges, nor does it authorise any invasion of personal rights, nor any infringement of Central, State or local laws or regulations.

5. The unit shall install separate electric metering arrangement for running of pollution control devices and this arrangement shall be made in such fashion that any non functioning of pollution control devices shall immediately stop electric supply to the production and shall remain tripped till such time unless the pollution control device/devices are made functional. The record of electricity consumption for running of pollution control equipment shall be maintained and submitted to the Board every month

6. This consent is granted in respect of Water pollution control Act 1974 or Air Pollution Control act, 1981 only and does not relate to any other Department/Agencies. License required from other Department/Agencies have to be obtained by the unit separately and have to comply separately as per there Act / Rules.

7. Balance consent fee, if any shall be recoverable by the Board even at a later date.

8. The applicant shall submit such information, forms and fees as required by the board not later than 180 day prior to the date of expiration of this consent.

9. The unit shall establish a separate environmental cell, headed by senior officer of the unit for reporting the environmental compliances. The industry/ Unit shall submit environmental statement for the previous year ending 31st March on or before 30th September every year to the Board.

10. The unit shall obtain membership of Emergency Response Center of the Board if needed.

11. Knowingly making any false statement for obtaining consent or compliance of consent conditions shall result in the imposition of criminal penalties as provided under the section 42(g) of the Water Act or section 38 (g) of the Air Act.

12. After notice and opportunity for the hearing, this consent may be modified, suspended or revoked by the Board in whole or in part during its term for cause including, but not limited to, the following:

- Violation of any terms and conditions of this Consent.
- Obtaining this Consent by misrepresentation of failure to disclose fully all relevant facts.
- A change in any condition that requires temporary or permanent reduction or elimination of the authorized discharge.

13. On violation of any of the above-mentioned conditions the consent granted will automatically be taken as canceled and necessary action will be initiated against the industry.

**Consent No:CTE-57735**



## **Consent Order**

**M.P. Pollution Control Board  
E-5, Arera Colony  
Paryavaran Parisar, Bhopal - 16 MP  
Tele : 0755-2466191, Fax-0755-2463742**

### **Additional condition:-**

1. The industry shall ensure the arrangements for storage of Hazardous and Non Hazardous waste generated.
2. Authorization under Hazardous Waste and other waste (Management & Transboundary Movement) Rules, 2016 should be obtained (If applicable).
3. Industry shall strictly follow the Construction & Demolition Waste Management Rules, 2016 as applicable.
4. The industry shall provide arrangements for fire safety & emergency.
5. The industry shall strictly comply with CPCB/MPPCB/MoEF&CC norms & Hon'ble NGT directions issued from time to time.
6. The industry shall comply all the conditions mentioned the Environmental Clearance granted by MoEF&CC vide dated 01.12.2021

*Consent to establish as required under the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 is granted to your unit subject to fulfillment of all the conditions mentioned above. The applicant without valid consent (for operation) of the Board shall not bring in to use any outlet for the discharge of effluent and gaseous emission.*

**For and on behalf of  
M.P. Pollution Control Board**

**By the order of Chairman, MPPCB**

**CHANDRA MOHAN THAKUR  
Member Secretary**



**(Organic Authentication on AADHAR from UIDAI Server)  
TPAV # YUI1K6S4GJ**

**Consent No:CTE-57735**

कार्यालय प्रधान मुख्य वन संरक्षक (कक्ष भू-प्रबंध) सतपुड़ा भवन, भोपाल, मध्यप्रदेश

क्रमांक/एफ-4/23/2021/10-11/1355

भोपाल, दिनांक 5/4/23

प्रति,

मेसर्स ग्रीनको एनर्जी प्रायवेट लिमिटेड,  
प्लॉट नं. 1071, रोड नं. 44, जुबली हिल्स,  
हैदराबाद-500033

**विषय:- Diversion of 301.96 ha forest land for the construction of MP-30 Gandhi Sagar off-stream Pumped Storage Project (1440 MW) by M/s Greenko Energies Private Limited, Hyderabad in Neemuch Forest Division, Neemuch District of Madhya Pradesh State (Online proposal No. FP/MP/HYD/116943/2020)-reg.**

-0-

विषयांकित प्रकरण में भारतीय वन्यप्राणी संस्थान द्वारा परियोजना क्षेत्र का अध्ययन कर अपनी रिपोर्ट प्रस्तुत की है। इस रिपोर्ट में उनके द्वारा रु. 1.00 करोड़ का कार्य किया जाना प्रतिवेदित किया है।

इस प्रस्ताव में प्रधान मुख्य वन संरक्षक (वन्यप्राणी) भोपाल द्वारा रु. 166.90 लाख की वन्यप्राणी संरक्षण योजना स्वीकृत की है।

भारतीय वन्यप्राणी संस्थान द्वारा की गई अनुशंसा तथा प्रधान मुख्य वन संरक्षक (वन्यप्राणी) भोपाल द्वारा दी गई स्वीकृति के आधार पर वन्यप्राणी संरक्षण योजना हेतु निम्नलिखित कार्यों की राशि आपके द्वारा जमा की जानी है :-

क्र.	किस संस्था की अनुशंसा अनुसार कार्य किया जाना है	कार्य का नाम	आवश्यक राशि
1	भारतीय वन्यप्राणी संस्थान द्वारा की गई अनुशंसा अनुसार कार्य	Establishment of Wild Animal Rescue and Rehabilitation Centre (it includes rescue centre etc)	रु. 60 लाख
2		Capacity building programme for forest staff for handling wild animal conflict and habitat management	रु. 10 लाख
3	प्रधान मुख्य वन संरक्षक (वन्यप्राणी) भोपाल	Farm forestry for fuelwood and timber	रु. 3.50 लाख
4		Sowing of Grass	रु. 8.00 लाख
5		Awareness Program	रु. 4.00 लाख
6		Strengthening of Infrastructural Facilities of Forest Department	रु. 10.00 लाख
7		Habitat improvement by development of vegetation cover by plantation with suitable species	रु. 20.00 लाख



क्र.	किस संस्था की अनुशंसा अनुसार कार्य किया जाना है	कार्य का नाम	आवश्यक राशि
8	प्रधान मुख्य वन संरक्षक (वन्यप्राणी) भोपाल	Biological fence (eg. Bamboo species) around the habitation and around the agriculture fields adjoining to forest area to control human wildlife conflict	रु. 10.00 लाख
9		Construction and filling of wter holes and check dams/ponds, tube wells etc	रु. 16.00 लाख
10		Infra-structure development (Surveillance Equipment's like Cameras, Wireless Sets, GPS, etc)	रु. 5.00 लाख
11		Anti-Poaching measures	रु. 8.00 लाख
12		Prevention of Forest Fire : Training and Infrastructure facilities	रु. 6.00 लाख
13		Monitoring and Evaluation	रु. 10.00 लाख
योग-			रु. 170.50 लाख

इसके अतिरिक्त राज्य वन अनुसंधान संस्थान द्वारा पत्र दिनांक 31.03.2023 से जलाशय के आस-पास के वन क्षेत्र में संकटाप्रद प्रजातियों के पौधों के लिये अपनी अनुशंसा की थी। इस अनुशंसा के आधार पर वनमण्डलाधिकारी, नीमच द्वारा 509 हेक्टेयर वनक्षेत्र में इन संकटाप्रद प्रजातियों के रोपण के लिये रु. 2,82,80,740/- की योजना तैयार की है।

अतः आप वन्यप्राणी प्रबंधन योजना की राशि रु. 170.50 लाख तथा संकटाप्रद प्रजातियों के पौधों के रोपण के लिये रु. 2,82,80,740/- की राशि ऑनलाईन पोर्टल के माध्यम से जमा करे।

  
 (सुनील अग्रवाल)

प्रधान मुख्य वन संरक्षक (भू-प्रबन्ध)  
 मध्यप्रदेश, भोपाल

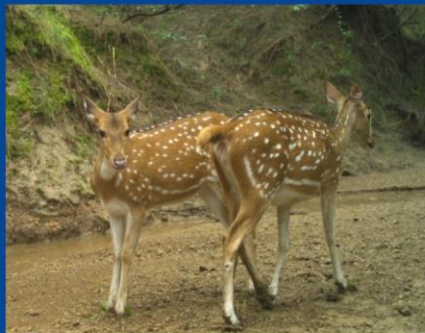
# WILDLIFE CONSERVATION PLAN FOR IMPACT ZONE OF MP-30 GANDHI SAGAR OFF-STREAM PUMPED STORAGE PROJECT (1440 MW), MADHYA PRADESH



भारतीय वन्यजीव संस्थान  
Wildlife Institute of India



March 2023



**WILDLIFE CONSERVATION PLAN FOR IMPACT ZONE OF MP-30 GANDHI  
SAGAR OFF-STREAM PUMPED STORAGE PROJECT (1440 MW),  
MADHYA PRADESH**

**Project Investigators**

Dr. J.A. Johnson, Scientist - F  
Dr. R. Suresh Kumar, Scientist - F  
Dr. Gopi, G.V., Scientist - F  
Dr. Abhijit Das, Scientist - E

**Researchers**

Mr. Arun Kumar  
Mr. Jason Dominc Gerard  
Mr. Vishal Verma

**Wildlife Management Plan Submitted to Madhya Pradesh Forest Department  
Government of Madhya Pradesh**



**भारतीय वन्यजीव संस्थान  
Wildlife Institute of India**

**March 2023**

**Citation:** Johnson, J.A., Arun Kumar, Jason Dominc Gerard, Vishal Verma, Suresh Kumar, R. Gopi, G.V., Abhjit Das. 2023. Wildlife conservation plan for impact zone of mp-30 Gandhi sagar off-stream pumped storage project (1440 mw), Madhya Pradesh, Wildlife Institute of India, pp. 40.

## ACKNOWLEDGEMENTS

We are thankful to the Principal Chief Conservator of Forest (Land Management), Madhya Pradesh Forests Department for providing opportunity to undertake this study and also thank the Divisional Forests Officer, Neemuch Forest Division, Madhya Pradesh for providing necessary local support to carry out this work. We would like to show our gratitude to the Director, Dean and Registrar, Wildlife Institute of India for their encouragements and administrative supports. We would like to thank Project interns Mr. Akashdeep Dutta and Mr. Ashish Chand Peter for their support during the field data collection. We sincerely Mr. Vabesh Tiripura, WII researcher for designing the cover page and page settings

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## SUMMARY

In the present study, there are 17 species of mammals were recorded from the proposed MP 30 Gandhi Sagar off stream pumped storage project area, including 10 scheduled- I species listed in the Indian Wildlife Protection Act 1972 (Common Leopard, Chinkara, Indian Crested Porcupine, Jungle Cat, Indian Civet, Palm Civet, Grey Mongoose, Indian Fox, Striped Hyena and Golden Jackal). Further, distance sampling result indicated that the diverted forested area supports high ungulate abundance (Nilgai encountered rate of 22.7/ sq.km; Chinkara 6/ sq.km). The result of camera trap showed that the project area has high relative abundance of Wild Pig (31.69%) and Nilgai (24.65%). Because of presence of good prey abundance, this area also supports good numbers of top predators/ carnivores such as Leopard (relative abundance - 5.5%) and Hyena (relative abundance - 0.22%). The study area also had information records of schedule I reptiles like Monitor lizard (*Varanus bengalensis*) and Indian rock python (*Python molurus*) from the project area. Thus, the proposed project area in the forested land might cause reduction/ loss of wild animals habitats and result in animal dispersal into surrounding human landscapes, which pave way for increased man-animal conflicts around the project areas.

In order to secure the dispersing scheduled wild animals from the project area, the Wildlife Management Plan with budget estimate of Rs. 100 Lakhs has been prepared. The clips of activities proposed in the Wildlife Management Plan are: 1. Establishment of Wild Animal Rescue and Rehabilitation Centre: the project proponent should establish mobile animal rescue facilities and rescue and rehabilitation centre at the vicinity of the adjoining forest area to catering the strayed and conflict prone wild animals. These facilities should be delivered to the local Divisional Forest Officer, Neemuch; 2. Establishment of water holes around the upper reservoir area: due to diversion of forests land for upper reservoir construction, wild animal might be dispersed around the neighbouring area for searching water, especially in summer months. Thus, it is recommended to create water holes around the project area for saving wild animals. The potential locations of water holes creation are provided in the detailed Management Plan; 3. Compensating the loss of scheduled species habitats: in order to restore and secure the remaining wildlife habitat, it is recommended to remove invasive plant *Lantana camera* in the adjoining project area. Specific locations for habitat restoration is provided in the detailed report. Further, to reduce the wild animal mortality due to creation of large wall around the reservoir and road operation, it is recommended to create chain-linked fence around the upper reservoir area and creation of underpasses along the road at strategic locations. Locations of major animal underpass structure need to be established in the proposed road are provided in the detailed management plan.

# WILDLIFE CONSERVATION PLAN FOR IMPACT ZONE OF MP-30 GANDHI SAGAR OFF-STREAM PUMPED STORAGE PROJECT (1440 MW), MADHYA PRADESH

## 1. BACKGROUND

The off-stream pumped storage project or Pumped storage hydropower is a type of hydroelectric energy generation project. It involves two water reservoirs at different elevations that can generate electricity as water moves from upper reservoir to down and the same water recirculate to upper reservoir through pumping system. This pumping system requires power as it pumps water back into the upper reservoir. The MP-30 Gandhi Sagar off-stream pumped storage project has components of two reservoirs, i) lower reservoir (Gandhi Sagar reservoir, which is already existing and ii) MP-30 Gandhi Sagar upper reservoir (to be constructed). The water from the Gandhi Sagar reservoir (existing lower reservoir) will be pumped up and stored in the proposed in upper reservoir for generating power. The flood discharge of the existing Gandhi Sagar reservoir will be utilised for the proposed MP-30 Gandhi Sagar pumped storage project to generate energy. Five turbines will be set up, and the water discharge from upper reservoir will be utilized for generating power. The total capacity of this project is 1440 MW generation potential. The MP-30 Gandhi Sagar off-stream pumped storage project, is planned at Neemuch District, Madhya Pradesh (N 24.51858; E 75.51558) on the banks of Gandhi Sagar Reservoir. The existing Gandhi Sagar dam is built across the Chambal River and the reservoir covers an area of 660km<sup>2</sup>, it is one of the largest inland water bodies (Vyas and Singh, 2004). The land required for the construction of various components including submergence by the formation of MP-30 Gandhi Sagar upper reservoir and other infrastructure like road, power station, muck disposal area, etc., is estimated to be about 402.50 ha. Out of which 301.96 ha is of forest land, 71.96 ha is of private land and 28.58 ha is of government revenue land.

The diverted forest land for construction of MP-30 Gandhi Sagar off-stream pumped storage project consists of Northern tropical dry deciduous forest, Dry deciduous, *Anogeissus pendula* forest & Flat Grasslands (Tiwari *et al.*, 2015). The predominant vegetations found in this region are: East Indian ebony (*Diospyros melanoxylon*), Neem (*Azadirachta indica*), Flame of the forest (*Butea monosperma*), Indian plum (*Ziziphus spp*), etc. (Champion and Seth, 1968). The major mammals residing in this forests area are: common Leopard (*Panthera pardus*), Striped hyena (*Hyaena hyaena*), Indian Fox (*Vulpes bengalensis*), Indian jackal (*Canis aureus*

*indicus*), Nilgai (*Boselaphus tragocamelus*), Indian-gazelle (*Gazella bennettii*), and Spotted deer (*Axis axis*) (Jhala *et al.*, 2016). This area also supports many bird species, especially migratory birds that visit during the winter season. The major herpetofauna reported for this region is Saw-scaled viper (*Echis carinatus*), Indian rock python (*Python molurus*), Rat snake (*Ptyas mucosa*), freshwater crocodile (at the Gandhi Sagar dam - *Crocodylus palustris*), Indian garden lizard (*Calotes versicolor*), Monitor lizard (*Varanus beagalensis*) (Ishaque *et al.*, 2014).

In this context, the Madhya Pradesh Forests Department (Letter no. 4/23/2021/10-11/3553 dated 14/09/2021), has granted in principal approval/ stage I clearance for diversion of 301.96 ha forest lands for construction of MP-30 Gandhi Sagar off-stream pumped storage project at Neemuch Forest Division at Rapura Tehsil with the following specific condition:

*The Wildlife Conservation Plan shall be updated in consultation with WII and approval by CWLW and the same shall be implemented at the cost of the user agency with an added focus on compensating the lost habitat of schedule species especially Schedule-I reptilians (e.g. Indian Rock Python, Indian Monitor Lizard, etc.) and avifauna and their improvement in the adjoining forests area. This plan shall also take into account the fact that the proposed area is a low rainfall area and presence of a nearby PSP reservoir with sharply raised edges could create a threat to wild animals that might want to use the reservoir for drinking water and fall into it. Therefore, the Plan shall include creation of alternative water resources in the adjoining forests to minimise the changes of such accidental death of wild animals”*

In this background, the Madhya Pradesh Forests Department requested Wildlife Institute of India (Letter No. 4/23/2021/10-11/3553 dated 27/10/2021) to conduct a study at the diverted forest land for preparing a Wildlife Conservation Plan. Subsequently, WII has submitted a concept proposal to undertake the scientific study, subsequently the work has been awarded to WII for preparing Wildlife Conservation Plan with the following objectives:



## 2. OBJECTIVES

- To assess the distribution status of scheduled wildlife species and their habitats, especially Birds, Reptiles, and Mammals at the diverted forest lands for the MP-30 Gandhi Sagar off-stream pumped storage project.
- To suggest suitable mitigation measures for securing habitats for scheduled wildlife species in the remaining forest area.

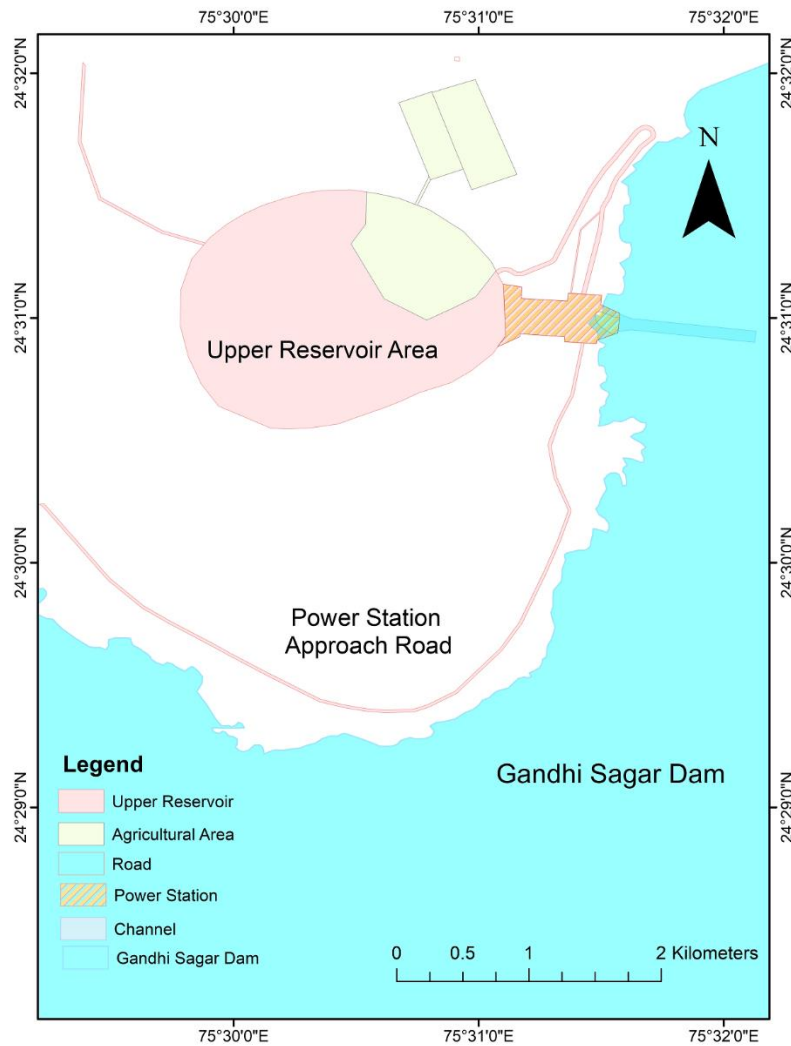
## 3. STUDY AREA

The study area falls in Rampura Fathar Reserve Forests, Neemuch Forest Division (24° 31' 6.89" N, 75° 30' 56.12" E) and it consist of two parts - the upper plateau region, which is located near Khemla village and the lower linear road of 9.8 km for approaching power house area (Fig. 1). This landscape falls under the semi-arid biogeographic zone of India, it consists of open forests, grasslands, scrublands, woodlands and agricultural area. This area receives an annual rainfall of 880-1000 mm. (Tiwari, 1997). The open forest land consists of mixed tree species such as *Anogeissus pendula*, *Diospyros melanoxylon*, *Butea monosperma*, *Ziziphus* sp. and *Azodirachta indica*. Apart from the trees, vast extends of grasslands and invasive lantana shrubs are more prevalence across the study area.

## 4. SAMPLING STRATEGY

In order to assess the status of scheduled wildlife species, the study area/ submergence forest area (301.96 ha) was divided into 500 x 500 m grids for sampling birds and reptiles, while in the lower approach road region, multiple transects of 1 km in length were used for birds and reptile abundance estimation. In the case of mammal survey, the lower road region was divided into 3 segments (each of 2.7 km), while the upper reservoir region was divided into 1 km grids for establishing transect survey and 500m grids for deploying camera traps. Line transects, Camera trapping and sign survey methods were adopted for estimation of mammals. For estimation of birds, point count method was executed on the transect line. In the case of reptiles, visual encounter survey, time constraint survey and cover board survey (Kenneth, 2016) were carried out. All the surveys were carried out according to the high activity time of respective taxa, maximum efforts were made to assess birds, herpetofauna, and mammals. Field data

collection was carried out between January 2023 and March 2023. Due to extended winter season, the herpetofauna activities were very less during the sampling period. Though, the existing information on herpetofauna records were used to supplement the data for preparing Wildlife Management Plan.



**Figure 1.** Map showing the Gandhi Sagar dam and proposed MP-30 Gandhi Sagar off-stream Pumped storage project in Neemuch district of Madhya Pradesh.

## 5. METHODS

### 5.1. Abundance estimation of Mammals

#### Line transect

The distance sampling technique is widely used for estimation of density of ungulates and other wildlife species in forested habitats ,(Karanth *et al.*, 1992; Harihar, 2005; Ramesh *et al.*,

2012). Direct counting of species was quite challenging in the forest because poor visibility and high foliage made detection difficult. Hence, camera trapping and line transect, along with sign surveys, were used to detect the abundance and encounter rate of mammals (Selvan *et al.*, 2013). In the present study, a total of 5 line transects were established in the submergence zone of upper reservoir. Each transect was 1 km in length and each separated by ~500 m distance apart from one another. Two observers walked each transects in the early morning hours (6:30 - 9:00 hrs) and evening hrs (16:00 - 18:00 hrs). All transects were marked with GPS coordinates (GARMIN eTrex 30x), and the transect bearing was determined using a compass (Suunto Optical sighting Compass). The distance of the individual was determined using a range finder (Hawk sport - 6\*25mm, Range-600m). The time, species, group size, group composition, animal bearing angle, sighting distance, and sex of each animal sighting were recorded during the transect walk. The location of transects placed in the study area is presented in Figure 2.

### **Data analysis**

Animal abundance in forested habitat can be estimated using the computer programme DISTANCE 7.5 (Laake *et al.*, 1998), which calculates animal density based on the distance of animal sighting from a transect line. As shown in the equation below (Buckland *et al.*, 1993), the species density in the survey region was estimated using the DISTANCE software.

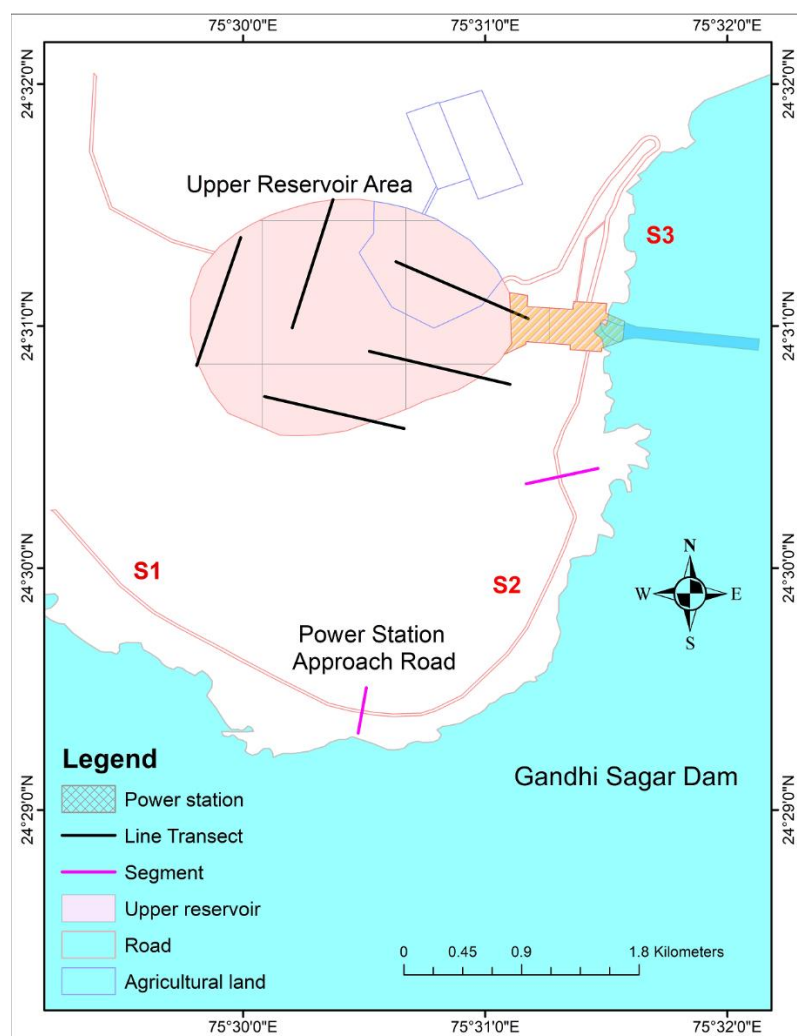
$$D = \frac{n}{2wL * F(0)}$$

Where, n-is the number of species detected; L-length of line (m); f (0)- the probability density function of the perpendicular distances evaluated at zero (generated by DISTANCE); D- Density of species per sq. km. The software package uses six models: uniform-cosine, uniform-simple polynomial, half normal-hermite, half normal-cosine, hazard rate-cosine, and hazard rate-simple polynomial in order to generate unique estimates of f(0) for each site (Buckland *et al.*, 1993). Low variance, low Akaike's information criterion (AIC), and a nonsignificant goodness-of-fit value were used to select a suitable model (Marques *et al.*, 2001; Focardi *et al.*, 2002).

### **Camera Trapping**

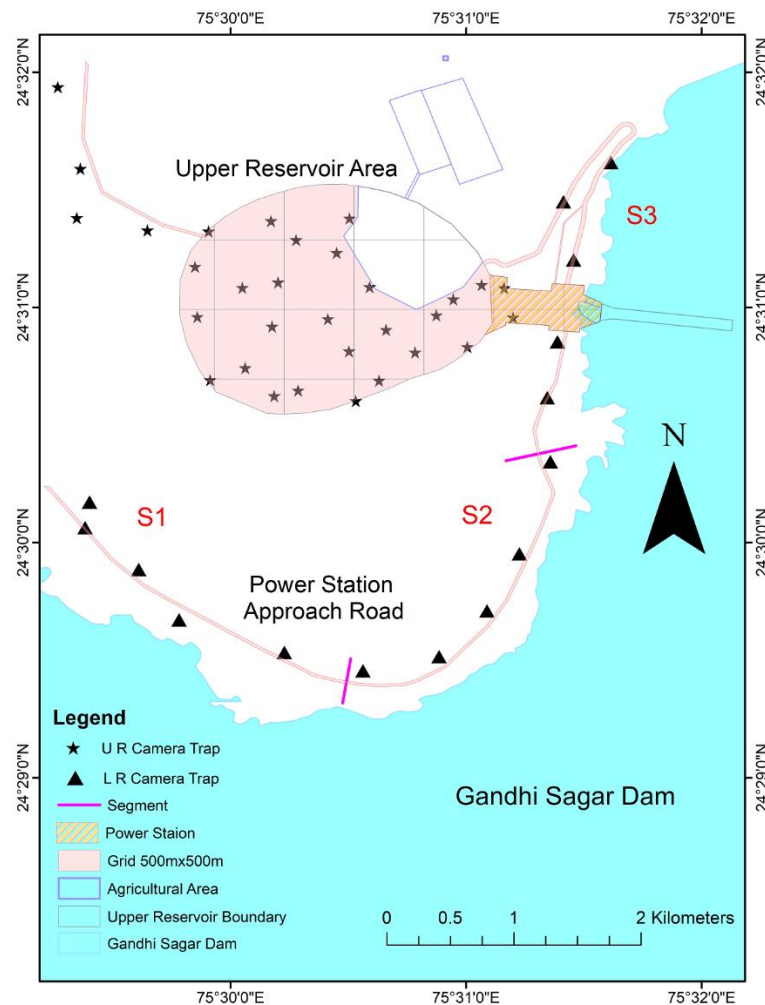
Camera traps have been widely utilized for wildlife monitoring due to their objectivity, simplicity and capacity to collect data on various species, especially nocturnal and very elusive species. Camera trapping is intended to record species richness, occupancy, and relative

abundance of species, estimate the abundance of individually identifiable species in a capture-recapture framework and ascertain their activity patterns (Tanwar *et al.*, 2021). We used camera traps to determine the relative abundance of the mammals in the study area. For camera-trap studies, the proposed upper reservoir area was partitioned into 500 x 500 m grids and each grid Cuddeback 20MP, camera was placed. A total of 25 cameras in the upper reservoir region and later 15 were deployed in the approach road to power house. Three phases of camera traps seasons were operated between January 2023 and March 2023 with 6 days trap nights in each phase. ArcGIS 10.5 was used to create random locations for camera traps. Position of camera trap locations in the study area are given Figure 3.



**Figure 2.** Location of line transect for assessment of mammals in the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

In order to understand the animal distribution along the approach road to the power house, the road sector was divided into three segments. Five camera traps were placed with a minimum of 500 metres distance between them in each phase (3 phased) and Total 15 cameras were placed in the approach road to power house (Fig. 3). In order to assure the full-body capture of wild animals, camera traps were set up 3-5 m from the trail's centre and fastened to trees at a height of 50 to 60 cm above the ground. The delay between two subsequent images was preserved in the "Fast as Possible" mode (1-2 sec), however at night the delay increased to 8–10 sec depending on the battery state (Tanwar *et al.*, 2021). The capture pictures were stored in 32 GB Nikon SD cards. These camera traps were operated for six days in each phase (3 phases were completed), which amounted to 720 trap nights of work (number of camera traps x number of working days).



**Figure 3.** Map showing the camera trap locations of upper and lower reservoir approach road of MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

## Data analysis

All photographs were scanned and entered into the Seagate OneTouch HDD. The location ID, date, time and species were recorded in all camera trap pictures (Tobler, 2008). Initially photographs were manually shorted, followed by they were sorted with the help of software. Each photo sequence was thoroughly analysed and verified using Menon's field guide to identify discrete photo-capture events (Menon *et al.*, 2009). Up to 30 minutes apart photographs of the same species were taken. The following formula was used to assess the relative abundance of each species in the study area (Petridou *et al.*, 2019).

$$\text{Relative Abundance (RA)} = \frac{\text{Number of individuals captured (Ni)} * 100}{\text{Total number of photos captured (Nt)}}$$

## Sign Survey

In order to understand the carnivore/ nocturnal species occupancy, animals indirect evidence such as vocalisation, scrap, rack marks, burrows, pugmarks and faces/scats (Fig. 4) are used to precisely indicate the presence of medium and large mammals. In the present study, sign surveys were carried out in 5 existing animal/ human trails, each of about 1 km length, were selected in the lower road zone covering three segments to standardise the survey effort across the three sectors. These routes have a lot of pebbles and an unadorned landscape. Some of the pathways traversed streams, while others led to the upper plateau. Similarly, 4 trails in the upper reservoir region were selected for sing survey. Sightings of any wildlife signs (direct and indirect) were recorded using GPS (GARMIN eTrex 30x). Three researchers walked each trails and every detail of the sign was recorded meticulously. Based on the sign survey dada, animal encounter rate and occupancy were estimated.

## Data analysis

### *Encounter Rate estimation*

For estimating animal encounter rate, sing survey data and line transect data were used and the encountered rate of herbivore and carnivore mammals estimated as per the following formula (Gowda *et al.*, 2009).

$$\text{Encounter Rate (ER)} = \text{Number of individuals sightings (N)} / \text{Total km of distance covered (D)}$$

### *Detection Rate estimation*

In general, there is no equal distribution of species in the forested habitat and animal select more appropriate and suitable habitat based on the availability. Availability of species in different area of forest can be determined based on the detection rate as per the following formula (Chinarro *et al.*, 2019).

Detection Rate (DR) = Number of occupied animal trails / Total number of animal trails



Leopard scat



Leopard pugmark



Chinkara pellets



Jackal pugmark

**Figure 4.** Images showing various signs of wild animals

### **5.2. Abundance estimation of Birds**

A preliminary survey was made to identify suitable trails for placing sampling point for estimating birds abundance. Since birds are highly mobile, the point count method was selected

for abundance estimation. The fixed radius point count method was adopted for systematic estimation of birds abundance. For placing the sampling points, the upper reservoir region was divided into two parts, i) the submergence zone (Fig. 5) and ii) a 1000m buffer created around the submergence zone, this buffer area was called an influenced zone. It is perceived that the activity related to construction in the submergence zone likely to have impact on the adjoining area, hence the sampling was done to record the diversity of birds in the influence zone (Fig. 5). Sampling in these two areas were conducted to see whether any difference in the abundance of these areas. The sampling effort in both areas was kept the same, to compare abundance.

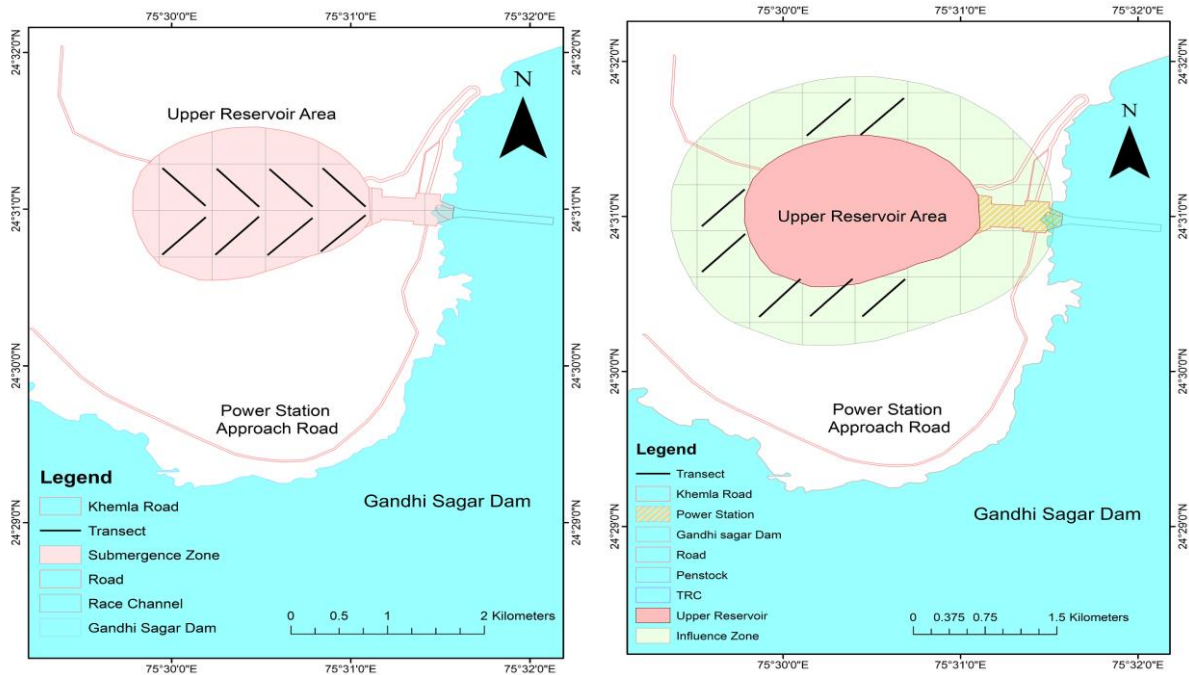
The upper plateau region/submergence zone and the influenced zone were divided into 500 x 500m grids and transects were laid diagonally in each grid. Each transect was extended for 600m. Four-point counts were placed on these transects line; each point was 200 m apart from the other. Every point count was done for 2 minutes and had a fixed radius of 50 meters. Within the submergence zone as well as the influenced zone and a total of 168 point counts were conducted. The number of individuals of each species detected within a 50 meters radius surrounding the observer was recorded as occurring within the fixed-radius circle, and landscape and terrain details were also recorded. Point count was performed in the morning, beginning with the maximum activity of birds, starting from 0800 to 1100 hrs, and in the evening from 1600 to 1800 hrs. The time spent at each sampling point for observation was 2 minutes before moving to the next point. Three replicates of transects were done to record more accurate and precise data.

In addition, bird count also performed along the approach road to power house region. On the lower approach road to power house region, perpendicular transects were laid for collecting bird data. Each line was extended for 1 km and six points were placed in each transect; each point is 200 meters apart from the other. Data were recorded for each species detected within a 50 m radius surrounding the observer, time spent at each point counts was 2 minutes before moving to the next. This study was carried out from January 2023 to March 2023. Crepuscular surveys were also done, where encountered bird species were recorded with its name and GPS locations in the study area.

Birds were counted using binoculars (Bushnell 8x42mm) and photographed using Nikon Point and Shoot camera (Nikon P1000). The distance of the bird species was recorded using a Hawke sport range finder (6x25mm, range 600m). GPS coordinates of each point was recorded using



Garmin etrex 30x. Species that were difficult to identify during the survey were identified later with the help of Grimmett et al. (2016) field guide. The nomenclature of birds was referred from the Checklist of the birds of India (v6.1) (Praveen and Jayapal, 2022). Migratory status of birds were obtained from Grimmett et al. (2011) and BirdLife International. Finally, a checklist of the bird recorded from the project area was prepared along with their IUCN status.



**Figure 5.** Map showing bird sampling area in Submergence Zone (Left) and Influenced Zone (Right) of MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

### Data analysis

On the basis of the accumulated data, relative abundance of each species of birds and density value of bird population per sq. km is determined.

Relative abundance (RA) was analyzed using the formula:

$$RA = n_i / effort$$

Where,  $n_i$  = number of individuals in the  $i$ th species

$Effort$  = number of point counts.

Overall Relative abundance (RA)/Encounter rate (ER) was analyzed using the formula:

RA = total no. of Individual observed in submergence zone + total no. of individual observed in influence zone / total no. of point count in submergence zone + total no. of point count in influenced zone

### 5.3. Abundance estimation of Herpetofauna

#### Visual Encounter Survey (VES)

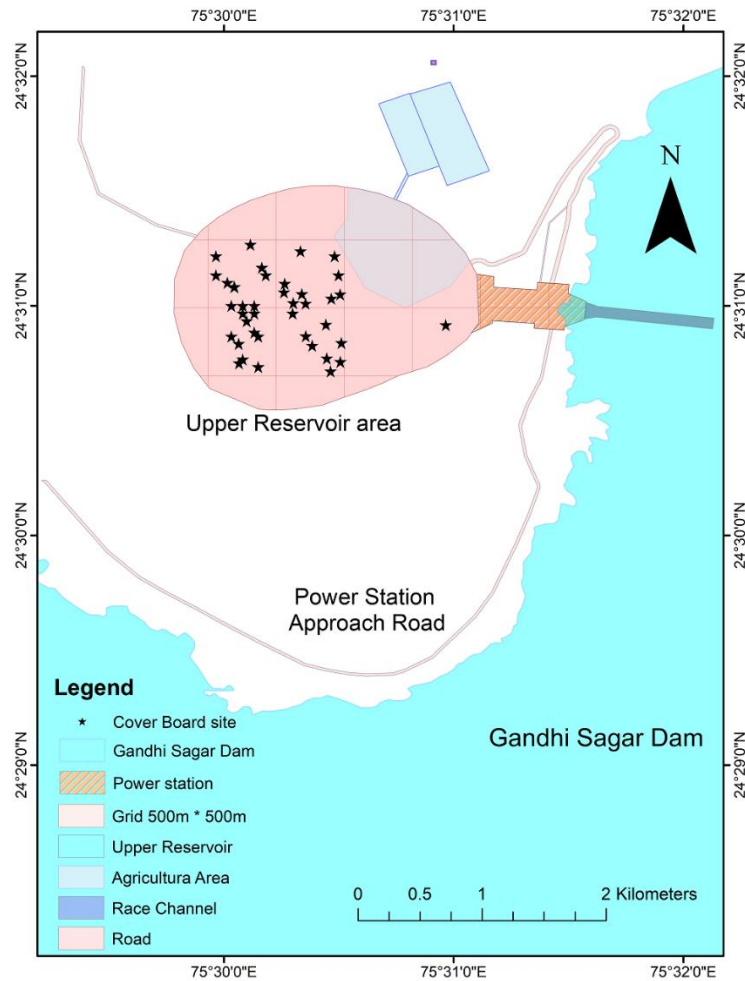
In the present study, visual encountered survey method was adopted for estimating relative abundance of herpetofauna. The visual encounter survey (VES) is a time-constrained method in which the observer's sample for species richness and abundance along a survey path (Crump and Scott, 1994). VES was carried out from January to March 2023. In the present study, 500m x 500m grids were placed in the upper reservoir region and each grid was searched for a fixed time of two hours in the morning and two hours in the evening. All the grids were covered by feet searching for herpetofauna by actively overturning rocks, under the leaf litter, inside bushes, etc. Whenever, a species was sighted the species identification, GPS coordinates, time of the sighting, and microhabitat characteristics such as presence and absence of canopy cover and leaf litter, height from the ground, etc were recorded (Ishwar *et al.*, 2001).

#### Cover Board Method

Artificial covers provide a potentially useful survey method for reptiles (Engelstoft and Ovaska, 2000). For the cover board survey, we distributed 1 x 1m metal sheets at 10 randomly generated points within the 500 x 500m grids (Fig. 6). Each cover board was placed at a minimum distance of 100m apart from other boards. After 5 days, the boards were left undisturbed and checked after 5 days if any reptiles are utilizing the cover boards for refugia and thermoregulation. All the animals sighted were identified and noted down along with other microhabitat details.

#### Opportunistic Surveys

Herpetofauna, in general, are elusive creatures, they can not be expected to be only in a particular range and since the study was conducted during late winter spotting them was a bit hard. Thus, opportunistic surveys was conducted in and around the study area along the forest paths, boundary walls made of piled-up rocks, and dry streams, to collect more data on the herpetofauna abundance.



**Figure 6.** Map showing the locations of the Cover Board sampling points in the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

## 6. FINDINGS

### 6.1. Abundance of Mammals

In the present study, 17 species of mammals were recorded from the study area, based on the distance sampling, camera trapping and sign survey. Among these, 10 species (Common Leopard, Chinkara, Indian Crested Porcupine, Jungle Cat, Indian Civet, Palm Civet, Grey Mongoose, Indian Fox, Striped Hyena and Golden Jackal) are listed in Schedule-I of Indian Wildlife Protection Act 1972 (IWPA); 5 species (Northern Plains Gray Langur, Spotted Deer, Nilgai, Wild Pig and Indian Hare) are listed in Schedule II of IWPA. List of mammal species recorded from the study area is given in Table 1. According to IUCN Red List data, the Common Leopard is listed in vulnerable categories and Striped Hyena is listed in Near Threatened categories, rest of the species are listed in Least Concern categories. Images of animals captured through camera traps are given in Figure 7 & 8.



Striped Hyaena (Scheduled – I)



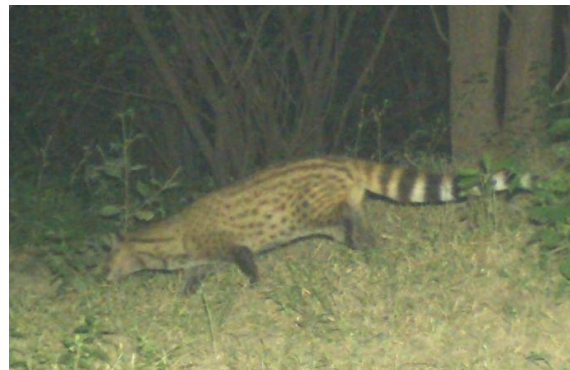
Common Leopard (Scheduled – I)



Golden Jackal (Scheduled – I)



Jungle Cat (Scheduled – I)



Indian Fox (Schedule – I)

**Figure 7.** Carnivore mammals recorded from the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.



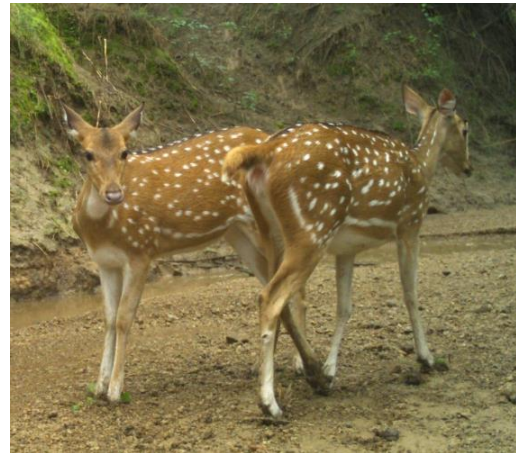
Wild Pig



Indian Crested Porcupine



Nilgai



Spotted deer



Grey Langur



Indian Hare

**Figure 8.** Herbivore mammals recorded from the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

### Mammal Density based on DISTANCE sampling

In the present study, 4 line transects were laid in the upper reservoir area for conducting animal estimation and transects were walked thrice to get unbiased results. Nilgai, Chinkara, Wild Pig and Golden Jackal were sighted directly during the transect walk. Over all 36 animal sightings were recorded during the sampling period. The data were subjected to DISTANCE Software with Half-normal cosine as best fit model. Effective strip width (ESW=31.86m) and detection probability (p=0.32) were recorded along with low AIC (302.21). Graph showing detection probability is given in Figure 9. In the case of Nilgai, we obtained encountered rate of 22.7 per sq. km with high Density estimate (D=15.2), whereas Chinkara, had low density (D=4.20) with encounter rate of 6 per sq. km. The statistical results obtained through DSSTANCE programme is presented below:

Model

Minimum AIC = 302.2139

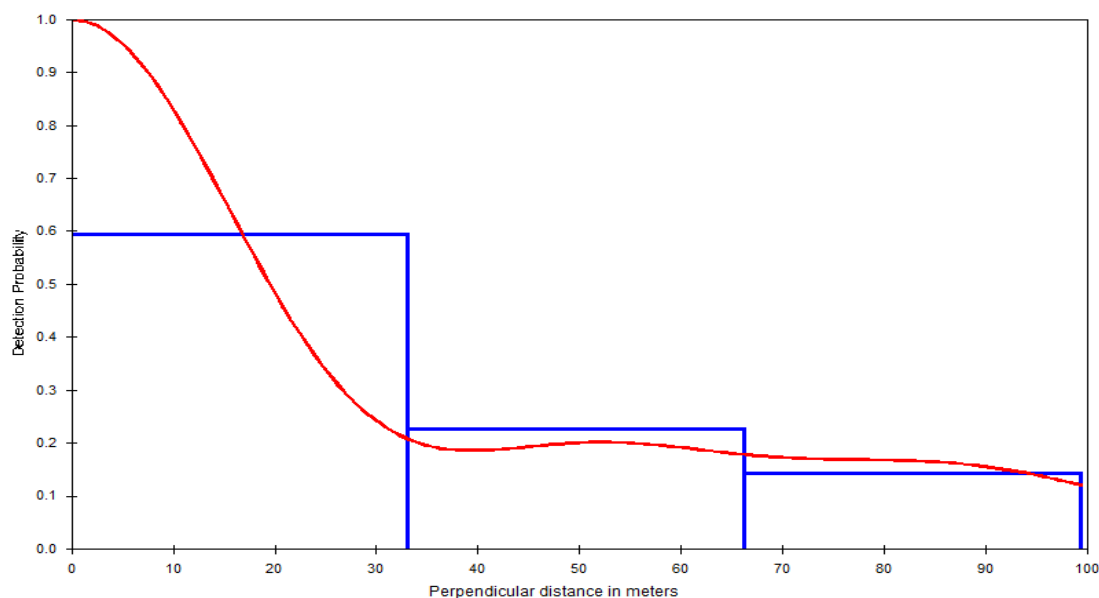
Half-normal key,  $k(y) = \text{Exp}(-y^{**2}/(2*A(1)**2))$

Cosine adjustments of order(s) : 2, 3, 4

Parameter	Point Estimate	Standard Error	Percent Coef. of Variation	95 Percent Confidence Interval	
A(1)	50.57	8.689			
A(2)	0.5580	0.2419			
A(3)	0.1538	0.2576			
A(4)	0.1669	0.2190			
f(0)	0.31381E-01	0.70643E-02	22.51	0.19928E-01	0.49416E-01
p	0.32036	0.72116E-01	22.51	0.20344	0.50447
ESW	31.866	7.1734	22.51	20.236	50.180

Parameter	Point Estimate	Standard Error	Percent Coef. of Variation	95% Percent Confidence Interval	
DS	22.228	5.8972	26.53	13.159	37.549
E(S)	0.69862	0.94312E-01	13.50	1.0000	0.91859
D	15.529	4.6226	29.77	8.6844	27.769

Detection probability : 57.2  
 Encounter rate : 22.2  
 Cluster size : 20.6



**Figure 9.** Graph representing the detection probability obtained in the DISTANCE sampling.

**Table 1.** List of mammals recorded from the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

Sl No.	Common Name	Scientific Name	WPA Status*	IUCN Status**
1	Northern Plains Gray Langur	<i>Semnopithecus entellus</i>	Schedule-II	LC
2	Spotted Deer	<i>Axis axis</i>	Schedule II	LC
3	Chinkara	<i>Gazella bennettii</i>	Schedule I	LC
4	Nilgai	<i>Boselaphus tragocamelus</i>	Schedule II	LC
5	Wild Pig	<i>Sus scrofa</i>	Schedule II	LC
6	Indian Hare	<i>Lepus nigricollis</i>	Schedule II	LC
7	Indian Crested Porcupine	<i>Hystrix indica</i>	Schedule I	LC
8	Five-striped Palm Squirrel	<i>Funambulus pennantii</i>	Not listed	LC
9	Indian Gerbil	<i>Tatera indica</i>	Not listed	LC
10	Common Leopard	<i>Panthera pardus</i>	Schedule I	VU
11	Jungle Cat	<i>Felis chaus</i>	Schedule-I	LC
12	Small Indian Civet	<i>Viverricula indica</i>	Schedule-I	LC
13	Common Palm Civet	<i>Paradoxurus hemaphroditus</i>	Schedule-I	LC
14	Indian Grey Mongoose	<i>Herpestes edwardsii</i>	Schedule-I	LC
15	Indian Fox	<i>Vulpes bengalensis</i>	Schedule-I	LC
16	Golden Jackal	<i>Canis aureus</i>	Schedule-I	LC
17	Stripped Hyena	<i>Hyaena hyaena</i>	Schedule I	NT

\*As per IWPA Amendment 2022; \*\*NT- Near Threatened, VU- Vulnerable and LC- Least Concern

### **Primate counts**

The only primate recorded from the study area is the Northern Plains Gray Langur. The members of this Langur troops are arboreal, keep transposing through the project area. In order to account their population status, a total count method was adopted. During the study period, two troops were recorded in the study area. The first troop had 24 individuals consisting of 10 females, 6 males and 8 sub-adults. The other troop had 27 individuals consisting 12 females, 4 males and 11 sub-adults.

### **Relative abundance of Mammals based on Sign Survey**

Sign survey was carried out in the study area, a total of 7 trail walks of ~1 km was walked to find carnivore sign encountered rate. The approach road to power house region was divided into 3 segments for trails walk. Segment 2 is full of *Lantana camara* compare to other segments. Based on analysis, overall encounter rate of wild animals is (ER=15.32/km), in which segment 3 has higher encounter rate (ER=20.6/km) and segment 2 has low encounter rate (ER=12.7.km) of wild mammals. Over all Wild Pig encounter rate was high (E=3.6/km) in upper reservoir region and segment 3 of road region, next to that Golden Jackal had high encounter rate (ER=3.4/km). In contrast, Indian fox had very low encounter rate (ER=0.14/km) in the study area. The encounter rate of different mammals recorded in the study area is given in Table 2.

### **Relative abundance of Mammals based Camera Traps**

A total of 40 camera traps were deployed in study site (25 in the upper reservoir area, 15 in the approach road to power house) for 6 days in a phase and the session was repeated thrice. The camera traps were taken continuous image shots for 720 working nights. Total of 82,422 photos were captured from the study area, out of which 10,665 photos of cattle, 60,871 photos of Blank images, 8,231 photos of human and vehicle and 2,655 photos of wild animals. All camera traps images were segregated with the help of EXIF Pro Software and the photos were stored in 1TB HDD of Seagate OneTouch, according to the species folder. Total 15 species of mammals were recorded from the study area, excluding Indian gerbil and five striped palm squirrel.

The camera trap results revealed that the wild pig had higher relative abundance (RAI=31.69), followed by Nilgai (RAI=24.65). In contrast, the striped hyena had very low relative abundance (0.22) and the Indian fox showed second lowest relative abundance (RAI=1.71). In the case of Common Leopard, it had relative abundance of 5.55 from the study area and its movement was



detected throughout the project area, except the Khemla village region. Whereas, the movement of Indian crested Porcupine is limited to segment 1 and segment 3 of approach road to power house with relative abundance of 1.84. Spotted Deer were captured in the upper reservoir area and 3<sup>rd</sup> segment of lower road region with relative abundance of 1.2 while Chinkara were spotted only in upper reservoir (RAI=2.43) not in the lower road sector. Small Indian Civet were seen almost in all region (RAI=0.91) while Common palm civet were captured in 2<sup>nd</sup> and 3<sup>rd</sup> segment of lower road side. The summary of relative abundance of wild mammals recorded from the study are is presented in Table 3. Further, the graph depicting mean encounter rate and relative abundance of mammals present in the study area is presented in Figure 10.

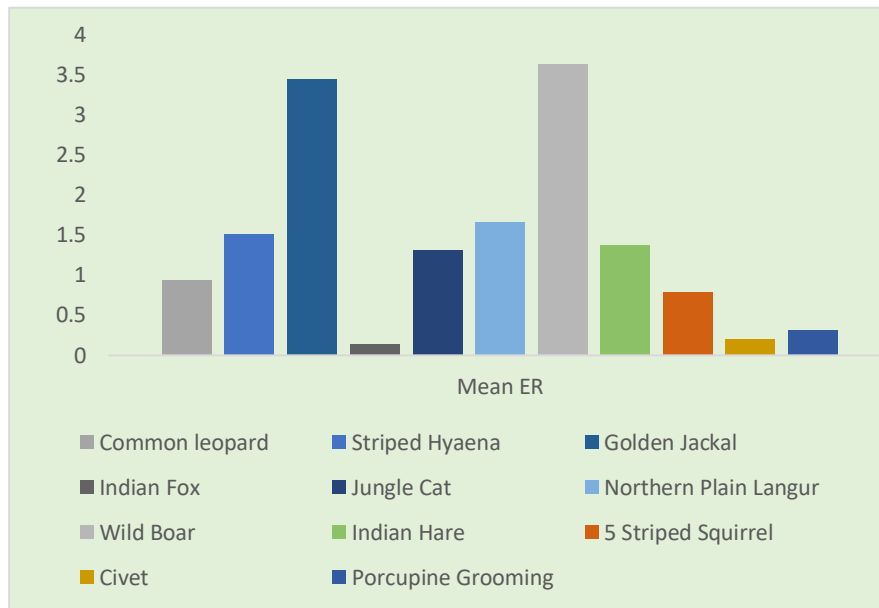
**Table 2.** Encounter rate of carnivores and other mammals recorded through sign survey in the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh (ER= Encountered Rate).

Species Sign	Upper Reservoir ER	Khemla road ER	Lower approach road Segment1 ER	Lower approach road Segment 2 ER	Lower approach road Segment 3 ER	Mean ER
Common leopard Pugmark	0.63	0.83	0.3	1.7	1.1	0.93
Common leopard Scat						
Striped Hyena Pugmark	1.25	1.5	1.3	1.2	2.3	1.51
Striped Hyena Scat						
Golden Jackal Pugmark	2.38	4.33	2.6	2.9	5	3.44
Golden Jackal Scat						
Indian Fox Pugmark	0.38	0.33	0	0	0	0.14
Indian Fox Scat						
Jungle Cat Pugmark	0.75	0	1.9	1.8	2.1	1.31
Jungle Cat Scat						
Northern Plain Langur Groomig site	0.5	0	2.5	1.8	3.5	1.66
Northern Plain Langur Scat						
Wild Boar Hoofmark	5.38	2.67	2.6	2.2	5.3	3.63
Wild Boar Scat						

Wild Boar Digging site						
Indian Hare Pugmark	1.88	2.33	2.6	0.1	0	1.38
Indian Hare Pellet						
5 Striped Squirrel Direct sighting	0.63	2.33	0.5	0	0.5	0.79
5 striped Squirrel Scat						
Civet	0.25	0	0.2	0.3	0.3	0.21
Porcupine Grooming site	0.38	0	0	0.7	0.5	0.32
Porcupine Grooming Pugmark						
Total	14.37	14.33	14.5	12.7	20.6	15.32

**Table 3.** Relative abundance of mammalian species recorded through Camera Traps from the MP 30 Off stream Pumped storage project, Madhya Pradesh (RA= Relative Abundance).

Common Name	Upper Reservoir RA	Khemla Road RA	Lower approach road Segt-1 RA	Lower approach road Segt 2 RA	Lower approach road Segt 3 RA	Mean RA	Std. Dev	Error Function
Northern Plains Grey Langur	1.83	0	2.7	0	0	0.91	9.25	0.92
Spotted Deer	0.32	0	0	0	5.53	1.17	9.44	1
Chinkara	3.22	8.72	0	0	0	2.39	9.65	1
Nilgai	32.63	38.32	11.66	28.33	20.53	26.29	9.92	1
Wild boar	29.05	31.05	12.89	42.5	32.73	29.64	8.61	0.99
Indian Hare	9.33	4.1	56.93	0	2.5	14.57	4.65	0.83
Indian Crested Porcupine	0	0	2.08	0	8.03	2.02	3.18	0.98
Common Leopard	3.36	0	2.08	12.5	10.08	5.6	3.36	0.95
Jungle Cat	2.01	2.18	0	2.5	3.03	1.94	3.41	0.71
Small Indian Civet	0.99	0	1.35	0	2.5	0.97	3.68	1
Common Palm Civet	0	0	0	5	3.03	1.61	3.95	0.05
Indian Grey Mongoose	0.69	0	2.08	0	4.02	1.36	4.36	0
Indian Fox	2.19	1.57	0	0	0	0.75	4.88	0
Golden Jackal	14.2	14.05	8.22	9.17	8.03	10.73	5.35	0
Stripped Hyena	0.18	0	0	0	0	0.04	0	0



**Figure 10.** Graph showing the mean encounter rate and relative abundance of mammals in the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

## 6.2. Abundance of Birds

During the preliminary survey, we found variety of bird life in and around the study area. Five species of Vultures were spotted, while they were soaring above the study area. Out of which two are critically endangered White back vulture (*Gyps bengalensis*) and Indian vulture (*Gyps indicus*). No nesting of vultures were observed in the study area during the survey duration in the study area. Monotagu's Harrier (*Circus pygargus*), Short-eared owl (*Asio flammeus*), Short-toed snake eagle (*Circaetus gallicus*), Shikra (*Accipiter badius*), White-eyed Buzzard (*Butastur teesa*) were some of the other raptor species were recorded from study area. Since study area has different habitats such as Grassland, Agriculture and Scrublands, they provide habitat for different group of birds. Siberian stonechat (*Saxicola maurus*), Pied bushchat (*Saxicola caprata*), Plain prinia (*Prinia inornata*), Ashy prinia (*Prinia socialis*) were seen in Grasslands, Common Woodshrike (*Tephrodornis pondicerianus*), Coppersmith Barbet (*Psilopogon haemacephalus*), Cinereous Tit (*Parus cinereus*), White-bellied Drongo (*Dicrurus caerulescens*), Black drongo (*Dicrurus macrocercus*), Yellow-eyed Babbler (*Chrysomma sinense*) were spotted in forest patches. Ground dwelling birds like Indian Nightjar (*Caprimulgus asiaticus*), Savanna Nightjar (*Caprimulgus affinis*) and Indian thick-knee (*Burhinus indicus*) were also recorded.

A total of 114 species of birds were recorded from the study area. Among the recorded birds, the order *Passeriformes* was the most observed dominant order with 54 species. Species like Rose-ringed parakeet (RA=1.113), Large Grey Babbler (RA=0.649), Yellow-throated Sparrow (RA=0.256) were dominant species in this landscape with highest abundance in submergence zone and Large Grey babbler (RA=0.542) and Yellow-throated Sparrow (RA=0.542) were most abundance species in the influenced zone. Following this, the order *Accipitriformes* ranks second with 11 species. Two species of vulture White-backed Vulture (*Gyps bengalensis*) and the Indian vulture (*Gyps indicus*), which are listed under Schedule –I of IWPA 1972, these birds were observed from the study area. No nesting of these vultures were found in and around the study area. Species with their relative abundance in submergence and influenced zone are presented in Table 4. A checklist of bird species from in and around the study area, with their foraging guilds, IUCN status and their protected status under the Indian Wildlife Protection Act (1972) is presented in Table 5.

**Table 4.** Relative abundance (encounter rate) and overall encounter rate of bird species recorded in Submergence and Influenced Zone of the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

S. No.	Name of the species	Encountered Rate in submergence zone	Encountered Rate in influenced zone	Encountered Rate Overall
1	Rose-ringed Parakeet	1.113	0.030	1.13
2	Large Grey Babbler	0.649	0.542	0.650
3	Yellow-throated Sparrow	0.256	0.185	0.257
4	Indian Silverbill	0.101	0.024	0.101
5	Ashy Prinia	0.095	0.018	0.095
6	Indian Robin	0.089	0.065	0.089
7	Eurasian Collared Dove	0.077	0.226	0.078
8	White-browed Fantail	0.077	0.006	0.007
9	Ashy-crowned Sparrow-Lark	0.024	0.036	0.024
10	Indian Bushlark	0	0.036	0.036
11	Plain Prinia	0.071	0	0.071
12	Red-vented Bulbul	0.071	0.089	0.072
13	Black Drongo	0.077	0.036	0.077
14	Plum-headed Parakeet	0.060	0.018	0.018

15	Rufous Treepie	0.054	0.042	0.054
16	Spotted Dove	0.048	0.048	0.048
17	Jungle Bush-Quail	0	0.018	0.018
18	White-bellied Minivet	0.036	0	0.036
19	Indian Roller	0.030	0.012	0.030
20	Grey Francolin	0.024	0	0.024
21	House Sparrow	0.024	0.006	0.024
22	Black-winged Kite	0.018	0.006	0.018
23	Red-wattled Lapwing	0.018	0	0.018
24	Jungle Babbler	0.012	0.012	0.012
25	Pied Bushchat	0.018	0	0.018
26	Siberian Stonechat	0.018	0.006	0.018
27	Common Myna	0.018	0	0.018
28	Common Woodshrike	0.018	0.030	0.018
29	House Crow	0.024	0.006	0.024
30	Egyptian Vulture	0.06	0	0.06
31	White-eyed Buzzard	0.012	0	0.012
32	Laughing Dove	0.012	0.006	0.012
33	Oriental Turtle Dove	0.012	0.006	0.012
34	Long-tailed Shrike	0.012	0.012	0.012
35	Yellow-crowned Woodpecker	0.012	0	0.012
36	Chestnut-bellied Sandgrouse	0.012	0	0.012
37	Montagu's Harrier	0.006	0	0.006
38	Savanna Nightjar	0.006	0	0.006
39	Common Iora	0.006	0.006	
40	Rufous-tailed Lark	0.006	0	0.006
41	Large Cuckooshrike	0.012	0	0.012
42	Common Tailorbird	0.006	0	0.006
43	Jungle Prinia	0	0.006	0
44	Barn Swallow	0.006	0	0.006
45	Bay-backed Shrike	0.006	0.018	0.006
46	Cinereous Tit	0.006	0.018	0.006
47	Lesser Whitethroat	0.006	0	0.006

**Table 5.** Checklist of bird species recorded from the MP-30 Gandhi Sagar off-stream pumped storage project, Madhya Pradesh.

Sr.no.	Name of the species	Scientific Name	Bird Guilds	IUCN category	IWPA 1972, Schedules
<b>Order -Accipitriformes</b>					
<b>Family -Accipitridae</b>					
1	Black-winged Kite	<i>Elanus caeruleus</i>	Carnivorous	LC	Schedule - II
2	Cinereous Vulture	<i>Aegypius monachus</i>	Carnivorous	NT	Schedule - I
3	Egyptian Vulture	<i>Neophron percnopterus</i>	Carnivorous	EN	Schedule - I
4	Griffon Vulture	<i>Gyps fulvus</i>	Carnivorous	LC	Schedule - I
5	Himalayan Vulture	<i>Gyps himalayensis</i>	Carnivorous	NT	Schedule - I
6	Indian Vulture	<i>Gyps indicus</i>	Carnivorous	CE	Schedule - I
7	Montagu's Harrier	<i>Circus pygargus</i>	Carnivorous	LC	Schedule - I
8	Shikra	<i>Accipiter badius</i>	Carnivorous	LC	Schedule - I
9	Short-toed Snake Eagle	<i>Circaetus gallicus</i>	Carnivorous	LC	Schedule - I
10	White-backed Vulture	<i>Gyps bengalensis</i>	Carnivorous	CE	Schedule - I
11	White-eyed Buzzard	<i>Butastur teesa</i>	Carnivorous	LC	Schedule - I
<b>Order- Bucerotiformes</b>					
<b>Family- Bucerotidae</b>					
12	Indian Grey Hornbill	<i>Ocyrceros birostris</i>	Omnivorous	LC	Schedule - II
Family	Upupidae				
13	Eurasian Hoopoe	<i>Upupa epops</i>	Insectivorous	LC	Schedule - II
<b>Order - Caprimulgiformes</b>					
<b>Family - Caprimulgidae</b>					
14	Indian Nightjar	<i>Caprimulgus asiaticus</i>	Insectivorous	LC	Schedule - II
15	Savanna Nightjar	<i>Caprimulgus affinis</i>	Insectivorous	LC	Schedule - II
<b>Order- Charadriiformes</b>					
<b>Family -Burhinidae</b>					
16	Indian Thick-knee	<i>Burhinus indicus</i>	Omnivorous	LC	Schedule - II
<b>Family- Charadriidae</b>					
17	Little Ringed Plover	<i>Charadrius dubius</i>	Insectivorous	LC	Schedule - II
18	Red-wattled Lapwing	<i>Vanellus indicus</i>	Insectivorous	LC	Schedule - II

19	Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	Insectivorous	LC	Schedule - II
<b>Family - Laridae</b>					
20	River Tern	<i>Sterna aurantia</i>	Carnivorous	VN	Schedule - I
<b>Family - Recurvirostridae</b>					
21	Black-winged Stilt	<i>Himantopus himantopus</i>	Carnivorous	LC	Schedule - II
<b>Order - Ciconiiformes</b>					
<b>Family - Ciconiidae</b>					
22	Painted Stork	<i>Ciconia episcopus</i>	Carnivorous	NT	Schedule - II
23	Woolly-necked Stork	<i>Mycteria leucocephala</i>	Carnivorous	NT	Schedule - II
<b>Order Columbiformes</b>					
<b>Family - Columbidae</b>					
24	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	Granivorous	LC	Schedule - II
25	Laughing Dove	<i>Streptopelia senegalensis</i>	Granivorous	LC	Schedule - II
26	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	Granivorous	LC	Schedule - II
27	Rock Pigeon	<i>Columba livia</i>	Granivorous	LC	Schedule - IV
28	Spotted Dove	<i>Streptopelia chinensis</i>	Granivorous	LC	Schedule - II
29	Yellow-footed Green Pigeon	<i>Treron phoenicopterus</i>	Frugivorous	LC	Schedule - II
<b>Order - Coraciiformes</b>					
<b>Family - Alcedinidae</b>					
30	Pied Kingfisher	<i>Ceryle rudis</i>	Carnivorous	LC	Schedule - II
31	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Carnivorous	LC	Schedule - II
<b>Family Coraciidae</b>					
32	Indian Roller	<i>Coracias benghalensis</i>	Carnivorous	LC	Schedule - II
<b>Family Meropidae</b>					
33	Green Bee-eater	<i>Merops orientalis</i>	Insectivorous	LC	Schedule - IV
<b>Order - Cuculiformes</b>					
<b>Family - Cuculidae</b>					
34	Greater Coucal	<i>Centropus sinensis</i>	Carnivorous	LC	Schedule - IV
<b>Order - Galliformes</b>					
<b>Family - Phasianidae</b>					
35	Grey Francolin	<i>Ortygornis pondicerianus</i>	Omnivorous	LC	Schedule - IV
36	Indian Peafowl	<i>Pavo cristatus</i>	Omnivorous	LC	Schedule - I

37	Jungle Bush Quail	<i>Perdicula asiatica</i>	Omnivorous	LC	Schedule - II
<b>Order -Gruiformes</b>					
<b>Family -Rallidae</b>					
38	Grey-headed Swampphen	<i>Porphyrio poliocephalus</i>	Omnivorous	NR	Schedule - IV
39	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Omnivorous	LC	Schedule - IV
<b>Order -Passeriformes</b>					
<b>Family- Aegithinidae</b>					
40	Common Iora	<i>Aegithina tiphia</i>	Insectivorous	LC	Schedule - II
<b>Family -Alaudidae</b>					
41	Ashy-crowned Sparrow Lark	<i>Eremopterix griseus</i>	Omnivorous	LC	Schedule - II
42	Indian Bushlark	<i>Mirafra erythroptera</i>	Omnivorous	LC	Schedule - II
43	Rufous-tailed Lark	<i>Ammomanes phoenicura</i>	Omnivorous	LC	Schedule - II
<b>Family -Campephagidae</b>					
44	Large Cuckooshrike	<i>Coracina macei</i>	Insectivorous	LC	Schedule - II
45	Small Minivet	<i>Pericrocotus cinnamomeus</i>	Insectivorous	LC	Schedule - II
46	White-bellied Minivet	<i>Pericrocotus erythropygius</i>	Insectivorous	LC	Schedule - II
<b>Family -Cisticolidae</b>					
47	Ashy Prinia	<i>Prinia socialis</i>	Insectivorous	LC	Schedule - II
48	Common Tailorbird	<i>Orthotomus sutorius</i>	Insectivorous	LC	Schedule - IV
49	Jungle Prinia	<i>Prinia sylvatica</i>	Insectivorous	LC	Schedule - II
50	Plain Prinia	<i>Prinia inornata</i>	Insectivorous	LC	Schedule - II
<b>Family -Corvidae</b>					
51	House Crow	<i>Corvus splendens</i>	Omnivorous	LC	Schedule - IV
52	Large-billed Crow	<i>Corvus macrorhynchos</i>	Omnivorous	LC	Schedule - IV
53	Rufous Treepie	<i>Dendrocitta vagabunda</i>	Omnivorous	LC	Schedule - II
<b>Family -Dicruridae</b>					
54	Black Drongo	<i>Dicrurus macrocercus</i>	Insectivorous	LC	Schedule - II
55	White-bellied Drongo	<i>Dicrurus caeruleus</i>	Insectivorous	LC	Schedule - II
<b>Family -Emberizidae</b>					
56	Crested Bunting	<i>Emberiza lathami</i>	Omnivorous	LC	Schedule - II
<b>Family -Estrildidae</b>					



57	Indian Silverbill	<i>Euodice malabarica</i>	Granivorous	LC	Schedule - II
<b>Family -Hirundinidae</b>					
58	Barn Swallow	<i>Hirundo rustica</i>	Insectivorous	LC	Schedule - II
59	Red-rumped Swallow	<i>Cecropis daurica</i>	Insectivorous	LC	Schedule - II
<b>Family -Laniidae</b>					
60	Bay-backed Shrike	<i>Lanius vittatus</i>	Insectivorous	LC	Schedule - II
61	Long-tailed Shrike	<i>Lanius schach</i>	Insectivorous	LC	Schedule - II
<b>Family -Leiothrichidae</b>					
62	Jungle Babbler	<i>Argya striata</i>	Insectivorous	LC	Schedule - II
63	Large Grey Babbler	<i>Argya malcolmi</i>	Insectivorous	LC	Schedule - II
<b>Family -Motacillidae</b>					
64	Citrine Wagtail	<i>Motacilla citreola</i>	Insectivorous	LC	Schedule - II
65	Grey Wagtail	<i>Motacilla cinerea</i>	Insectivorous	LC	Schedule - II
66	Paddyfield Pipit	<i>Anthus rufulus</i>	Insectivorous	LC	Schedule - II
67	Tawny Pipit	<i>Anthus campestris</i>	Insectivorous	LC	Schedule - II
68	White Wagtail	<i>Motacilla alba</i>	Insectivorous	LC	Schedule - II
69	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	Insectivorous	LC	Schedule - II
<b>Family -Muscicapidae</b>					
70	Black Redstart	<i>Phoenicurus ochruros</i>	Insectivorous	LC	Schedule - IV
71	Bluethroat	<i>Luscinia svecica</i>	Insectivorous	LC	Schedule - II
72	Brown Rock Chat	<i>Oenanthe fusca</i>	Insectivorous	LC	Schedule - II
73	Desert Wheatear	<i>Oenanthe deserti</i>	Insectivorous	LC	Schedule - II
74	Indian Robin	<i>Copsychus fulicatus</i>	Insectivorous	LC	Schedule - II
75	Isabelline Wheatear	<i>Oenanthe isabellina</i>	Insectivorous	LC	Schedule - II
76	Oriental Magpie Robin	<i>Copsychus saularis</i>	Insectivorous	LC	Schedule - II
77	Pied Bushchat	<i>Saxicola caprata</i>	Insectivorous	LC	Schedule - II
78	Red-breasted Flycatcher	<i>Ficedula parva</i>	Insectivorous	LC	Schedule - II
79	Siberian Stonechat	<i>Saxicola maurus</i>	Insectivorous	LC	Schedule – II
80	Variable Wheatear	<i>Oenanthe picata</i>	Insectivorous	LC	Schedule – II
<b>Family -Nectariniidae</b>					

81	Purple Sunbird	<i>Cinnyris asiaticus</i>	Nectivorous	LC	Schedule - II
<b>Family -Paradoxornithidae</b>					
82	Yellow-eyed Babbler	<i>Chrysomma sinense</i>	Omnivorous	LC	Schedule - II
<b>Family -Paridae</b>					
83	Cinereous Tit	<i>Parus cinereus</i>	Insectivorous	LC	Schedule - II
<b>Family -Passeridae</b>					
84	House Sparrow	<i>Passer domesticus</i>	Granivorous	LC	Schedule - II
85	Yellow-throated Sparrow	<i>Gymnoris xanthocollis</i>	Granivorous	LC	Schedule - II
<b>Family -Phylloscopidae</b>					
86	Greenish Warbler	<i>Phylloscopus trochiloides</i>	Insectivorous	LC	Schedule - IV
<b>Family -Pycnonotidae</b>					
87	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Omnivorous	LC	Schedule - II
<b>Family -Rhipiduridae</b>					
88	White-browed Fantail	<i>Rhipidura aureola</i>	Insectivorous	LC	Schedule - II
<b>Family -Sturnidae</b>					
89	Asian Pied Starling	<i>Gracupica contra</i>	Omnivorous	LC	Schedule - II
90	Brahminy Starling	<i>Sturnia pagodarum</i>	Omnivorous	LC	Schedule - IV
91	Common Myna	<i>Acridotheres tristis</i>	Omnivorous	LC	Schedule - II
<b>Family -Sylviidae</b>					
92	Lesser Whitethroat	<i>Curruca curruca</i>	Insectivorous	LC	Schedule - IV
<b>Family -Vangidae</b>					
93	Common Woodshrike	<i>Tephrodornis pondicerianus</i>	Insectivorous	LC	Schedule - II
<b>Family -Zosteropidae</b>					
94	Indian White-eye	<i>Zosterops palpebrosus</i>	Frugivorous	LC	Schedule - II
<b>Order -Pelecaniformes</b>					
<b>Family -Ardeidae</b>					
95	Cattle Egret	<i>Bubulcus ibis</i>	Carnivorous	LC	Schedule - II
96	Grey Heron	<i>Ardea cinerea</i>	Carnivorous	LC	Schedule - II
97	Indian Pond Heron	<i>Ardeola grayii</i>	Carnivorous	LC	Schedule - II
98	Intermediate Egret	<i>Ardea intermedia</i>	Carnivorous	LC	Schedule - II
99	Little Egret	<i>Egretta garzetta</i>	Carnivorous	LC	Schedule - II
100	Purple Heron	<i>Ardea purpurea</i>	Carnivorous	LC	Schedule - II
<b>Family -Threskiornithidae</b>					

101	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	Carnivorous	NT	Schedule - II
102	Red-naped Ibis	<i>Pseudibis papillosa</i>	Carnivorous	LC	Schedule - II
<b>Order -Piciformes</b>					
<b>Family -Megalaimidae</b>					
103	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	Frugivorous	LC	Schedule - II
<b>Family -Picidae</b>					
104	Brown-capped Pygmy Woodpecker	<i>Yungipicus nanus</i>	Insectivorous	LC	Schedule - II
105	White-naped Woodpecker	<i>Chrysocolaptes festivus</i>	Insectivorous	LC	Schedule - II
106	Yellow-crowned Woodpecker	<i>Leiopicus mahrattensis</i>	Insectivorous	LC	Schedule - I
<b>Order -Psittaciformes</b>					
<b>Family -Psittaculidae</b>					
107	Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	Frugivorous	LC	Schedule - II
108	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Frugivorous	LC	Schedule - II
<b>Order- Pterocliiformes</b>					
<b>Family -Pteroclididae</b>					
109	Chestnut-bellied Sandgrouse	<i>Pterocles exustus</i>	Granivorous	LC	Schedule - II
110	Painted Sandgrouse	<i>Pterocles indicus</i>	Granivorous	LC	Schedule - II
<b>Order -Strigiformes</b>					
<b>Family -Strigidae</b>					
111	Short-eared Owl	<i>Short-eared Owl</i>	Carnivorous	LC	Schedule - I
112	Spotted Owlet	<i>Athene brama</i>	Carnivorous	LC	Schedule - II
<b>Order -Suliformes</b>					
<b>Family -Anhingidae</b>					
113	Oriental Darter	<i>Anhinga melanogaster</i>	Carnivorous	NT	Schedule - II
<b>Family -Phalacrocoracidae</b>					
114	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	Carnivorous	LC	Schedule - II

Birds recorded during the point count were categorised into different foraging guilds (Sohil, 2020 and Wilman *et al.*, 2014). Since there were large number of bird species recorded, calculating densities of each species was not feasible due to sample size limitations. Therefore, their relative abundance was calculated and they were placed in different foraging guilds and species were grouped according to their foraging habits. The important foraging guilds observed

are: Insectivorous, Carnivorous, Frugivorous, Granivorous, Omnivorous and Nectivorous. Among the feeding guilds, the insectivorous guild had a greater number of species and total of 48 species represents this guild (Table 6). At the same time insectivorous and nectivorous guild members are less abounded in number, they constitute 5 species and 1 species in insectivorous and nectivorous respectively.

**Table 6.** Bird abundance as per different feeding guilds recorded in Submergence and Influenced Zone of the MP-30 off stream pumped storage project, Madhya Pradesh.

Sr. no.	Bird Guild	No. of species in Bird Guild	ER in sub-mergence zone	No. of species in Bird Guild	ER in influence zone	ER Overall
1	Insectivorous	24	1.179	14	0.750	0.964
2	Granivorous	9	0.542	7	0.476	0.508
3	Frugivorous	2	1.173	2	0.048	0.610
4	Omnivorous	10	0.274	7	0.262	0.267
5	Carnivorous	6	0.071	3	0.024	0.017
6	Nectivorous	0	0	1	0.018	0.000

Out of all recorded species, two species of birds are listed in the IUCN threatened categories: the Egyptian vulture is listed as endangered and River Tern is listed as Vulnerable. However, many raptor species and few rare birds are listed in the Scheduled list of newly updated the Indian Wildlife Protection Act 1972 (IWPA). A total of 14 species of birds listed under scheduled-I of IWPA, they are: Cinereous vulture, Egyptian Vulture, Griffon Vulture, Himalayan Vulture, Indian Vulture, Montagu's Harrier, Shikra, Short-toed Snake Eagle, White-backed Vulture, White-eyed Buzzard, River tern, Short-eared Owl, Yellow-crowned Woodpecker and Indian Peafowl. Some of the shceduled bird species recorded from the study area is given in Figure 11.



**Short-toed Snake Eagle (Schedule -I)**



**Short-eared Owl (Schedule-I)**



**Griffon Vulture (Schedule-I)**



**White-backed Vulture (Schedule-I)**



**Indian Vulture (Schedule-I)**



**Egyptian Vulture (Schedule-I)**



**Black-winged Kite, (Schedule-II)**



**Himalayan Vulture, (Schedule-I)**

**Figure 11.** Some of the scheduled bird species recorded from the MP 30 off stream Pumped storage

### 6.3. Abundance of Herpetofauna

A total of 16 species of herpetofauna were recorded from the study area within the short span of time from January 2023 to March 2023. In the visual encounter survey (VES), a total of 48-man hours were spent in field searching for herpetofauna in the study area and 12 species of reptiles and 4 species of amphibians were recorded. The reptiles include 6 species of snakes, 1 species of lizard, 2 species of skink, 1 species of lacertid and 2 species of gecko. The list of herpetofauna recorded from the study area and their status in the IWLP Act and IUCN conservation status are given in Table 7. In addition to VES, the cover board method was adopted for documenting herpetofuna in the study area, a total of 40 1 x 1 m metal cover boards across the study area were placed for 5 days. In this technique, 1 skink (*Eutropis* spp) and 2 lacertids (*Ophisops* spp) were recorded.

From the data obtained, it is observed that the species recorded from the study area are Least Concern status of IUCN redlist data and none of the species are listed in Schedule I of IWLP. However, there are records of Schedule I reptiles like Monitor lizard (*Varanus bengalensis*) and Indian rock python (*Python molurus*) in other published studies from around this region (Vyas and Singh, 2004; Ishaque *et al.*, 2014) and many villagers also confirmed that presence of Monitor lizard & Indian rock python in the study area.

**Table 7.** List of herpetofauna recorded from the Submergence/ Influenced Zone of the MP-30 off stream pumped storage project, Madhya Pradesh.

Common Name	Scientific Name	Upper reservoir	Lower road	IUCN**	IWPA
Monitor lizard*	<i>Varanus bengalensis</i>	+	+		Schedule I
Indian rock python*	<i>Python molurus</i>	+	+		Schedule I
Rat snake	<i>Ptyas mucosa</i>		+	LC	
Checkered keelback	<i>Xenocrophis piscator</i>		+	LC	
Blind snake		+			Schedule II
Leith's sand snake	<i>Psammophis leithii</i>	+		LC	
Banded racer	<i>Argyrogena fasciolata</i>	+		LC	
Saw scaled	<i>Echis carinatus</i>	+		LC	Schedule II
Garden lizard	<i>Calotes versicolor</i>	+	+	LC	
Lacertid	<i>Ophisops spp</i>	+	+	LC	
Skink	<i>Eutropis spp</i>	+	+	LC	
Lined supple skink	<i>Riopa lineata</i>	+		LC	
House geckos	<i>Hemidactylus spp</i>	+	+		
Rock gecko	<i>Cyrtopodion</i>		+	LC	
Skittering frog	<i>Euphlyctis cyanophlyctis</i>		+	LC	
Cricket frog	<i>Fejervarya spp</i>		+	LC	
Asian toad	<i>Duttaphrynus melanostictus</i>		+	LC	
Tree frog	<i>Polypedates leucomystax</i>		+	LC	

\*Species are not recorded during the present survey, but reported in published literature

\*\*LC- Least Concern



*Duttaphrynus melanostictus* (Common Asian Toad)



*Euphlyctis cyanophlyctis* (Indian Skittering Frog)



*Hemidactylus* sp. (House Gecko)



*Calotes* cf. *versicolor* (Garden Lizard)



*Ptyas mucosa* (Indian Rat Snake)



*Fowlea piscator* (Checked Keelback)



*Python molurus* (Indian Rock Python)



*Varanus bengalensis* (Bengal Monitor Lizard)

**Figure 13.** Some of the hepetafauna recorded/ reported from MP 30 off stream Pumped storage project area, Madhya Pradesh.



## 7. WILDLIFE MANAGEMENT PLAN

The present study indicated that the diverted forested area supports good ungulate abundance with encountered rate of 22.7/ sq. km and 6/ sq.km for Nilgai and Chinkara respectively. Similarly, the camera trap survey indicated that the ungulates, Wild Pig had high relative abundance (RAI=31.69), followed by Nilgai (RAI=24.65) in the diverted forested area. Since, the forests cover is predominated by mixed tree species, understory cover and grass cover, which support ideal habitat and necessary dietary requirements for ungulates. The present survey with good sighting of ungulates in the project area indicates that the forests cover falls within the submergence zone support good number of ungulates like Nilgai, Chinkara, Cheetal and Wild Pig. Because of presence of good prey basis, this forest area also supports good abundance of top predators like Leopard and other co-predators like Hyena and Jackals. However, most of the mammalian species recorded (nilgai, chinkara, spotted deer, wild pig, golden jackal, striped hyena, jungle cat) from the study area are highly adoptive in living around the human dominated landscapes and that it is one of the main factors for their survival. Thus, the reduction/ loss of forest area due to the proposed reservoir construction would pave way for dispersal of these wild animals into the nighening agricultural and human habitations. As a results, it is expected that man-animal conflicts would increase around the proposed MP-30 off stream pumped storage project.

Thus, the following management strategies have been recommended for mitigating the expected human-wildlife conflicting situation due to dispersing free-ranging mammals and the scheduled reptilian species.

### 1. Establishment of Wild Animal Rescue and Rehabilitation Centre:

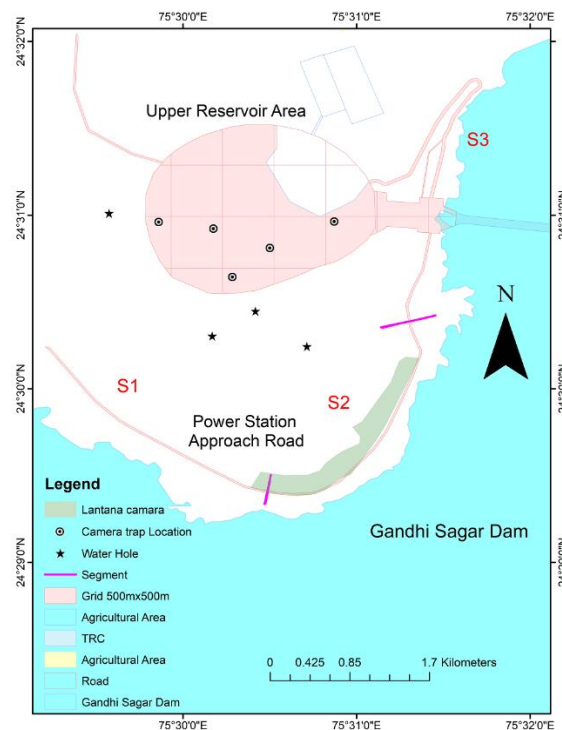
In order to reduce the human-wildlife conflict around the project area, the project proponent should establish mobile animal rescue facilities comprising of a rescue vehicle supported with all animal rescue equipment and device. These mobile rescue facilities should be hand overed to the Divisional Forest Officer, Neemuch Division, Madhya Pradesh. In addition, a rescue and rehabilitation center should be established at the Divisional Forest Office for accommodating the straying or injured wild animals such as Spotted deer, Nilgai and other carnivores. The rescue center should be near the vicinity of project area to rescue the conflict-prone animals. Both mobile rescue facilities and rehabilitation center should be established with proper supporting staff within one year of the commencement of this project (**Budget allocation please refer Table 9**).

## 2. Establishment of water holes around the upper reservoir:

Since the proposed project area is a semiarid dry landscape, during summer months the wild animals might be dispersed around the project area for searching water. Thus, it is recommended to create water holes at specific places around the project area for saving wildlife in the adjoining forest area. Based on the filed survey, the important wild animal hotspots area were identified and the location of water holes creation points are presented in the Table 8 and as well as indicated in the Figure 14. **(Budget allocation please refer Table 9).**

**Table 8.** GPS locations for creating water holes around the upper reservoir area of the MP-30 off stream pumped storage project, Madhya Pradesh.

S. No.	Water hole ID	GPS Location X	GPS Location Y
1	WH 1 upper reservoir area	24°31'0.29"N	75°29'34.25"E
2	WH 2 upper reservoir area	24°30'18.18"N	75°30'9.84"E
3	WH 3 upper reservoir area	24°30'14.31"N	75°30'42.73"E
4	WH 4 upper reservoir area	24°30'26.78"N	75°30'25.03"E



**Figure 14.** Map indicating the proposed water hole locations (star marks) around the upper reservoir area and lantana removal area in the segment 2 region of approach road to the power station of the MP-30 off stream pumped storage project, Madhya Pradesh.

### 3. Compensating the loss of scheduled species habitats:

One of the ways to compensate the loss of scheduled species habitat is, to remove and restore the weed-infested habitats around the project area. In the present study, it is observed that there is a heavy infestation of the invasive plant species *Lantana camera* along the proposed approach road to the Power house, specifically the segment 2 region (Figure 14). As a results, few wild animals using in this area due to non-availability of grazing grounds for ungulates and cover complex for scheduled reptilian species. Thus, it is recommended to intensively remove the invasive *Lantana camera* continuously for 5 years period. Thus, the restored habitats will develop into potential additional habitats for the scheduled wildlife in the project area (**Budget allocation please refer Table 9**).

**Table 9.** Budget recommendation for the Wildlife Management Plan  
(Activities 'B' budgeted under the Biodiversity and Wildlife Management Plan)

S. No.	Activities	Amount in lakhs
1	Establishment of Wild Animal Rescue and Rehabilitation Centre (it includes rescue vehicle with rescue equipment & establishment of rescue centre etc)	60
2	Establishment of water holes around the upper reservoir region with permanent water source	15
3	Restoration of degraded habitats (mainly lantana removal along the lower approach road)	15
4	Capacity building programme for forest staff for handling wild animal conflict and habitat management	10
	Total	100

In addition to that, project proponent should adopt the following wildlife mitigation measures while constructing the upper reservoir and approach road to the pump house.

### 4. Establishment of animal barrier around the upper reservoir:

The construction of upper reservoir with sharply raised cemented bound could create a threat to wild animals that might use the reservoir for drinking water. In order to avoid falling of wild animals in to the reservoir, it is recommended to create Galvanized iron chain-linked fence of 10fts height around the reservoir wall.

### 5. Establishment of Underpass along the approach road to the power house:

Based on the camera trap and sign survey study it is observed that wild animals, especially herpetofauna are following specific path to cross the current '*katcha*' road approaching to the

proposed power house. Since, the project area inhabits the schedule I reptilian species such as the Indian rock python (*Python molurus*) and Monitor lizard (*Varanus bengalensis*), the approach road and perceived frequent vehicular movement in the proposed road may have impacts the movement of scheduled reptilian species. Further, other small vertebrates such as snakes, rodents and amphibians are using stream courses and aqueduct for crossing the road. Based on the field survey, the major animal crossovers and aqueduct locations along the road alignment were mapped and their GPS co-ordinates are given in the Table 10. It is predicted that the proposed construction of 'metal' road for approaching power house with increasing vehicular transport might prone for increased road mortality of wild animals. In order to reduce road kill related mortalities, it is recommended to establish suitable mitigation structure as proposed in the Table 10. Based on the present study, there are 5 potential locations require box culverts (Table 10). Out of five, 2 at the Segment 2 region and segment 3 region of the proposed road, which have big stream each that needs to be covered with Box culverts. The size of Box culverts should have the dimension: 10fts height x 18fts width x 65fts length, as this area is regularly used by Spotted Deer and Nilgai. Besides these, there are some small seasonal streams crossing over the road alignment, which need to be secured through Pipe culverts. This will ensure the conservation of Rodents, Amphibians and Reptiles living around this area.

**Table 10.** Locations of streams and important animal crossover points with suitable culvert structure for the proposed approach road to the power house.

Stream	Location Lat.	Location Long.	Culvert
S2 ST1	24°30'21.48"N	75°31'18.79"E	Box Culvert
S3 ST4	24°31'14.19"N	75°31'26.84"E	Box Culvert
S1 ST2	24°29'36.02"N	75°30'1.67"E	Box Culvert
S1 ST3	24°29'45.09"N	75°29'45.17"E	Box Culvert
S3 ST8	24°30'36.77"N	75°31'20.49"E	Box Culvert
S1 ST1	24°29'31.67"N	75°30'8.61"E	Pipe Culvert
S1 ST4	24°29'54.15"N	75°29'29.81"E	Pipe Culvert
S1 ST5	24°29'59.71"N	75°29'25.45"E	Pipe Culvert
S1 ST6	24°30'2.05"N	75°29'23.23"E	Pipe Culvert
S1 ST7	24°30'13.59"N	75°29'13.89"E	Pipe Culvert
S3 ST1	24°31'29.62"N	75°31'31.68"E	Pipe Culvert
S3 ST2	24°31'27.88"N	75°31'25.21"E	Pipe Culvert
S3 ST3	24°31'21.15"N	75°31'27.23"E	Pipe Culvert
S3 ST5	24°31'8.73"N	75°31'27.77"E	Pipe Culvert
S3 ST6	24°30'47.92"N	75°31'24.77"E	Pipe Culvert
S3 T7	24°30'43.52"N	75°31'23.65"E	Pipe Culvert

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**भारतीय वन्यजीव संस्थान**  
**Wildlife Institute of India**



**STATUS REPORT ON  
LOCAL AREA DEVELOPMENT ACTIVITY AT  
MP 30 GANDHISAGAR OFF-STREAM PUMPED  
STORAGE PROJECT (1440 MW) LOCATED  
AT  
NEEMUCH DISTRICT, MADHYA PRADESH STATE**



**(Sept 2023)**



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## **1. INTRODUCTION**

Greenko Group as part of its overall business operations is addressing many important aspects of local sustainable development like Social, Economic, and Environment development and specific issues associated with Climate Change, Local and Regional Environmental Degradation, Powering the Economy, Generating Wealth and Employment, Technology Innovation, and Inclusive Development. It is addressing these issues through its Corporate Social and Environment Policy initiatives. In line with the above policy, a Local Area Development Plan (LADP) for the MP 30 Gandhisagar Off-Stream Pumped Storage Project (1440 Mw) located at, Rampura Tehsil, Neemuch District, Madhya Pradesh State is prepared and implemented.

## **2. CORPORATE SOCIAL & ENVIRONMENT POLICY**

Greenko Group is committed to sustainable development at all its facilities and works to the satisfaction of all stakeholders while fulfilling its social, economic, and environmental responsibilities. Social Responsibility being one of its core values, it aligns its community development activities through regular stakeholder engagements resulting in inclusive growth.

### **2.1 Vision**

Greenko Group aims to improve the quality of life of our neighborhood communities through equitable and proactive smart initiatives in spheres of education, health, rural development, environment, and livelihoods resulting in improvement of the overall local social, economic, and environmental conditions. The Group aims to achieve its vision through an effective institutional setup with a dedicated team and a well-designed program-based approach, management systems, stakeholder engagements, monitoring, and impact assessments.

### **2.2 Policy Principles**

Some of the Social and Environment Policy guiding principles for achieving the above sustainable development vision include ensuring that all Group level activities at both operations and projects:

- Are environmentally and socially sustainable.
- Are compliant with applicable environmental and social regulations in the host country and the commitments of the country to international laws/ agreements.
- Are compliant with the applicable green or clean energy guidelines.
- Anticipate the environmental meant and social impact of its projects through environmental and social impact assessment.
- Continually monitor their environmental and social impact – and take appropriate measures for remedying or correcting or avoiding in the future.

- Pursue fair labor and safe working conditions, promote equal opportunity, and work-life balance, respite, etc. the human rights of employees and the community.
- Anticipate and avoid adverse impacts on the health, safety, and security of the employees and community.
- Anticipate and avoid or minimize adverse social and economic impacts.
- Pursue resource efficiency, pollution prevention and minimize waste generation.
- Protect and conserve biodiversity and practice sustainable management.
- Avoid negative impacts on cultural heritage and indigenous peoples' rights.
- Ensure that all personnel working for Greenko are aware of the environmental and social requirements relevant to their area of work.
- Continually build capacity, through training or other means, to identify environmental and social risks as well as to identify mitigating measures.

### 2.3 Policy Thrust Areas and Objectives

At the Group level, Greenko has identified five critical areas to focus on for its Corporate Social and Environment Responsibility initiatives. The focus areas and the broad objectives under the identified thrust areas which are in line with the relevant United Nations Sustainable Development Goals include the following.

- ✓ **Education** – To ensure access to equitable and quality primary and secondary education leading to relevant and effective learning outcomes in rural communities.
- ✓ **Healthcare** – To provide access to quality healthcare to our workforce and the rural communities close to our operations.
- ✓ **Rural Development** – To improve the living standards of rural people equitably and sustainably through the creation the community services and facilities.
- ✓ **Livelihoods & Skill Development** - To ensure access to skill training for the local people leading to relevant and sustainable livelihoods for rural communities.
- ✓ **Environment** - To protect and manage the living natural resources within its project vicinity and promote the conservation of biodiversity.

### 3. AFFECTED AREA FOR LAD ACTIVITY

The proposed Project is located near Khemla block about 0.5 Km, which comes under, Rampura tehsil, Neemuch District. All the private land proposed to be acquired for the project is under the Khemla block. Therefore, Khemla Block Village and other adjoining village panchayats will be direct beneficiaries of the Local Area Development schemes. Further based on the need the local area development activity will also be extended to the adjoining panchayats appropriately.

#### 4. FOCUS AREAS FOR LAD ACTIVITY

Based on the need assessment and local consultations in project-affected villages the following focus areas covering many important components of sustainable development such as social, economic, livelihoods, and environment are identified, and development activities proposed under each focus area for the benefit of the local people under the Project. **Table 1** below presents the thrust area and the nature of activity proposed as part of the LAD Plan.

**Table 1: Focus Area and Nature of LAD Activity**

Focus Area	Nature of Activity
Education	<ul style="list-style-type: none"> <li>• Need-based infrastructure support for existing Schools.</li> <li>• Support for basic amenities in existing Schools</li> <li>• Support for teaching and learning materials.</li> <li>• Support for improving the quality of education.</li> <li>• Support for meritorious students</li> </ul>
Health Care	<ul style="list-style-type: none"> <li>• Support or general and specialized health camps</li> <li>• Support to an existing health facility</li> <li>• Support through mobile healthcare services</li> <li>• Support for emergency health care services</li> <li>• Awareness of Health and Hygiene</li> </ul>
Infrastructure Development	<ul style="list-style-type: none"> <li>• Support for strengthening existing roads.</li> <li>• Support for existing transportation services</li> <li>• Support for Drinking Water facilities</li> <li>• Support in garbage collection/disposal</li> <li>• Support for Street Lighting facilities</li> <li>• Support for Community Toilet facilities</li> </ul>
Animal Husbandry, Fishery & Irrigation Facilities	<ul style="list-style-type: none"> <li>• Support for Irrigation facilities</li> <li>• Conduct awareness and training on modern agriculture methods.</li> <li>• Promote natural farming/ organic farming.</li> <li>• Conduct Veterinary Camps for livestock.</li> <li>• Construction of a Veterinary Clinic (1 No)</li> <li>• Construction of drinking water ponds for Livestock</li> <li>• Support the local fishermen with nets and other fishing material</li> </ul>
Skill Development and Training	<ul style="list-style-type: none"> <li>• Skill Training of local youth for Job skills</li> <li>• Support for Vocational Training in market trades</li> <li>• Support for capacity building of local Teachers</li> </ul>
Livelihood Enhancement for Job Opportunities	<ul style="list-style-type: none"> <li>• Support to un-employed youth for small enterprises</li> <li>• Support to local youth for self-employment</li> <li>• Support to local women for household enterprises</li> <li>• Support to local artisans</li> <li>• Support for training and capacity building of local women</li> </ul>
Environment Conservation and Protection	<ul style="list-style-type: none"> <li>• Plantation along roads/open spaces/ community lands</li> <li>• Strengthening existing water resources</li> <li>• Awareness and Training on the conservation of natural resources</li> </ul>
Sports	<ul style="list-style-type: none"> <li>• Support the local schools with play materials and equipment.</li> <li>• Support for local Anganwadi Centers with play equipment</li> </ul>

Focus Area	Nature of Activity
	<ul style="list-style-type: none"> <li>• Support for developing playgrounds.</li> <li>• Support the local sports events.</li> <li>• Support the performing local sports persons</li> </ul>
Common Interest Activity	<ul style="list-style-type: none"> <li>• Support for Community Infrastructure</li> <li>• Promoting local culture and traditions</li> <li>• Support for the protection of local art forms</li> <li>• Support for the protection of local heritage</li> </ul>

## 5. LADP IMPLEMENTATION

For implementing the LADP a thorough need-based assessment is undertaken. Based on the local context the development activity proposals are prepared in consultations with various stakeholders including the Gram Panchayats, Schools, health authorities, and the public in general. The objective is to adopt a multi-stakeholder partnership implementation model for integrating the development activity with more focus on education, health, environment, and economic objectives of the local people. The development activity is proposed to be implemented in Phases covering both the Project Planning Phase and Project Execution Phase. As the Project is still in the planning Phase few entry point development activities have been initiated and are in progress. Table 2 below provides the list of development activities already completed.

**Table 2: List of Development Activity Completed**

Sl. No.	Thrust Area	Name of the Activity	Amount Spent (Rs)
1	Rural Development	Providing RO Plant to the Community at the Khemla Block Village	12,00,000
2	Rural Development	Providing RO Plant to the DFO Office, Neemuch District	37,700
3	Health Services	Primary Health Services through Mobile Clinic	15,00,000
4	Sports	Providing Sports kits to the village youth at Khemla Block	5,000
5	Education	Distribution of schoolbags and stationery at Govt. Middle School and Angawandi, Khemla Block	33,000
6	Health Services	Conducting General Health and Eye Screening at Camp	2,00,000
7	Education	A Complete set of a computer along with a table and a chair for Digital Education, Govt. Primary School, Khemla Block	49,696
8	Education	Sitting tables for the students, Almirah/Rack, Food plates and glasses for the children, Govt. Primary School, Khemla Block	70,860
9	Education	Vessels, Two burner stove, Tables for the student Dining Hall, Benches for Student Dining Hall, for the Mid-day Meal Kitchen, Both Primary and UP Schools, Khemla Block	18,067

Sl. No.	Thrust Area	Name of the Activity	Amount Spent (Rs)
10	Education	2 Complete sets of Computers, a Projector, and a Screen along with 2 tables and 2 chairs for Digital Education, Govt. UP School, Khemla Block	1,45,469
11	Education	Almirahs/Racks, Tables and Chairs for the Office Room, for the Teaching Staff Room, Food plates and glasses for the children, Govt. UP School, Khemla Block	66,399
12	Education	Food plates, glasses, Tables and Chairs for the children, and a Table and a chair for the teacher, Govt. Anganwadi Center, Khemla Block	1,67,181
13	Infrastructure Development	A set of a computer and a printer for the Gram Panchayat, Khemla Block	52,684
14	Infrastructure Development	Providing LED Lights, Gram Panchayat, Khemla Block	13,440
15	Education	Sitting Bench and Table for the students, Govt. Primary & Secondary School, Bassi ki Bawdi	12,744
16	Infrastructure Development	Providing LED Lights, Gram Panchayat, Bassi Ki Bawdi	13,440
17	Education	Providing a Computer and Furniture for both students and teachers to the Govt. Primary School, Salarmala Block	67,108
18	Infrastructure Development	Providing LED Lights, Gram Panchayat, Salarmala Block	19,200
19	Education	Providing a Computer and Furniture for both students and teachers & Utensils to the Govt. Primary School, Amarpura	45,650
20	Infrastructure Development	Providing LED Lights, Gram Panchayat, Amarpura	9,600
21	Animal Husbandry, Fishery & Irrigation Facilities	Conducting Veterinary Camp, Khemla Block	29,113
22	Infrastructure Development	Providing Wet and dry garbage bins for the village to promote Health & Hygiene	71,800
23	Health Services	General Medical Camp at Khemla Block Village	1,50,000
24	Education	Painting of Govt. School Buildings of Middle School, Khemla Block, Primary School & Anganwadi at Khemla Block Village	91,590
<b>Total</b>			<b>40,69,741</b>

In addition to the above-completed activities the list of activities planned and under implementation is given in Table 3 below.

**Table 3: Local Area Development Activity Planned and Under Implementation**

Sl. No.	Focus Area	Village/School	Proposed Activity	Amount Proposed (Rs)
1	Education	Both Primary and UP Schools, Khemla Block	Improving the Water Availability by providing 200 Ltrs. Capacity Syntax Water Tank and Taps along with pipeline for the Girls' Toilet, Boys' Toilet, and Drinking Water room and Improving the Dining Facility and Mid-day Meal Kitchen, (Electrical work with Ceiling Fans, etc.)	27,000
2	Sports	Both Primary and UP Schools, Khemla Block	Games and Play materials for the students	1,00,000
3	Education	Govt. Upper Primary School, Khemla Block	Repair and renovation work and Infrastructure Development works (Electrical Wiring, etc.)	40,000
4	Education	Govt. Anganwadi Center, Khemla Block	Repair and renovation work and Infrastructure Development works (Ceiling Fans, 200 Liters Syntax Water tank, Electrical Wiring, etc)	47,000
5	Sports	Govt. Anganwadi Center, Khemla Block	External Play Equipment for the children	1,00,000
6	Education	Khemla Block and the Govt. Schools	Support for the Development of the Library (Books and others)	20,000
7	Environment	Khemla Block and the Govt. Schools	Plantation Activity for the school and the community	75,000
8	Education	Govt Primary School, Bassi Ki Bawdi	Water supply connection from the main channel to the school	50,000
9	Education	Govt Secondary School, Bassi ki Bawdi	Repair and renovations and Infra Support (Electricity Connection with wiring for the school etc.)	30,000
10	Sports	Govt Secondary School, Bassi ki Bawdi	Indoor and Outdoor Games & Sports material	50,000
11	Sports	Govt Primary School, Junapani	Indoor and Outdoor Games & Sports material	50,000
12	Sports	Govt Primary School, Googlekheda	Indoor and Outdoor Games & Sports material	50,000
13	Sports	Govt Middle School, Bhimpura	Indoor and Outdoor Games & Sports material	50,000
14	Animal Husbandry, Fishery	Besla	Conducting Veterinary Camp	1,00,000
15	Common Interest Activity	Besla	Construction of a Multipurpose Community Building	30,00,000
			<b>Total</b>	<b>37,89,000</b>

## 6. DEVELOPMENT ACTIVITY AT A GLANCE



**General Health Camp for the Local community at Khemla Block village.**



**Painting of Govt. School Building of Primary School & Anganwadi at Khemla Block Village**





Providing Digital Equipment and Furniture to the Got. Schools, and Anganwadi, Khemla Block



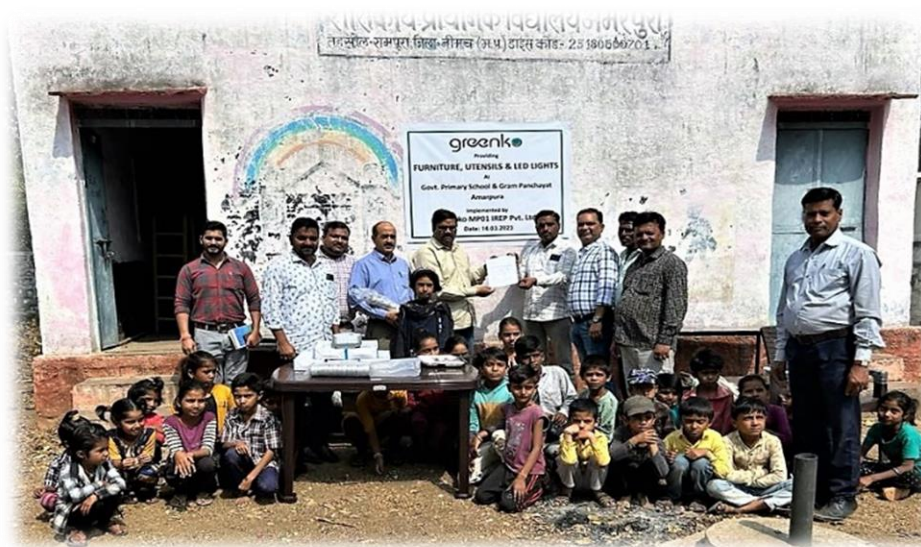
Providing Utensils for the Mid-day Meal Kitchen to the Got. Schools, and Anganwadi, Khemla Block



Providing Digital Equipment and Furniture to the Got. Schools, Bassi Ki Bawdi



Activities were acknowledged by the stakeholders and Team MP01 with the students and teaching staff.



Activities implemented at the Govt. School & the GP, Salarmala Block



**Activities implemented at the Govt. School & the GP, Amarpura Village**



**Screening of Livestock with the proper treatment**





## EMERGENCY RESPONSE PLAN

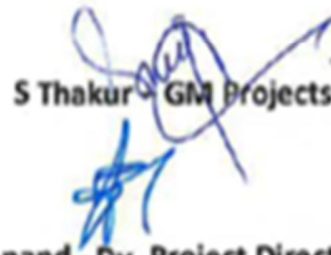
**Greenko MP01 IREP Private Limited.**

**Prepared by:**



**(Mr. Rouf Ahmad Wani- Manager EHS)**

**Reviewed by:**



**S Thakur - GM Projects**

**Approved by:**

**Ch Anand - Dy. Project Director**

Rev. No. and Effective Date	Description	Sections Affected	Revised By	Approved By
20-04-2022	First Issue	-	-	

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## GREENKO INTEGRATED MANAGEMENT SYSTEM

### Greenko MP01 IREP Pvt. Ltd. Emergency Response Plan

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# GREENKO INTEGRATED MANAGEMENT SYSTEM

## Greenko MP01 IREP Pvt. Ltd. Emergency Response Plan

### 1. Introduction.

M/s. Greenko MP01 IREP Private Limited is a proposed Hydro power generation project situated at Khemla Block, (Village), Rampura (Tehsil), and Neemuch (Dist.) in the Madhya Pradesh state. The project will execute the constructions of Upper reservoir, Water Conductor System and Power House.

Emergency Preparedness and Response plan is prepared to protect the public health, safety, and environment on and off the Project site in the case of a major natural disaster or industrial accident relating to or affecting the Project. IREP project prepared this document and will be responsible incidents for implementing the plan same with its construction team in coordination with the local emergency response support functions. The document will describe the emergency response procedures to be implemented during various emergency situations that may affect the Project or the surrounding community or environment.

### 2. Scope.

This procedure shall be applicable for all situations that could generate emergency situations during the Project's construction phase and is applicable to all GREENKO GROUP staff, Contractors, Sub-contractors other interested parties. To improve State of preparedness to meet any contingency, reduce response time in organizing the assistance, to identify major resources, work force, material & equipment needed to make the plan operational and making optimum use of the combined resources.

### 3. Definitions

**Emergency:** An emergency means a situation arising out of or as a result of any type of hazards like fire, explosion, uncontrolled gas release, or chemical spill which is likely to adversely affect the persons or population working on or near the site or residing in the adjacent or nearby areas around the work site.

**Hazard:** Source or situation with a potential for harms in terms of injury or ill health, damage to property, damage to the workplace environment, or a combination of these.

**Hazard identification:** Process of recognizing that a hazard exists and defining its characteristics with an Incident / Event that gave rise to an Incident or had the potential to lead to an Incident.

**Risk:** Combination of the likelihood and consequence(s) of a specified hazardous event occurring.

**NOTE:** An incident where no ill health, injury, damage, or other loss referred to as a "near-miss". The term "incident" includes "near-misses".

#### **Sub Agency/ Contractors**

A company directly employed by GREENKO to undertake activities on behalf of GREENKO GROUP.

**Emergency Coordinator:** The Area Manager or designated alternate who will be available engineer of IRESP Projects and Services person in charge during any site emergencies.

## GREENKO INTEGRATED MANAGEMENT SYSTEM

### Greenko MP01 IREP Pvt. Ltd. Emergency Response Plan

**Emergency Rescue Team (ERT):** The team should consist skilled, expertise and trained persons, those who physically, mentally fit and having endurance to adverse situation and sense of quick response to emergency situations.

**Evacuation Meeting Location (Assembly point):** A designated area where all employees will assemble during a site evacuation emergency.

**Fire Detection System:** An outside firm or a site monitoring system that detects and sends out a warning in the event of a fire.

**Fuel/Ignition Sources:** Any material, chemical, etc. that has the potential to increase the size, or possibly start, a fire (i.e. boxes, skids, rags, oil, fuel, paint, etc.).

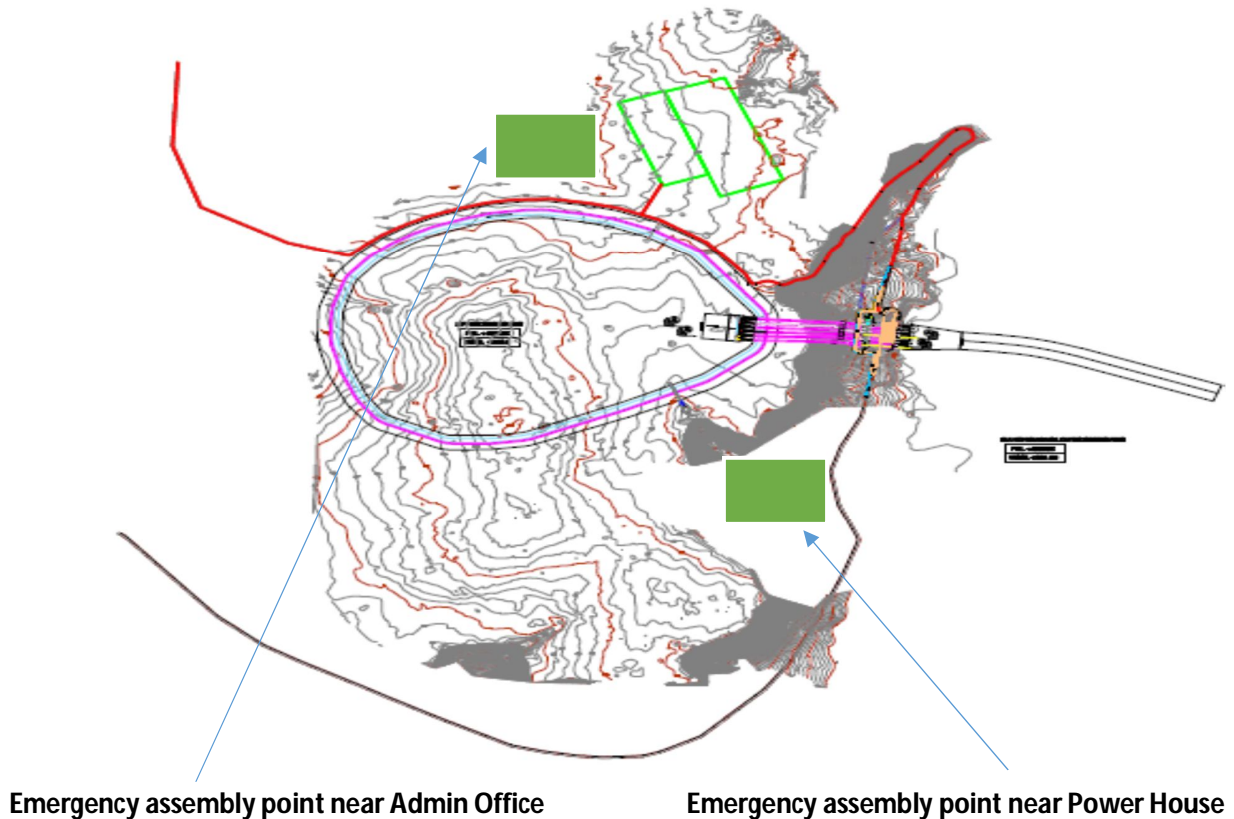
**Hazardous Materials:** Any chemical meeting the hazardous criteria of being toxic, flammable, or corrosive defined by national regulations.

**Highly Combustible Materials:** Any material or chemical that will readily catch fire (i.e. fuel, oily rags, etc.).



**4. IREP- MP01 Pvt. Ltd - Location Layout.**

Detailed Location Layout will be finalized and displayed soon.



**5. IREP- MP01" Emergency Response Plan.**

Greenko believes that the best response to emergency comes from good emergency preparedness, clear emergency procedures, safe work practices, clearly defined roles and responsibilities as well as trainings. IREP-MP01 Pvt. Ltd., project site, Emergency Response plan is in line with the Greenko Group EHS Policy and Procedure.

**6. IREP- MP01" Emergency Management procedures.**

The procedure to be adopted during emergency is as follows:

- i. All project Execution personnel at project site are imparted emergency response training. Anybody observing an emergency situation will immediately proceed with emergency response actions as trained. These include immediate seeking of assistance and rescue of persons in grave danger (if possible), contacting the emergency coordinator (contact details available with everybody-at least identified coordinators will be named for each site), evacuation of location if necessary, etc. Details of general

## GREENKO INTEGRATED MANAGEMENT SYSTEM

### Greenko MP01 IREP Pvt. Ltd. Emergency Response Plan

- training are available in the training document.
- ii. Actions by other personnel are as per training and drills conducted.
  - iii. **Actions by Emergency Coordinator:** the emergency coordinator is specifically trained to intimate and assemble specialist teams for rescue and combat as well as to alert other coordinators of specific tasks. - I.e. transport coordinator, ambulance /medical coordinator etc.
  - iv. **Action by special teams / specific coordinators:** specialist for rescue and combat are available with clearly defined roles. The notified teams and coordinators will perform their identified roles.
  - v. All clear and resumption of work: as per training, there is a clear method for alerting “**ALL CLEAR**”. The emergency coordinator coordinating the specific emergency will signal all clear when he is convinced that the emergency has been resolved and it is safe to resume work. When this signal is given all operating personnel will resume work in an orderly manner.
  - vi. **Codification of Sirens:**

Sr. No.	SIRENS	INDICATES
1	Three Sirens of 30 Seconds each with 1 second interval.	On site Emergency Alert
2	1 Minute Continuous	Emergency Controlled (All Clear)

- vii. **Reporting and corrective action:** The emergency coordinator coordinating the specific emergency will prepare a report with assistance from site EHS team and any of the available personnel and report to the site in charge. The site in-charge will there after report the matter to the Greenko Group EHS team and the Greenko Project Head / Business Head and seek if required expert assistance to design permanent corrective action. It is the duty of the Greenko Group EHS team to follow through and ensure that such a corrective action is designed and implemented by the Greenko Site EHS team.

#### 7. Key Personnel and Their Duties.

- 7.1 Emergency Control Coordinator (Site Controller):
- 7.2 On Site Emergency Coordinator (Incident Controllers):
- 7.3 Emergency Control Advisory Team:
- 7.4 Technical Support Team:
- 7.5 HR & Administration Team:
- 7.6 Medical Team:
- 7.7 Fire Fighting Team:
- 7.8 Rescue Team:
- 7.9 Recovery & Operation Continuity Team:

Responsibilities of Emergency Response Team

**7.1 Emergency Control Coordinator (Site Controller):**

- a. Overall, in-charge to control emergency, recovery & Operation continuity.
- b. Observer will be declared at site by the site controller by looking at the site operating\emergency circumstances.
- c. Authorize for Mobilization of Resources.
- d. Coordinate with Emergency Advisory Team to receive advice on the emergency actions and direct the Onsite Emergency controller.
- e. Coordinate Emergency Control through On-site Emergency Teams.
- f. Communicate with the interested parties including GREENKO GROUP C.O - Hyderabad, Local Authorities, Mutual Aids, etc.
- g. Authorize for raise request for Resources and its use at site.
- h. Coordinate Medical Team, Rescue Team, Fire Fighting Team, etc. to facilitate control, rescue & treatment of victims.
- i. Coordinate with Recovery & Operation Continuity Teams to clear of the Incident location and restart the site.
- j. Communicate with the Emergency Control Coordinator and apprise him of the emergency situation at site.
- k. Responsible to assess and inform the end of emergency at the site.
- l. Responsible to call the end of emergency.

**7.2 On Site Emergency Coordinator (Incident Controllers):**

- a. Overall, in-charge at the field to control emergency, recovery & Operation continuity.
- b. Authorize for raise request for Resources and its use at site.
- c. Coordinate Medical Team, Rescue Team and Fire Fighting Team etc. to facilitate control, rescue & treatment of victims.
- d. Coordinate with Recovery & Operation Continuity teams to clear of the Incident locations and restart the site.
- e. Communicate with the Emergency Control Coordinator and apprise him of the emergency situation at site.
- f. Responsible to assess and inform the end of emergency at the site.

**7.3 Emergency Control Advisory Team:**

- a. Act in the capacity of the advisor to the Emergency Control Coordinator.
- b. Communicate with the Technical Team to identify the technical feasibility of the rescue or recovery & operation continuity options.
- c. Coordinate with Administration & Legal support team to handle the labor unrest, local authority, treatment options, HR issues, PR issues etc.
- d. Investigate the causes of the Emergency & recommend corrective action.
- e. Log the sequence of events so that report of the emergency operation can be prepared to identify the deficiencies in the Emergency preparedness system and recommend improvement.

**7.4 Technical Support Team:**

- a. Evaluate the technical aspects of in the control/ mitigation of the emergency & operation continuity.
- b. Review the technical documents and recommend feasibility.

## GREENKO INTEGRATED MANAGEMENT SYSTEM

### Greenko MP01 IREP Pvt. Ltd. Emergency Response Plan

- c. Evaluate the need of emergency, understand the recovery measures, arrange for the resources, and supervise the recover till initiation of operation.
- d. Arranging for cranes, equipment, and electrical assistance and coordinating with the Emergency Team.
- f. Ensure the Damage is controlled, removed from the site and the site is reinstated for the operation to start smoothly.
- g. Communicate with the Emergency Advisory Team and furnish required clarifications.

#### 7.5 HR & Administration Team:

- a. Coordinate with the Hospitals for the treatment of the injured.
- b. Coordinate with the Local Authorities including the Police etc.
- c. Communicate with the sub-Agencies and ensure no Labor Unrest takes place.
- d. Ensure communication to the relatives in case of fatality.
- e. Manage the Media with assistance from the Emergency Control Coordinator.
- f. Arrange for the food/ welfare facilities etc. if the rescue, recovery & operation continuity activity extends beyond the regular working hours.

#### 7.6 Medical Team:

- a. Coordinate with the Site Emergency Controller.
- b. Communicate & coordinate with the First Aider to provide First-Aid to the injured.
- c. Coordinate with the Ambulance & Emergency vehicle & other Mutual-Aid Ambulance to remove the victim to the nearest Hospital.
- d. Assist the First Aider to organize personnel for assistance.
- e. Record the victims' details and communicate to the Site Emergency Controller.

#### 7.7 Fire Fighting Team:

- a. Coordinate with the Site Emergency Controller.
- b. Communicate & Coordinate with the Firefighting Team to control the fire in the initial stages.
- c. Coordinate with the fire brigade in the event of big fire and extend necessary assistance especially in case of chemical fire provide MSDS & Quantity etc.
- d. Ensure the fire is controlled and does not pose and threat to the people or property.
- e. Responsible to declare the fire is controlled to the Site Emergency Controller.

#### 7.8 Rescue Team:

- a. Coordinate with the Site Emergency Controller.
- b. Organize the search and rescue operation.
- c. Coordinate Head Count Operation obtain the Missing details & initiate rescue operation.

#### 7.9 Recovery & Operation Continuity Team

- a. Coordinate with the Site Emergency Controller.
- b. Evaluate the need of emergency, understand the recovery measures, arrange for the resources, and supervise the recover till initiation of operation.
- c. Arranging for cranes, equipment, and electrical assistance and coordinating with the emergency team.
- d. Ensure the Damage is controlled, removed from the site and the site is reinstated for the operation to start smoothly.

**8. Actions in case of Emergency.**

In the event of an Emergency

- Stop all the jobs and report to the Safe Assembly Point.
- Stop all the Hot Jobs in the area including Welding, Gas Cutting, grinding etc.
- Stop all the machineries and park in a secure place, ensure it does not obstruct any movement of the fire engine etc.
- The Entrance entry of any person (except ERP team) to the site must be stopped.
- Turn Off generators, Compressors and other powered equipment, unless these provide power for emergency services.
- Attack fire with the equipment provided, if it is safe to do so
- Obey the instruction of the Site EHS coordinator / Engineer In-charge/ Supervisory staff.
- Assist the Fire Fighting Team, Medical Team, Rescue Team, and technical team to control the emergency.

**9. Potential Emergencies:**

- Emergency action plan during fire.
- Emergency action plan during explosion (gas cylinder, and explosives handling and transportation etc.)
- Emergency action plan during leakage of toxic or combustible gases.
- Emergency action plan during spillage of acids/chemicals/ flammable liquids.
- Emergency action plan for major equipment failure.
- Emergency action plan during road accidents of own vehicles / heavy machinery.
- Emergency action plan during structural collapse.
- Emergency action plans during tower crane/mobile crane/crawler crane collapse, scaffold collapse.
- Emergency action plan during bomb threat.
- Emergency action plans during snake bites / scorpion / poisonous insects.
- Emergency action during Electrocutation.
- Emergency action during Lightning and thunderstorm.
- Emergency action during Person collapse due to heat stroke or faint.
- Emergency action during Food poisoning.
- Emergency action plan during Riot Local People.
- Emergency action plan during Fall from Height.
- Emergency action plan during Earthquake.
- Emergency action plan during Heavy Rains and Inundation.
- Emergency action plan during Epidemic/Contagious Disease.

**10. Site Emergency Facilities.**

The List of emergency facilities available at site is as follows:

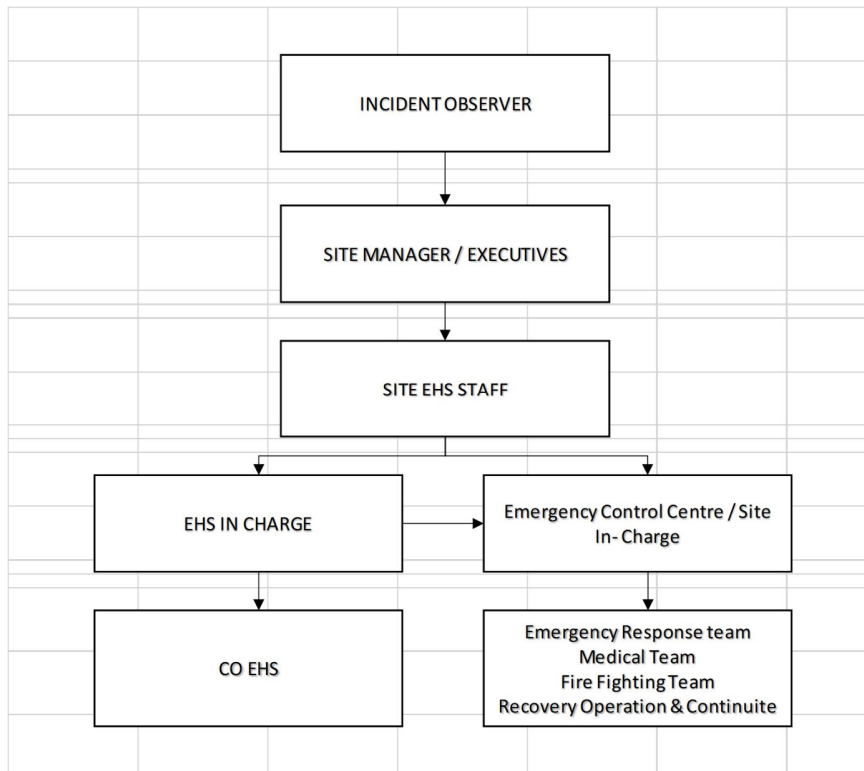
1. Basic First Aid Facilities.
2. Emergency Vehicle / Ambulance.
3. Trained First Aider / Nurse / First aider from the working group & Executives: Nos. (Names of the First aider attached Annexure No: 1).
4. Fire Extinguisher Placed at required locations.
5. Emergency Assembly Points at identified places for easy access.
6. Emergency Control Center with Emergency Rescue Equipment.
7. Communication Facilities (P.A System, Walky-talky, Group Mobile Network (CUG)).
8. Emergency Evacuation Plans.
9. Trained ERT Members/ Firefighting persons.
10. PPE Buffer Stock to meet Emergency requirement.

**11. Safe Assembly Points.**

Assembly points to be identified for emergencies.

- Assembly point-1 – At upper reservoir Near Administration office - Proposed
- Assembly point 2 – Lower Reservoir near powerhouse - Proposed

**11. Site Emergency Communication.**



**13. Training and Mock drills:**

There are two types of trainings conducted for the preparedness of emergencies i.e. Special trainings and General trainings.

**I. Special Trainings**

The following trainings will be provided to the Special teams.

- i. **Special training for firefighting team:** Training will be provided to all members of Fire Fighting Team working in the project / project area.
- ii. **First aid training:** First aid training will be given to identified employees and workers by authorized Doctors from St. John Ambulance. Those who clear the written and practical tests will be issued a first aid trained certificate.
- iii. **Defensive driving Training for drivers.**
- iv. **Training for fire rescue team.**
- v. **Training for height work team.**

**II. General Trainings**

The following trainings will be given to all the personnel of the site.

**i. Training on Fire fighting and use of fire and Safety equipment**

All supervisory personnel and senior operators are trained in basic Fire Fighting and use of Fire appliances and portable Fire extinguishers. Refresher training courses will be periodically conducted, to cover all project personnel once in a year.

**ii. Emergency Mock Drills**

Mock drill is a practice drill, conducted so as to get familiarity with mitigating methods during an actual emergency.

The practice of Mock drill helps:

- In identifying the actual difficulties that can be encountered in the field during an actual emergency and enable the organization in taking up pre compliance.
- Keeping the emergency equipment in working condition.
- In avoiding confusion about what to do and what not to do, among employees during an actual emergency.
- In checking the quick response of employees during emergency.
- Mock drills are conducted at least once in two months for checking the effectiveness of the emergency response plan and HR In-charge records the observations. Mock drills are conducted under the supervision of Security dept / HR dept. Mock drill is carried out either by giving prior information to employees or it can be a surprise drill.
- In case of surprise mock drill, the organizer (generally In-charge– HR / Manager-Security/ EHS) informs the date, time and the location where the drill would be conducted, to the Unit head and identified observers only. However it would be informed to the neighboring industries, just before conducting the mock drill to avoid confusion.
- Mock drill can be conducted in evening and apart from general working times to check the response of the employees.

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- Review meeting on the observations of mock drill is arranged immediately after the mock drill and the findings of the drill are discussed and meeting minutes are circulated to all the concerned for any compliance.

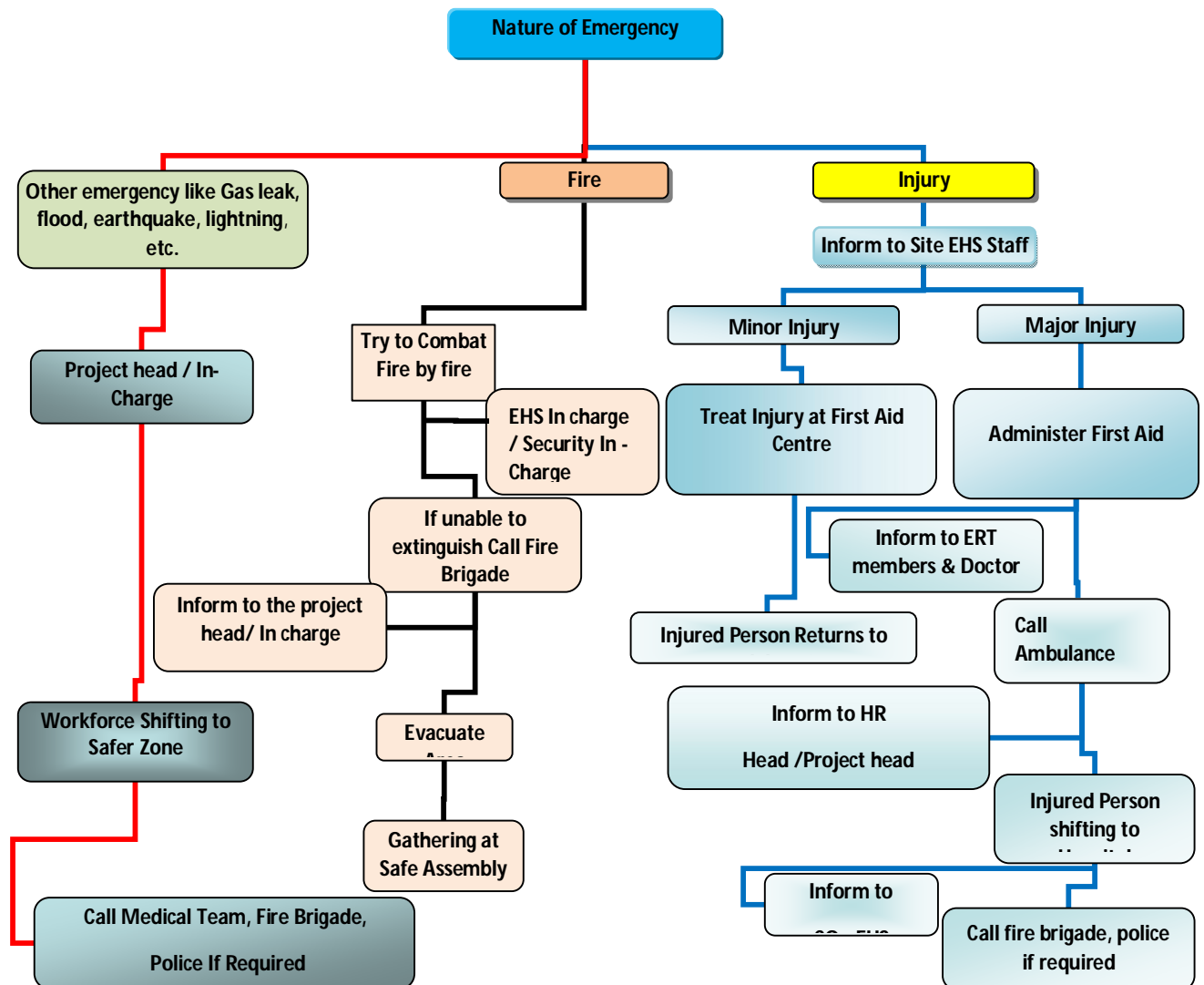
Wherever possible the training content / manuals will be available with the site HR, otherwise the specific organizations which impart training will be identified and listed with contact details and specialized trainings will be imparted to special team by those agencies and training records will be maintained.

The Project HR / EHS manager will also have training details for all individuals including coordinators and special teams with list of coordinators, special teams, names of team members and team sizes.

#### Signage and display material

All hazardous areas will have appropriate signage and there will be display of general site safety rules at entry points and near the office. Care will be taken to prevent unauthorized persons from entering the sites. List of display material is available in **"Signage and Display Material checklist"**.

#### 14. Emergency Response Requirement.



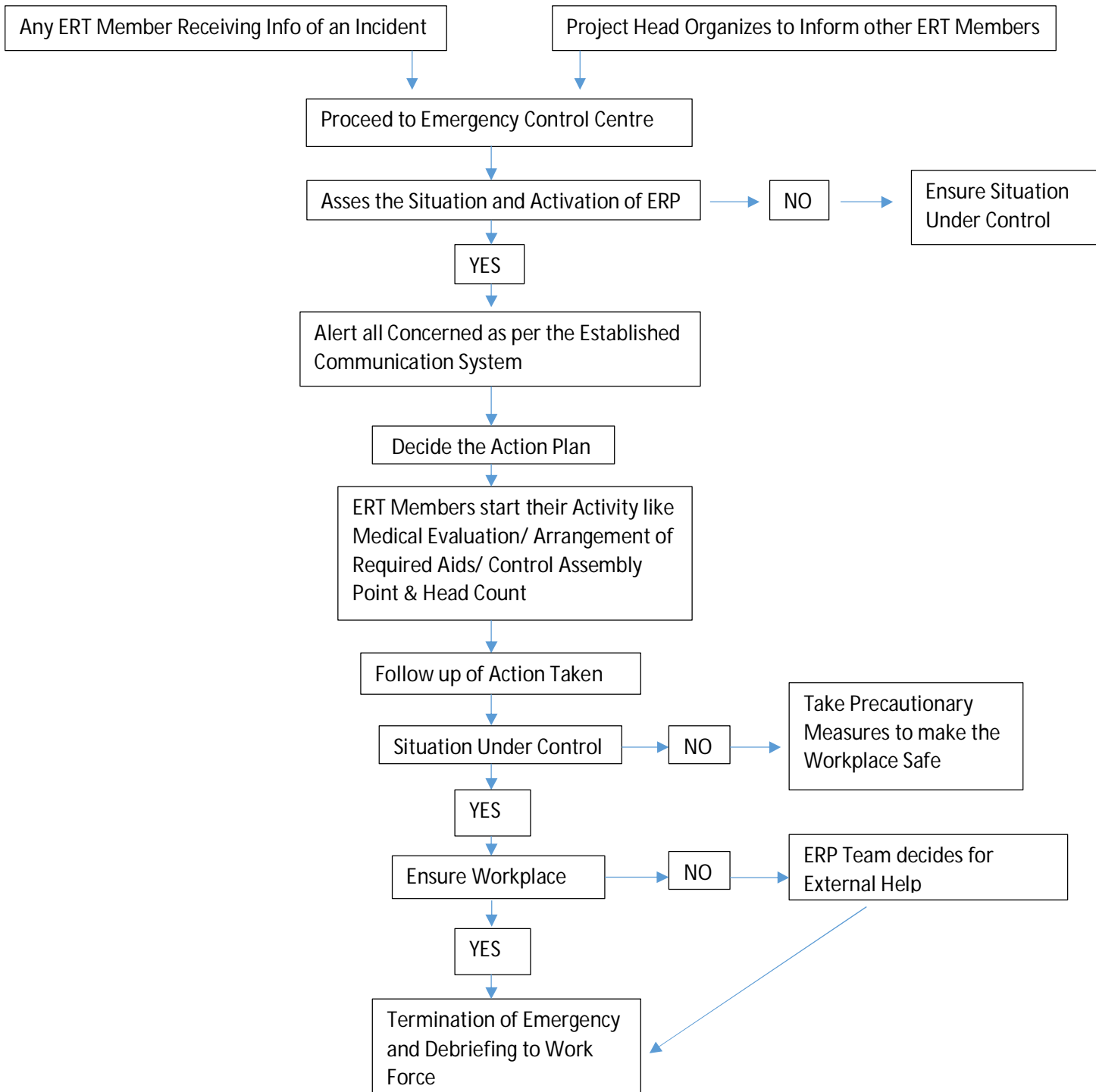


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**Greenko MP01 IREP Pvt. Ltd. Emergency Response Plan**

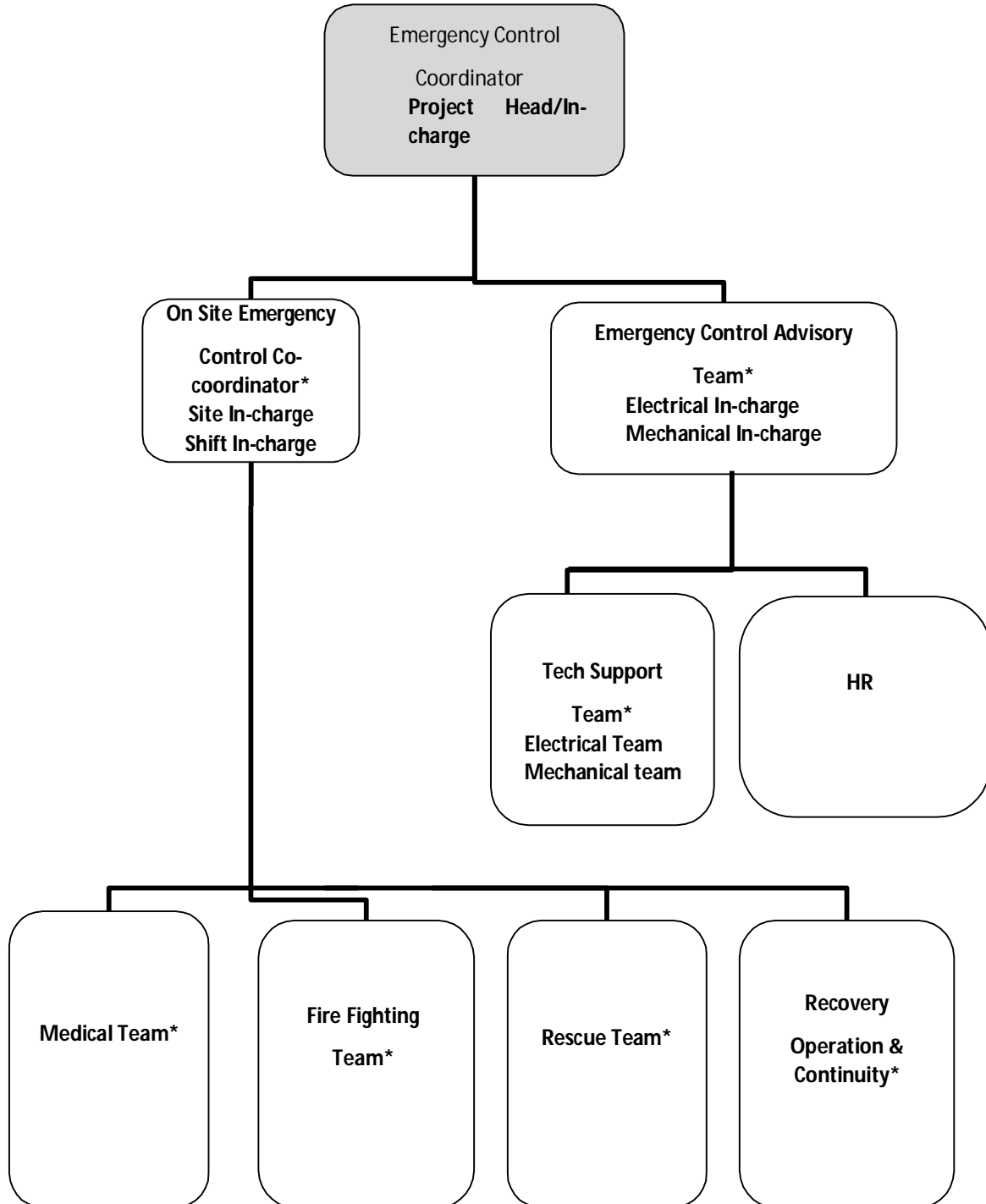
**15. Emergency Response Management.**

**Flow Chart:**

A flow chart outlining the typical flow of operations that should be followed in an emergency response management is given below.



**16. Emergency Response Team.**



**17. Evacuation Procedure.**

**17.1 Emergency action plans during fire.**

Sl. No.	Individual / Team	Initial Response	Incident control
1.	Observer of fire	<p>Informs to nearby persons by shouting "<b>FIRE, FIRE</b>".</p> <p>Informs the type of fire and location to emergency coordinator and Local emergency leader over phone.</p> <p>If he is trapped in a building during a fire and a window is available, he should place an article of clothing (shirt, etc.) outside the window as a marker for rescue crews to find him. If there is no window, he should stay near to the floor, where the air will be less toxic. He should Shout at regular intervals to alert emergency crews to know his location. <b>DO NOT PANIC!</b></p>	<p>He assesses the situation.</p> <p>If it is small fire, he isolates the fire by removing any combustible material from the location and fights the fire with the available firefighting devices only if he knows how to operate them.</p> <p>If it is an electrical fire or large fire, he waits till the firefighting team comes.</p>
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He shows the location to the firefighting team and first aid team. He always will be in contact with the coordinators.</p>	<p>He understands the type of fire.</p> <p>He disconnects the energy sources. He isolates the fire by removing all combustible material from the spot.</p> <p>He takes the help of personnel available in that area.</p> <p>He decides whether the fire is small enough to fight, and whether he can do so safely. He makes sure he has an escape route at all times.</p> <p>He takes the decision of evacuation.</p> <p>He helps the personnel in evacuation.</p>
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p>	

## GREENKO INTEGRATED MANAGEMENT SYSTEM

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		<p>If required declares emergency by sounding alarm.</p> <p>He informs the electrical / mechanical team to isolate from energy source and equipment.</p> <p>He contacts and mobilizes the specific coordinators and special teams to take specified actions. He guides the team members who are assisting him to take necessary actions.</p> <p>He informs the details to the project Head.</p> <p>He investigates the incident and prepares the report.</p>	
4.	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.</p>	
5	Electrical / mechanical team	<p>On receiving the communication from emergency coordinator, comprehensive will shut down the equipment / isolate area.</p>	
6	Firefighting team	<p>On receiving the information about the fire, they rush to the spot with the available firefighting equipment.</p>	<p>They fight the fire.</p> <p>They will inform to the emergency coordinator, If help from fire department is required.</p> <p>They will help the fire department in extinguishing the fire.</p> <p>They will help the rescue teams in rescuing the trapped or injured persons.</p>
7.	Statutory coordinator	<p>If fire goes out of control, he will call government fire office immediately for assistance.</p> <p>If necessary he will inform to the police department.</p>	
8.	Rescue team		<p>They take the help of local emergency leaders and firefighting team in</p>

**GREENKO INTEGRATED MANAGEMENT SYSTEM**  
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		On receiving the information they will rush to the spot with all the required equipment.	identifying the trapped / injured persons.  They assess the situation and if it is safe will go to the place and rescue and bring the casualties.
9	First aid team	They rush to spot with the first aid kits.	They will Identify the affected and give first aid treatment.  They will give CPR if required.  They will send the severely injured to hospital.
10	Welfare coordinator	He deputed a person at assembly area to take attendance.  He arranges drinking water, snacks etc. for the visitors and employees.  He informs to the relatives of affected persons.  He arranges persons, round the clock at hospitals to look after the need of the affected personnel.	

**17.2 Emergency action plan during explosion (gas cylinder, explosives handling and transportation etc.)**

SI No	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	<b>They should not panic.</b>  They should immediately take cover under tables, desks and other objects that will give protection against falling glass or debris.  After the initial effects of the explosion have subsided, they should report the emergency by telephone to emergency coordinators and give their names and describe the location and nature of the emergency.	On receiving the information to evacuate, they should walk quickly to the designated emergency assembly area.

## GREENKO INTEGRATED MANAGEMENT SYSTEM

### Greenko MP01 IREP Pvt. Ltd. Emergency Response Plan

2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the firefighting team and first aid team.</p> <p>He always will be in contact with the coordinators.</p>	<p>He takes the decision of evacuation after consultation with emergency coordinator.</p> <p>He helps the personnel in evacuation.</p>
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He declares emergency by sounding alarm.</p> <p>He contacts and mobilizes the specific coordinators and special teams to take specified actions.</p> <p>He informs the electrical / mechanical team to isolate the equipment.</p> <p>He guides the team members who are assisting him to take necessary actions.</p> <p>He informs the details project head.</p> <p>He investigates the incident and prepares the report.</p>	
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.</p>	
5	Electrical / mechanical team	<p>On receiving the communication from emergency coordinator, they shut down the equipment / isolate area.</p>	
6	Statutory coordinator	<p>After consulting with emergency coordinator, he will call government fire office immediately for assistance.</p>	

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		He will also inform to the police department.	
7.	Firefighting team	On receiving the information about the incident, they rush to the spot with the equipment.	<p>If there is a fire. They fight the fire.</p> <p>They will inform to the emergency coordinator, If help from fire department is required.</p> <p>They will help the fire department in extinguishing the fire.</p> <p>They will help the rescue teams in rescuing the trapped or injured persons.</p>
8.	Rescue team	On receiving the information, they will rush to the spot with all the required equipment.	<p>They take the help of local emergency leaders and firefighting team in identifying the trapped / injured persons.</p> <p>They assess the situation and if it is safe will go to the place and rescue and bring the casualties.</p>
9	First aid team	They rush to spot with the first aid kits.	<p>They will Identify the affected and give first aid treatment.</p> <p>They will give CPR if required.</p> <p>They will send the severely injured to hospital.</p>
10	Welfare coordinator	<p>He arranges a person to take attendance at the assembly area and identify the missing persons. He informs the details of missing persons to emergency coordinator.</p> <p>He arranges drinking water, snacks etc for the visitors and employees.</p> <p>He informs to the relatives of affected persons.</p> <p>He arranges persons, round the clock at hospitals to look after the need of the affected personnel.</p>	

**17.3. Emergency action plan during leakage of toxic or combustible gases.**

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SL No	Individual / Team	Initial Response	Incident control
1.	Observer	<p>He informs to nearby personnel.</p> <p>He stops all the works immediately.</p> <p>He shuts down all the equipment and makes them safe.</p> <p>He vacates the work place along with others, checking the windsock and proceeds in an orderly manner in up wind direction to the emergency assembly point.</p> <p>Inform to emergency coordinator and local emergency leader.</p>	
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He vacates the work place and walk briskly in upwind direction to assembly point.</p>	
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He declares emergency by sounding alarm.</p> <p>He contacts and mobilizes the specific coordinators and special teams to take specified actions.</p> <p>He informs the electrical / mechanical team to isolate equipment if required.</p> <p>He guides the team members who are assisting him to take necessary actions.</p> <p>He informs the details to the Project head.</p> <p>He investigates the incident and prepares the report.</p>	
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.</p>	



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5	Electrical / mechanical team	On receiving the communication from emergency coordinator, they shut down the equipment and isolate area.	
6	Statutory coordinator	He will call government fire office immediately for assistance.  If necessary, he will inform to the police department.	
7	Rescue team	On receiving the information they will rush to the spot with all the required equipment.	They assess the situation and if it is safe will go to the place and rescue and bring the casualties.
8	First aid team	They rush to spot with the first aid kits.	They will identify the affected and give first aid treatment.  They will give CPR if required.  They will send the affected persons to hospital.
9	Welfare coordinator	He deposes a person at assembly area to take attendance and identify the missing persons.  He informs to the coordinator regarding the missing persons.  He arranges drinking water, snacks etc for the visitors and employees.  He informs to the relatives of affected persons.  He arranges persons, round the clock at hospitals to look after the need of the affected personnel.	

#### **17.4 Emergency action plan during spillage of acids/chemicals/ flammable liquids.**

SI No	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	<b>THEY SHOULD NOT PANIC.</b>  They should not try to clean up the spill without knowledge!  They should call emergency coordinator and inform about the spill.	On receiving the information to evacuate, they should walk quickly to the assembly area.

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			<p>If the spill presents an immediate danger, they should evacuate as per the instructions of emergency team.</p> <p>They should first protect themselves and then take the injured person(s) to fresh air if they are safe.</p>
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the firefighting team and first aid team.</p> <p>He always will be in contact with the coordinators.</p>	<p>He takes the decision of evacuation after consultation with emergency coordinator.</p> <p>He helps the personnel in evacuation.</p> <p>He barricades the affected area immediately.</p>
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He declares emergency by sounding alarm.</p> <p>He contacts and mobilizes the specific coordinators and special teams to take specified actions.</p> <p>He informs the electrical / mechanical team to isolate equipment if required.</p> <p>He guides the team members who are assisting him to take necessary actions.</p> <p>He informs the details To the Project head.</p> <p>He investigates the incident and prepares the report.</p>	
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.</p>	

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	Electrical / mechanical team	On receiving the communication from emergency coordinator, they shut down the equipment / isolate area.	
5	Statutory coordinator	After consulting with emergency coordinator, he will call government fire office immediately for assistance.  He will also inform to the police department.	
6	Spill control team	On receiving the information about the incident, they rush to the spot with the available equipment.	<p>Prior to responding to any spills, spill control team should be thoroughly familiar with the hazards involved.</p> <p>DO NOT handle a spill without understanding the risks.</p> <p>Use proper protective equipment, use spill kit to contain the spilled materials.</p> <p>Apply absorbent material found within the spill kits to the entire spilled area.</p> <p>Place the used absorbent into a disposal bag and then into a non-combustible container.</p> <p>NEVER clean up Spills that present an immediate hazard (fire, explosion, chemical exposure, etc.), call for expert help.</p>
7.	Rescue team	On receiving the information they will rush to the spot with all the required equipment.	<p>They take the help of local emergency leaders and spill control team in identifying the trapped / injured persons.</p> <p>They assess the situation and if it is safe will go to the place and rescue and bring the casualties.</p>
8.	First aid team	They rush to spot with the first aid kits.	<p>They remove contaminated clothing of casualties.</p> <p>Flush the persons with water at least for 15 to 30 minutes.</p> <p>They will give first aid treatment.</p>

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			<p>They will give CPR if required.</p> <p>They will send the severely injured to hospital.</p>
9	Welfare coordinator	<p>He arranges a person to take attendance at the assembly area and identify the missing persons. He informs the details of missing persons to emergency coordinator.</p> <p>If the occurrence happened in the night time, they arrange sufficient lighting system as soon as possible.</p> <p>He arranges drinking water, snacks etc for the visitors and employees.</p> <p>He informs to the relatives of affected persons.</p> <p>He arranges persons, round the clock at hospitals to look after the need of the affected personnel.</p>	

#### 17.5 Emergency action plan for major equipment failure.

SI No	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	<p><b>They should not panic.</b></p> <p>They inform to the emergency coordinator and local emergency leader.</p>	<p>On receiving the information to evacuate, they should walk quickly to the nearest marked exit and ask others to do the same.</p> <p>Once outside, they should move to the designated emergency assembly area.</p>
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the firefighting team and first aid team.</p>	<p>He takes the decision of evacuation after consultation with emergency coordinator.</p> <p>He helps the personnel in evacuation.</p> <p>He barricades the affected area immediately.</p>

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		He always will be in contact with the coordinators.	
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He declares emergency by sounding alarm.</p> <p>He contacts and mobilizes the specific coordinators and special teams to take specified actions.</p> <p>He informs the electrical / mechanical team to isolate equipment if required.</p> <p>He guides the team members who are assisting him to take necessary actions.</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	
4	Project Head	<p>He instructs the operator to stop the wind turbines and de-energize the entire area.</p> <p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.</p>	He evacuates all the persons from the main control room to the assembly area.
5	Statutory coordinator	<p>After consulting with emergency coordinator, he will call government fire office immediately for assistance.</p> <p>He will also inform to the police department.</p>	
6	Firefighting team	On receiving the information about the incident, they rush to the spot with the available equipment.	If there is a fire. They fight the fire.

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			They will help the rescue teams in rescuing the trapped or injured persons.
7.	Rescue team	On receiving the information, they will rush to the spot with all the required equipment.	They take the help of local emergency leaders and firefighting team in identifying the trapped / injured persons.  They assess the situation and if it is safe will go to the place and rescue and bring the casualties.
8.	Transport coordinator	Arranges mobile machinery which can be used as per the instructions from management / technical team.	.
9	First aid team	They rush to spot with the first aid kits.	They will identify the affected and give first aid treatment.  They will give CPR if required.  They will send the severely injured to hospital.
10	Welfare coordinator	<p>He arranges a person to take attendance at the assembly area and identify the missing persons. He informs the details of missing persons to emergency coordinator.</p> <p>If the occurrence happened in the nighttime, they arrange sufficient lighting system as soon as possible.</p> <p>He arranges drinking water, snacks etc for the visitors and employees.</p> <p>He informs to the relatives of affected persons.</p> <p>He arranges persons, round the clock at hospitals to look after the need of the affected personnel.</p>	

#### **17.6 Emergency action plan during road accidents of own vehicles / heavy machinery.**

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SL No	Individual / Team	Initial Response	Incident control
1	Personnel at the site of incident	<b>HE SHOULD NOT PANIC.</b> He informs to the emergency coordinator.	
2	Local emergency leader	One of the persons at the site of the incident acts as local emergency leader. He informs to emergency coordinator. He gives the details of incident and location. He shows the way to the rescue team and first aid team. He always will be in contact with the coordinators.	He barricades the affected area immediately.  If required on consultation with the emergency coordinator, depending on the severity of the situation he sends the injured to nearby hospital in any available vehicle.
3	Emergency Coordinator	Once received the information about the emergency he will be in contact with the local emergency leader. He declares emergency by sounding alarm. He contacts and mobilizes the specific coordinators and special teams to take specified actions. He guides the team members who are assisting him to take necessary actions. He informs the details to the project head. He investigates the incident and prepares the report.	
4	Project Head	He gets the details from the Emergency coordinator. He communicates the information to the top management. He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.	

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6	Rescue team	On receiving the information they will rush to the spot with all the required equipment.	They help the first aid team in giving first aid.
7	Statutory coordinator	After consulting with emergency coordinator, he will call government fire office immediately for assistance.  He will also inform to the police department.	
8.	Transport coordinator	He arranges emergency vehicle for transporting the injured to the hospital.	
9	First aid team	They rush to spot with the first aid kits.	They will identify the affected and give first aid treatment.  They will give CPR if required.  They will send the severely injured to hospital.
10	Welfare coordinator	He goes to the place of incident.  He takes the photo snaps of the affected area.  He informs to the hospital authorities regarding the injured.  He informs to the relatives of affected persons.  He arranges persons, round the clock at hospitals to look after the need of the affected personnel.	

#### **17.7 Emergency action plan during structural collapse.**

SI No	Individual / Team	Initial Response	Incident control
1	Personnel at the site of incident	<b>They should not panic.</b>  They inform to the emergency coordinator and local emergency leader.	On receiving the information to evacuate, they should walk quickly to the nearest marked exit and ask others to do the same.  Once outside, they should move to the designated emergency assembly area.



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2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the firefighting team and first aid team.</p> <p>He always will be in contact with the coordinators.</p>	<p>He takes the decision of evacuation after consultation with emergency coordinator.</p> <p>He helps the personnel in evacuation.</p> <p>He barricades the affected area immediately.</p>
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He declares emergency by sounding alarm.</p> <p>He contacts and mobilizes the specific coordinators and special teams to take specified actions.</p> <p>He informs the electrical / mechanical team to isolate equipment if required.</p> <p>He guides the team members who are assisting him to take necessary actions.</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.</p>	
	Electrical / mechanical team	<p>On receiving the communication from emergency coordinator, they shut down the equipment and isolate area.</p>	
5	Statutory coordinator	<p>After consulting with emergency coordinator, he will call government fire office immediately for assistance.</p> <p>He will also inform to the police department.</p>	

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6	Firefighting team	On receiving the information about the incident, they rush to the spot with the available equipment.	<p>If there is a fire. They fight the fire.</p> <p>They will help the rescue teams in rescuing the trapped or injured persons.</p>
7.	Rescue team	On receiving the information they will rush to the spot with all the required equipment.	<p>They take the help of local emergency leaders and firefighting team in identifying the trapped / injured persons.</p> <p>They assess the situation and if it is safe will go to the place and rescue and bring the casualties.</p>
8.	Transport coordinator	Arranges mobile machinery which can be used as per the instructions from management / technical team.	.
9	First aid team	They rush to spot with the first aid kits.	<p>They will Identify the affected and give first aid treatment.</p> <p>They will give CPR if required.</p> <p>They will send the severely injured to hospital.</p>
10	Welfare coordinator	<p>He arranges a person to take attendance at the assembly area and identify the missing persons. He informs the details of missing persons to emergency coordinator.</p> <p>If the occurrence happened in the night time, they arrange sufficient lighting system as soon as possible.</p> <p>He arranges drinking water, snacks etc for the visitors and employees.</p> <p>He informs to the relatives of affected persons.</p> <p>He arranges persons, round the clock at hospitals to look after the need of the affected personnel.</p>	

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#### 17.8 Emergency action plans during tower crane/mobile crane/crawler crane collapse, scaffold collapse.

SI No	Individual / Team	Initial Response	Incident control
1	Personnel at the site of incident	<p><b>They should not panic.</b></p> <p>They inform to the emergency coordinator and local emergency leader.</p>	On receiving the information to evacuate, they should walk quickly to the designated emergency assembly area.
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the firefighting team and first aid team.</p> <p>He always will be in contact with the coordinators.</p>	<p>He takes the decision of evacuation after consultation with emergency coordinator.</p> <p>He helps the personnel in evacuation.</p> <p>He barricades the affected area immediately.</p> <p>He shows the way to rescue and first aid teams.</p>
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He declares emergency by sounding alarm.</p> <p>He contacts and mobilizes the specific coordinators and special teams to take specified actions.</p> <p>He informs the electrical / mechanical team to isolate the equipment if required.</p> <p>He guides the team members who are assisting him to take necessary actions.</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.</p>	

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5	Electrical / mechanical team	On receiving the communication from emergency coordinator, they shut down the equipment and isolate area.	
6	Rescue team	On receiving the information they will rush to the spot with all the required equipment.	They take the help of local emergency leaders and firefighting team in identifying the trapped / injured persons.  They assess the situation and if it is safe will go to the place and rescue and bring the casualties.
7	Firefighting team	On receiving the information about the incident, they rush to the spot with the available equipment.	They will help the rescue teams in rescuing the trapped or injured persons.
8	Statutory coordinator	After consulting with emergency coordinator, he will call government fire office immediately for assistance.  He will also inform to the police department.	
9.	Transport coordinator	Arranges mobile machinery which can be used as per the instructions from management / technical team.	.
10.	First aid team	They rush to spot with the first aid kits.	They will Identify the affected and give first aid treatment.  They will give CPR if required.  They will send the severely injured to hospital.
11.	Welfare coordinator	He arranges a person to take attendance at the assembly area and identify the missing persons. He informs the details of missing persons to emergency coordinator.  If the occurrence happened in the night time, they arrange sufficient lighting system as soon as possible.  He takes the photo snaps of the affected area.  He arranges drinking water, snacks etc for the visitors and employees.  He informs to the relatives of affected persons.	

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		He arranges persons, round the clock at hospitals to look after the need of the affected personnel.	
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**17.9 Emergency action plan during bomb threat:**

SI No	Individual / Team	Initial Response	Incident control
1.	The individual receiving the bomb threat	<p>He should not panic.</p> <p>He is responsible for carefully recording the information.</p> <p>He inform to the emergency coordinator and local emergency leader.</p> <p>In the event of a call, obtain all the information possible from the caller.</p> <p>He should be firm, calm, speak quietly and request the following information:</p> <p>Request the name of the building / area where the threat is located</p> <p>Request the exact location of the device</p> <p>Which area</p> <p>Which building. What floor</p> <p>What part of the building (north, south, etc.)</p> <p>Type of explosive or device or bomb</p> <p>Detonation time</p> <p>Description of the package. Once emergency leader arrives, he should handover the phone to him.</p>	
2.	Local emergency leader	<p>On receiving the information, he should walk quickly to the person who received the call. He should stay along with the first respondent and if required takes over the call from him. He should Advise the caller that the workers are working and the detonation of a bomb could result in the death or serious injury to many people.</p>	

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3.	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He declares emergency by sounding alarm.</p> <p>He contacts and mobilizes the specific coordinators and special teams to take specified actions.</p> <p>He informs the electrical / mechanical team to isolate the equipment if required.</p> <p>He guides the team members who are assisting him to take necessary actions.</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	<p>On receiving the information, he should walk quickly to the person who received the call. He should take over the call from the first respondent. He should Advise the caller that the workers are working and the detonation of a bomb could result in the death or serious injury to many people.</p>
4.	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Police inspector, Inspector of factories, Labor inspector, etc.</p>	
5	Electrical / mechanical team	<p>On receiving the communication from emergency coordinator, they shut down the equipment and isolate area.</p>	
6.	Rescue team	<p>On receiving the information they will rush to the spot with all the required equipment.</p>	<p>They take the help of local emergency leaders and firefighting team in identifying the trapped / injured persons.</p> <p>They assess the situation and if it is safe will go to the place and rescue and bring the casualties.</p>
7.	Firefighting team	<p>On receiving the information about the incident, they rush to the spot with the available equipment.</p>	<p>They will help the rescue teams in rescuing the trapped or injured persons.</p>
8.	Statutory coordinator	<p>After consulting with emergency coordinator, he will call government fire office immediately for assistance.</p> <p>He will also inform to the police department.</p>	
9.	Transport coordinator	<p>Arranges mobile machinery which can be used as per the instructions from management / technical team.</p>	

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10.	First aid team	They rush to spot with the first aid kits.	They will Identify the affected and give first aid treatment.  They will give CPR if required.  They will send the severely injured to hospital.
11.	Welfare coordinator	<p>He arranges a person to take attendance at the assembly area and identify the missing persons. He informs the details of missing persons to emergency coordinator.</p> <p>If the occurrence happened in the night time, they arrange sufficient lighting system as soon as possible.</p> <p>He takes the photo snaps of the affected area.</p> <p>He arranges drinking water, snacks etc for the visitors and employees.</p> <p>He informs to the relatives of affected persons.</p> <p>He arranges persons, round the clock at hospitals to look after the need of the affected personnel.</p>	

**17.10 Emergency action plans during snakebites / scorpion / poisonous insects.**

SI No.	Individual Team /	Initial Response	Incident control
1.	Personnel at the site of incident	<p>They should have a good look at the snake.</p> <p>This will help the doctor to identify and treat accordingly.</p> <p>They should Inform to the emergency coordinator and local emergency leader.  <b>THEY SHOULD NOT PANIC.</b></p>	
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the first aid team.</p> <p>He always will be in contact with the coordinators.</p>	<p>Make the person lie down.</p> <p>Make him not to move much.</p> <p>Most snakes are not poisonous, and it is likely that the person has been bitten by a non-poisonous snake. Reassure the person with smooth words.</p>

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			If fang marks are visible, the snake probably of the poisonous variety.
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He contacts first aid team to take actions.</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p> <p>He communicates with the external agencies such as Inspector of factories, Labor inspector, Police, etc.</p>	
5.	First aid team	<p>They should rush to spot with the first aid kits.</p> <p><b>First aid instructions:</b></p> <p>Keep the bitten limb below the level of the heart. This slows down the spread of the poison to the heart. So if he has been bitten on the leg, he could lie down with his leg on a lower level than the mattress, perhaps on a stool.</p> <p>Wipe the area clean with an antiseptic and retain the wipe for venom traces.</p> <p>Don't apply ice to the bite.</p> <p>Tie a band or cloth about two inches width away from the wound. If there has been swelling, tie the band about two inches from the swelling.</p> <p>The band should be at least an inch thick, and it should be tied within 20 minutes of the bite, if it is to have any effect.</p> <p>The band should be firm and tight, but not so tight that it completely blocks blood flow. A good rule of thumb is that the bandage should be loose enough for a finger to slip through.</p> <p>As far as possible, <b>DO NOT LET THE PERSON WALK.</b> Remember, the limb should be moved as little as possible.</p>	



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		<p>If the person is bitten by any other animal like a dog or spider, the first aid is relatively same in either case. Wash the wound with soap and water and apply an antiseptic. Always contact a doctor, whether the bite is big or small, if swelling occurs, the wound gets worse or if the person develops fever. If he gets bitten by a tick, don't squeeze the tick while removing it, as this causes the tick to secrete further bacteria.</p> <p><b>Send the person to hospital as soon as possible.</b></p>
6	Transport coordinator	He arranges the emergency vehicle.
7.	Welfare coordinator	<p>He informs to the hospital about the incident and gives the details.</p> <p>He informs to the relatives of affected person.</p> <p>He arranges persons, round the clock at hospitals to look after the need of the affected personnel.</p>

**17.11 Emergency action plan during Electrocutation.**

#	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	<p>Isolate the affected circuit from electric supply</p> <p><b>Provide first-aid to the injured for:</b></p> <p>Shock</p> <p>Burns</p> <p>Temporary breathlessness</p> <p>Declare Emergency Situation if required</p> <p>Depending on the nature of injury, decide to shift the victim / injured person to the Medical assistance or request Medical assistance on-site through ambulance</p> <p>Inform relatives of the affected person</p> <p>Install sign boards on the affected circuits</p> <p>Repair, Rectify and Restore the healthiness of the circuit involved</p>	<p>Ensure you and your workers are safe; safety takes precedence over other priorities</p> <p>Notify the Supervisor of the incident</p> <p>Take action to limit the damage; contain the material loss, fire, etc.</p>

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		<p>If required, informed statutory and regulatory bodies for any checks and validations before using the affected facility.</p> <p>Update records for further analysis for corrective and preventive actions</p> <p>They should Inform to the emergency coordinator and local emergency leader. <b>THEY SHOULD NOT PANIC.</b></p>	
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the first aid team.</p> <p>He always will be in contact with the coordinators.</p>	Establish management decision points for ordering a separate organization for an Incident within Incident
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He contacts first aid team to take actions if necessary</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	<p>Provide briefing to staff and at the premises regarding incident.</p> <p>On receiving the information, he should walk quickly to the person who received the call. He should take over the call from the first respondent.</p>
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p>	Notification and assistance to families of victims;
5	Electrical / mechanical team	On receiving the communication from emergency coordinator, they shut down the equipment and isolate area.	
6.	First aid team	<p><b>First aid instructions:</b></p> <p>They should rush to spot with the first aid kits.</p> <p>Coordinate with proper medical response team.</p> <p>Coordinate with the Communications to ensure proper medical unit procedures are followed.</p> <p>List all potential evacuation resources and/or equipment assigned to the incident</p>	

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		Provide First Aid for the Victim and <b>Send the victim / injured person to hospital as soon as possible.</b>	
7	Transport coordinator	He arranges the emergency vehicle.	Identify preferred method to the transport the victim.  Request any additional resources and/or equipment needed,
8.	Welfare coordinator	He informs to the hospital about the incident and gives the details.  He informs to the relatives of affected person.	

**17.12 Emergency action plan during Lightning and thunderstorm.**

Lightning is a leading cause of injury and death from Weather-related hazards.

Thunderstorms are dangerous storms that include lightning.

50+ MPH



**Include powerful winds**



**Create lightning and hail**



**Cause flash flooding**

IF YOU ARE UNDER A THUNDERSTORM WARNING, FIND SAFE SHELTER RIGHT AWAY.

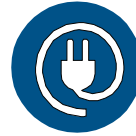
**When thunder roars,  
go indoors**



**Pay attention to alerts and warnings.**

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Move from outdoors into a building or car



Unplug appliances.



Do not use landline phones.

#	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	Evacuation needs to be carried out as a precautionary measure based on warning indicators of weather in order to protect Lightning affected persons from the full effects. They should Inform to the emergency coordinator and local emergency leader.  <b>THEY SHOULD NOT PANIC.</b>	Ensure you and your workers are safe; safety takes precedence over other priorities.
2	Local emergency leader	He informs to emergency coordinator.  He gives the details of incident and location.  He shows the way to the first aid team.  He always will be in contact with the coordinators.	All response activities will be undertaken at the local level through a suitably devised Incident Command System (ICS) coordinated by the local administration
3	Emergency Coordinator	Once received the information about the emergency he will be in contact with the local emergency leader.    He contacts first aid team to take actions if necessary   He informs the details to the project head.	Ensure adequate supply of medical kits.

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		He investigates the incident and prepares the report.	
4	Project Head	He gets the details from the Emergency coordinator.  He communicates the information to the top management.	Notification and assistance to families of victims;
5.	First aid team	<p><b>First aid instructions:</b></p> <p>Ensure adequate medical supplies available.</p> <p>They should rush to spot with the first aid kits.</p> <p>Coordinate with proper medical response team.</p> <p>Coordinate with the Communications to ensure proper medical unit procedures are followed.</p> <p>List all possible evacuation resources and/or equipment assigned to the incident</p> <p>Provide First Aid for the Victim and <b>Send the victim to hospital as soon as possible.</b></p>	
6	Transport coordinator	He arranges the emergency vehicle.	Identify preferred method to transport of the victim.  Request any additional resources and/or equipment needed.
7.	Welfare coordinator	He informs to the hospital about the incident and gives the details.  He informs to the relatives of affected person.	

**17.13 Emergency action plan during Person collapse due to heat stroke or faint.**

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#	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	Evacuation needs to be carried out as a precautionary measure based on warning indicators, prior to impact, in order to protect threatened persons from the full effects. They should Inform to the emergency coordinator and local emergency leader. <b>THEY SHOULD NOT PANIC.</b>	Ensure you and your workers are safe; safety takes precedence over other priorities.
2	Local emergency leader	He informs to emergency coordinator. He gives the details of incident and location. He shows the way to the first aid team. He always will be in contact with the coordinators.	All response activities will be undertaken at the local level through a suitably devised Incident Command System (ICS) coordinated by the local administration
3	Emergency Coordinator	Once received the information about the emergency he will be in contact with the local emergency leader.  He contacts first aid team to take actions if necessary  He informs the details to the project head.  He investigates the incident and prepares the report.	Ensure adequate supply of ice packs and IV fluids.
4	Project Head	He gets the details from the Emergency coordinator.  He communicates the information to the top management.	Notification and assistance to families of victims;
5.	First aid team	<b>First aid instructions:</b> Ensure adequate medical supplies available. They should rush to spot with the first aid kits. Coordinate with proper medical response team. Coordinate with the Communications to ensure proper medical unit procedures are followed. List all possible evacuation resources and/or equipment assigned to the incident	

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		Provide First Aid for the Victim and <b>Send the victim to hospital as soon as possible.</b> Special efforts will be made for the availability of IV fluid, antibiotics vaccines etc.	
6	Transport coordinator	He arranges the emergency vehicle.	Identify preferred method to transport of the victim.  Request any additional resources and/or equipment needed.
7.	Welfare coordinator	He informs to the hospital about the incident and gives the details.  He informs to the relatives of affected person.	

#### **17.14 Emergency action plan during Food poisoning.**

#	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	Evacuation needs to be carried out as a precautionary measure based on food poisoning of Victim in order to protect affected persons from the full effects. They should Inform to the emergency coordinator and local emergency leader.  <b>THEY SHOULD NOT PANIC.</b>	Ensure you and your workers are safe; safety takes precedence over other priorities.
2	Local emergency leader	He informs to emergency coordinator.  He gives the details of incident and location.  He shows the way to the first aid team.  He always will be in contact with the coordinators.	All response activities will be undertaken at the local level through a suitably devised Incident Command System (ICS) coordinated by the local administration

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3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He contacts first aid team to take actions if necessary</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	Ensure adequate supply of medical kits.
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p>	Notification and assistance to families of victims;
5.	First aid team	<p><b>First aid instructions:</b></p> <p>Ensure adequate medical supplies available.</p> <p>They should rush to spot with the first aid kits.</p> <p>Coordinate with proper medical response team.</p> <p>Coordinate with the Communications to ensure proper medical unit procedures are followed.</p> <p>List all possible evacuation resources and/or equipment assigned to the incident</p> <p>Provide First Aid for the Victim and <b>Send the victim to hospital as soon as possible.</b></p>	
6	Transport coordinator	He arranges the emergency vehicle.	<p>Identify preferred method to transport of the victim.</p> <p>Request any additional resources and/or equipment needed.</p>
7.	Welfare coordinator	<p>He informs to the hospital about the incident and gives the details.</p> <p>He informs to the relatives of affected person.</p>	



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#### 17.15 Emergency action plan during Riot Local People.

#	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	<p>He should not panic.</p> <p>He is responsible for carefully recording the riot local people.</p> <p>He inform to the emergency coordinator and local emergency leader.</p> <p>In the event of a call, obtain all the information possible from the caller.</p> <p>He should be firm, calm, speak quietly and request the following information:</p> <p>Request the exact location</p> <p>Which area</p> <p>Which building.</p>	<p>Ensure you and your workers are safe; safety takes precedence over other priorities.</p>
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the first aid team.</p> <p>He always will be in contact with the coordinators.</p>	<p>All response activities will be undertaken at the local level through a suitably devised Incident Command System (ICS) coordinated by the local administration</p>
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He contacts first aid team to take actions if necessary</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	<p>Ensure adequate supply of medical kits.</p>

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4	Project Head	He gets the details from the Emergency coordinator.  He communicates the information to the top management.	Notification and assistance to families of victims;
5.	First aid team	<b>First aid instructions:</b>  Ensure adequate medical supplies available.  They should rush to spot with the first aid kits.  Coordinate with proper medical response team.  Coordinate with the Communications to ensure proper medical unit procedures are followed.  List all possible evacuation resources and/or equipment assigned to the incident Provide First Aid for the Victim and <b>Send the victim to hospital as soon as possible.</b>	
6	Transport coordinator	He arranges the emergency vehicle.	Identify preferred method to transport of the victim.  Request any additional resources and/or equipment needed.
7.	Welfare coordinator	He informs to the hospital about the incident and gives the details.  He informs to the relatives of affected person.	

**17.16 Emergency action plan during Fall from Height.**

#	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	He should not panic.  He is responsible for carefully recording the effected person.  He inform to the emergency coordinator and local emergency leader.	Ensure you and your workers are safe; safety takes precedence over other priorities.

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		<p>In the event of a call, obtain all the information possible from the caller.</p> <p>He should be firm, calm, speak quietly and request the following information:</p> <p>Request the name of the building / area where the incident happen is Condition.</p> <p>Request the exact location of the device</p> <p>Which area</p> <p>Which building.</p> <p>What floor</p> <p>What part of the building (north, south, etc.)</p>	
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the first aid team.</p> <p>He always will be in contact with the coordinators.</p>	All response activities will be undertaken at the local level through a suitably devised Incident Command System (ICS) coordinated by the local administration
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He contacts first aid team to take actions if necessary</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	Ensure adequate supply of medical kits.
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p>	Notification and assistance to families of victims;
5.	First aid team	<p><b>First aid instructions:</b></p> <p>Ensure adequate medical supplies available.</p>	

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		<p>They should rush to spot with the first aid kits.</p> <p>Coordinate with proper medical response team.</p> <p>Coordinate with the Communications to ensure proper medical unit procedures are followed.</p> <p>List all possible evacuation resources and/or equipment assigned to the incident</p> <p>Provide First Aid for the Victim and <b>Send the victim to hospital as soon as possible.</b></p>	
6	Transport coordinator	He arranges the emergency vehicle.	<p>Identify preferred method to transport of the victim.</p> <p>Request any additional resources and/or equipment needed.</p>
7.	Welfare coordinator	<p>He informs to the hospital about the incident and gives the details.</p> <p>He informs to the relatives of affected person.</p>	

**17.17 Emergency action plan during Earthquake.**

#	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	<p>Remain calm and quickly follow the steps</p> <p>If indoors, seek refuge in a doorway or under a desk or table. Stay away from glass windows, shelves and heavy equipment. <b>IF INDOORS DURING AN EARTHQUAKE EXIT THE BUILDING ONLY AFTER THE SHAKING HAS STOPPED.</b></p> <p>If outdoors, move quickly away from buildings, utility poles, and other structures. Caution: Always avoid power or utility lines as they may be energized.</p>	Ensure you and your workers are safe; safety takes precedence over other priorities.
2	Local emergency leader	He informs to emergency coordinator.	All response activities will be undertaken at the local level through a

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		<p>He gives the details of incident and location.</p> <p>He shows the way to the first aid team.</p> <p>He always will be in contact with the coordinators.</p>	<p>suitably devised Incident Command System (ICS) coordinated by the local administration</p>
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He contacts first aid team to take actions if necessary</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	
4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p>	<p>Notification and assistance to families of victims;</p>
5.	First aid team	<p><b>First aid instructions:</b></p> <p>Ensure adequate medical supplies available.</p> <p>They should rush to spot with the first aid kits.</p> <p>Coordinate with proper medical response team.</p> <p>Coordinate with the Communications to ensure proper medical unit procedures are followed.</p> <p>List all possible evacuation resources and/or equipment assigned to the incident</p> <p>Provide First Aid for the Victim and <b>Send the victim to hospital as soon as possible.</b></p>	
6	Transport coordinator	<p>He arranges the emergency vehicle.</p>	<p>Identify preferred method to transport of the victim.</p> <p>Request any additional resources and/or equipment needed.</p>

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7.	Welfare coordinator	<p>He informs to the hospital about the incident and gives the details.</p> <p>He informs to the relatives of affected person.</p>	

**17.18 Emergency action plan during Heavy Rains and Inundation.**

#	Individual / Team	Initial Response	Incident control
1.	Personnel at the site of incident	Evacuation needs to be carried out as a precautionary measure based on heavy rain indicators, prior to impact, in order to protect threatened persons from the full effects. They should Inform to the emergency coordinator and local emergency leader. <b>THEY SHOULD NOT PANIC.</b>	Ensure you and your workers are safe; safety takes precedence over other priorities.
2	Local emergency leader	<p>He informs to emergency coordinator.</p> <p>He gives the details of incident and location.</p> <p>He shows the way to the first aid team.</p> <p>He always will be in contact with the coordinators.</p>	All response activities will be undertaken at the local level through a suitably devised Incident Command System (ICS) coordinated by the local administration
3	Emergency Coordinator	<p>Once received the information about the emergency he will be in contact with the local emergency leader.</p> <p>He contacts first aid team to take actions if necessary</p> <p>He informs the details to the project head.</p> <p>He investigates the incident and prepares the report.</p>	Ensure adequate supply of ice packs and IV fluids.

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4	Project Head	<p>He gets the details from the Emergency coordinator.</p> <p>He communicates the information to the top management.</p>	Notification and assistance to families of victims;
5.	First aid team	<p><b>First aid instructions:</b></p> <p>Ensure adequate medical supplies available.</p> <p>They should rush to spot with the first aid kits.</p> <p>Coordinate with proper medical response team.</p> <p>Coordinate with the Communications to ensure proper medical unit procedures are followed.</p> <p>List all possible evacuation resources and/or equipment assigned to the incident</p> <p>Provide First Aid for the Victim and <b>Send the victim to hospital as soon as possible.</b></p> <p>Special efforts will be made for the availability of IV fluid, antibiotics vaccines etc.</p>	
6	Transport coordinator	He arranges the emergency vehicle.	<p>Identify preferred method to transport of the victim.</p> <p>Request any additional resources and/or equipment needed.</p>
7.	Welfare coordinator	<p>He informs to the hospital about the incident and gives the details.</p> <p>He informs to the relatives of affected person.</p>	

#### **17.19 Emergency action plan during Epidemic/Contagious Disease.**

Infectious disease emergencies are circumstances caused by biological agents, including organisms such as bacteria, viruses or toxins with the potential for significant illness or death in the population. Infectious disease emergencies may include naturally occurring outbreaks (e.g., measles, mumps, meningococcal disease), emerging infectious diseases (e.g., SARS, avian influenza, Corona virus, COVID-19, etc.), and bioterrorism. The circumstances of infectious disease emergencies may vary by multiple factors, including the type of biological agent, the scale of exposure, mode of transmission and intentionality (bioterrorism), and many others. Public health measures to contain such outbreaks are especially important for diseases with high morbidity or mortality and limited medical prophylaxis and/or treatment.

The purpose of the Contagious Disease Emergency Response (CDER) is to contain an outbreak of disease caused by an infectious agent or biological toxin or respond to other infectious disease emergencies as defined above.

The ERP lays down in concise form the steps required to be taken to respond effectively to an Epidemic / Contagious Disease.

The ERP also lays down an institutional mechanism in unambiguous terms for the worst-case scenario with the Central/ State/ District administrations functioning on a trigger mechanism basis.

The National Disaster Management Authority may lay down policies and guidelines from time to time to be followed by different Ministries/ Departments/ Organizations/ Technical Agencies of the Government of India and the State Governments for preparedness and response to an Epidemic / Contagious disease.

The ERP encompasses five phases of activity as under the Government of India.

**Preparedness Phase:** - This will include all actions that have to be taken by various agencies to ensure the required state of preparedness. This will include documentation; having required equipment's in place, exercises/ drills, training programs, awareness generation programs, communication strategy, the establishment of command-and-control system, and storage of emergency medicines/ vaccines/ diagnostic agents, etc.

**Early Warning Phase:** - As a majority of the Epidemic / Contagious diseases have an incubation phase before onset, the early warning mechanism in the surveillance system will play an important role. Activities like case definition, notification, compilation and interpretation of epidemiological data are important aspects and need to be strengthened in the existing surveillance system for developing the early warning signals related to Epidemics / Communicable / Infectious disease.

**Notification Phase:** - It would be mandatory to report any unusual syndrome or incidence of a usual syndrome in unusual numbers. The Central/ State/ Local Authorities, to make such events notifiable, would enact necessary legal provisions. The activities in this phase include rapid epidemiological investigation, quick laboratory support for confirming the diagnosis, quarantine, isolation, keeping health facilities geared up for impending casualty management and evolving public health strategies for control.

**Response Phase:** - The Capabilities available with the Government at various levels for handling the epidemic are put into effect. The activities include rapid epidemiological investigation, quick laboratory support, mass casualty management and initiation of preventive, curative and specific control measures for containing the further spread of the disease.

**Recovery Phase:** - The setbacks suffered as a result of the Epidemic / Contagious diseases are restored and lessons learned in this phase are incorporated in the future preparedness plan(s).

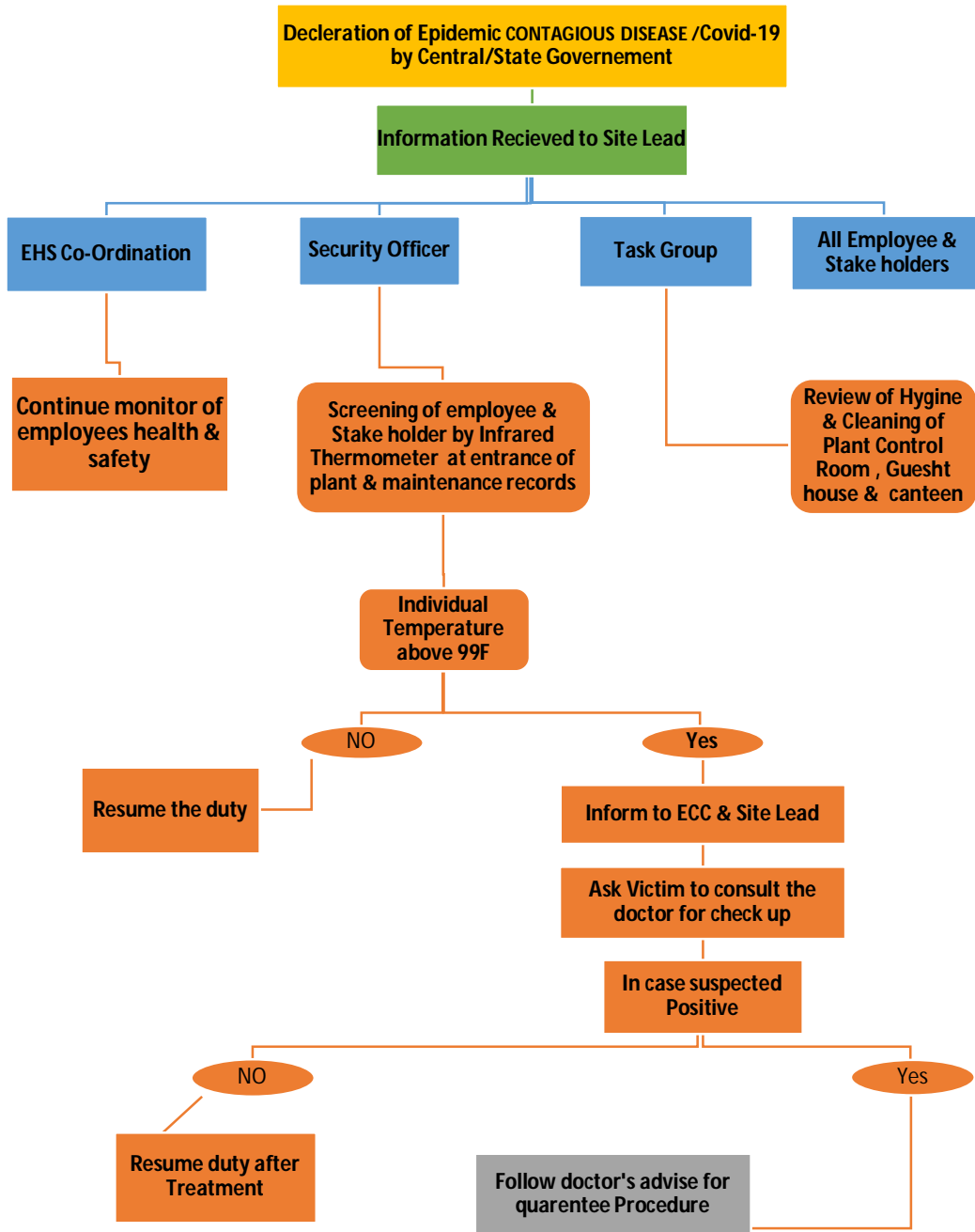


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**Reference Regulations / Acts:** - Epidemic Diseases Act 1897., National Disaster Management Act 2005, Amended 2019 – Sec 269 and 270., Management of Biological Disaster Guideline 2008., Epidemic/Contagious Disease - Prevention of Spread & Control- Standard Operating Procedure

**Epidemic /Contagious disease emergency communication flow chart:**



**THINGS TO NOTE & EVALUATE:**

1. The Timings of the Siren, Start of Emergency & End of emergency.
2. The First person & last Person Arrival at Assembly Point to understand the response times.
3. The Emergency response, like stoppage of Machinery ways to come down from height etc.
4. Arrangement and organization at the Assembly Point.
5. Head count, accountability & recognition of the Missing person including the visitors.
6. Initiation of the rescue operation and Sharing of the findings with the group.

**18. Emergency response plan check list/Formats/Documents.**

<b>FORM/DOCUMENT NO.</b>	<b>FORM/DOCUMENT TITLE</b>
F-EHS-ERP-01	Telephone Numbers of Key Personnel of Project team
F-EHS-ERP-02	Telephone Numbers of Statutory Personnel and External Agencies
F-EHS-ERP-03	Telephone Numbers of Hospitals
F-EHS-ERP-04	Location details of Emergency equipment
F-EHS-ERP-05	Emergency equipment checklist
F-EHS-ERP-06	Head count report
F-EHS-ERP-07	Emergency Preparedness Mock Drill Record
F-EHS-ERP-08	Actions taken during emergency
F-EHS-ERP-09	Signage and Display Material checklist
F-EHS-ERP-10	Emergency information card
F-EHS-ERP-11	Emergency response flowchart and Emergency escape route
F-EHS-ERP-12	Mock drill Schedule

**19. First Aid material's list.**

1. Adhesive tape.
2. 4" x 4" sterile gauze pads.
3. Antacid - for indigestion.
4. Antidiarrheal (Imodium, Pepto-Bismol, for example).
5. Antihistamine cream.
6. Antiseptic agent (small bottle liquid soap) - for cleaning wounds and hands.
7. Aspirin - for mild pain, heart attack.
8. Adhesive bandages (all sizes).
9. Diphenhydramine (Benadryl) - oral antihistamine.
10. Book on first aid.
11. Cigarette lighter - to sterilize instruments and to be able to start a fire in the wilderness.
12. Cough medication.
13. Dental kit - for broken teeth, loss of crown or filling.
14. Exam gloves.
15. Small flashlight.
16. Ibuprofen (Advil is one brand name); another good choice is naprosyn (Aleve is a brand name).
17. Insect repellent.
18. Knife (small Swiss Army-type).
19. Moleskin - to apply to blisters or hot spots.
20. Nasal spray decongestant - for nasal congestion from colds or allergies.
21. Nonadhesive wound pads (Telfa).
22. Polysporin antibiotic ointment.
23. Oral decongestant.
24. Plastic resealable bags (oven and sandwich).
25. Pocket mask for CPR (although now, CPR does not have to be mouth to mouth).
26. Safety pins (large and small).
27. Scissors.
28. Sunscreen.
29. Thermometer.
30. Tweezers.
31. Antivenom.



### सार्वजनिक सृजना (पर्यावरण मंजूरी)

सूचित किया जाता है कि प्रस्तावित एमपी 30 गाँधी सागर ऑफ स्ट्रीम पम्प स्टोरेज परियोजना (1440 मेगावाट) ग्राम खेमला ब्लॉक, तहसील रामपुरा, जिला नीमच, मध्य प्रदेश को पर्यावरण मंजूरी पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय (इम्पैक्ट असेसमेंट डिवीजन) भारत सरकार के पत्र क्रमांक एफ.सं. J-12011/22/2019-IA.I(R) दिनांक 02 दिसम्बर 2021 को प्रदान की गई है। पर्यावरण मंजूरी पत्र की प्रति मध्य प्रदेश प्रदूषण नियंत्रण बोर्ड भोपाल, क्षेत्रीय कार्यालय मध्य प्रदेश प्रदूषण नियंत्रण बोर्ड उज्जैन, जिला कलेक्टर कार्यालय नीमच, जिला व्यापार और उद्योग केन्द्र नीमच, जिला पंचायत कार्यालय नीमच और खेमला ब्लॉक ग्राम पंचायत कार्यालय के पास उपलब्ध है और पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय की वेबसाइट (परिवेश) <https://parivesh.nic.in> या <http://environmentclearance.nic.in> और कंपनी की वेबसाइट [www.greenkogroup.com](http://www.greenkogroup.com) पर भी देखा जा सकता है। इसे पर्यावरण मंजूरी की मानक शर्त के अनुपालन के तहत जारी किया जा रहा है।

मेसर्स ग्रीनको एनर्जीज प्राइवेट लिमिटेड  
प्लॉट नंबर-1071, रोड नंबर-44, जुबली हिल्स,  
हैदराबाद-500033, राज्य-तेलंगाना  
Email: [envifor.gandhisagar@greenkogroup.com](mailto:envifor.gandhisagar@greenkogroup.com)

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उपलब्ध है और पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय की वेबसाइट (परिवेश) <https://parivesh.nic.in> या <http://environmentclearance.nic.in> और कंपनी की वेबसाइट [www.greenkogroup.com](http://www.greenkogroup.com) पर भी देखा जा सकता है। इसे पर्यावरण मंजूरी की मानक शर्त के अनुपालन के तहत जारी किया जा रहा है।



# THE TIMES

INDORE | WEDNESDAY, JANUARY 5, 2022 | PAGES 20 | PRICE ₹ 3.00



# F INDIA

INDIA'S LARGEST ENGLISH NEWSPAPER

Foreign minister  
Jaishankar reviews  
ties in back-to-back  
conversations with  
his US & Russian  
counterparts,  
Blinken & Lavrov

## ENVIRONMENTAL CLEARANCE PUBLIC NOTICE

It is to inform that the Environmental Clearance (EC) for **MP30 Gandhi Sagar Off- Stream Pumped Storage Project (1440 MW)** at village Khemla Block, Tehsil Rampura, District Neemuch, Madhya Pradesh has been granted by Ministry of Environment, Forests & Climate Change (Impact Assessment Division), Government of India, New Delhi vide letter F.No. J- 12011/22/2019-IA.I (R) dated 02<sup>nd</sup> December, 2021 and a copy of Environmental Clearance (EC) letter is available with the Madhya Pradesh Pollution Control Board Bhopal, regional office Madhya Pradesh Pollution Control Board Ujjain District Collector Office Neemuch, District Trade & Industries Centre, Neemuch, Zila Panchayat Office Neemuch and Khemla Block Gram Panchayat Office, MoEF&CC (PARIVESH) website at <https://parivesh.nic.in> or <http://environmentclearance.nic.in> and at company website [www.greenkogroup.com](http://www.greenkogroup.com) This is being released under the compliance as per the standard condition of Environmental Clearance.

M/s Greenko Energies Private Limited  
Plot no-1071, Road No-44, Jubilee Hills,  
Hyderabad- 500033, Telangana State  
Email: [envifor.gandhisagar@greenkogroup.com](mailto:envifor.gandhisagar@greenkogroup.com)

GEPL/MP30PSP/EC/2021-22/211207

Dated: 07-12-2021

1. The Member Secretary,  
Madhya Pradesh State Pollution Control Board,  
Bhopal, M.P.
2. The Regional Officer, MPPCB,  
Ujjain, Madhya Pradesh
3. The District Collector,  
District Neemuch, Madhya Pradesh
4. The General Manager,  
District Trade & Industries Center  
District Neemuch, Madhya Pradesh.
5. The Zila Panchayat Office,  
District Neemuch, Madhya Pradesh.
6. The Gram Panchayat Office,  
Village Khemla Block, Tahsil Rampura  
District Neemuch, Madhya Pradesh.

**Sub: MP30 Gandhi Sagar Off Stream Pumped Storage Project (1440 MW) in an area of 402.50 ha. by M/ s Greenko Energies Private Limited in village Khemla Block, Tehsil Rampura, District Neemuch, Madhya Pradesh- Environmental Clearances- Reg**

Respected Sir,

We are pleased to inform you that the Ministry of Environment, Forests & Climate Change (IA.I-Division), Government of India has granted Environmental Clearance of MP30 Gandhi Sagar Off Stream Pumped Storage Project (1440 MW), Neemuch District of Madhya Pradesh vide EC Identification No.EC21A003MP159461 and letter no .F.No. J-12011/22/2019-IA.I (R) dated 01<sup>st</sup> December, 2021. A copy of the same is enclosed herewith for your kind information and necessary action please.

We wish to inform that as per the Standard Environmental Clearances Condition No. X-ii, the Environmental clearance letter should be displayed in your office Notice Board for information to the public for a period of 30 days.

Thanking You,

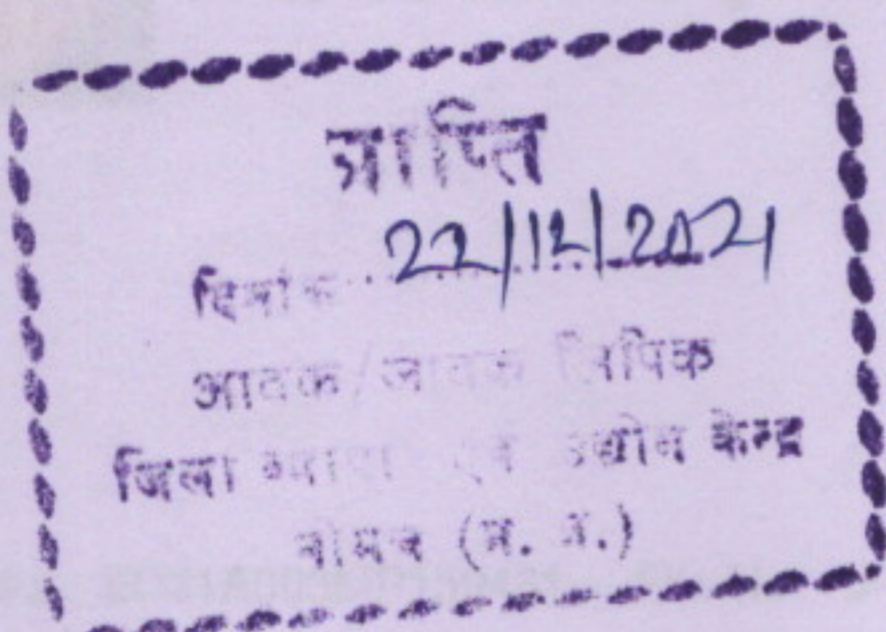
Yours Sincerely,

For M/s Greenko Energies Private Limited

N. Gopi Krishna  
Authorized Signatory



Enclosures: As above.



आवक - शाखा  
कलेक्टर कार्यालय जिला नीमच

लिपिक  
जावक शाखा  
जिला पंचायत, नीमच

GEPL/MP30PSP/EC/2021-22/211207

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Yours Sincerely,

For M/s Greenko Energies Private Limited

*N. Govindarajan*  
Authorized Signatory



Enclosures: As above.

