Executive Summary

Kurha-Vadhoda Islampur Lift Irrigation Scheme, UPSA Sinchan Yojna

with CCA 32372 Ha at Village Rigaon,

Tehsil- Muktainagar, District- Jalgaon, Maharashtra

[TYPE THE COMPANY NAME]

Executive Summary

1. Project Description

The proposed project is lifting of flood water in rainy season from Purna river by constructing Intake structure, Jack well overhead Pump house near village Rigaon, Taluka Muktainagar, Dist- Jalgaon, and conveying water to store in a dam near village Islampur.

As per EIA Notification, published in Gazette of India, Extraordinary Part-II, Section-3, sub-section(ii) of Ministry of Environment & Forest dated 14.09.2006 & subsequent amendments, the proposed project falls in Activity 1(c),River Valley Projects, Category-A of "List of Projects or Activities requiring Prior Environmental Clearance" in Hydropower Projects. As per the above notification, proposed project will have to obtain Environmental Clearance from Ministry of Environment, Forests &Climate Change (MoEF&CC), due to presence of Maharashtra- Madhya Pradesh Interstate Boundary at 5.7kms in NNW.

Kurha Vadhoda Islampur lift Irrigation Scheme is in jurisdiction of Tapi Irrigation Development Corporation, Jalgaon. The project is located near Village Rigaon, Taluka Muktainagar, Dist- Jalgaon. Jalgaon area has no source of irrigation and suffers due to drought for years together. The scheme envisages lifting of flood water in rainy season from Purna river by constructing Intake structure, Jack well overhead Pump house near village Rigaon, Taluka Muktainagar, Dist- Jalgaon, and conveying water to store in a dam near village Islampur. Construction of dam is also included in the scheme. Irrigation from dam is proposed by Gravity pipe line. Gross Command Area under this scheme is 40465 Ha, Culturable Command Area is 32372 Ha& Irrigable Command Area is 25898 Ha. Thus, the project will benefits 25898 ha irrigable area.

2. Description of the Environment

The baseline study and primary data collection has been carried out for Winter Season (December 2020- February 2021), Pre-Monsoon Season (March- May 2022) and Monsoon Season (June 2022- September 2022). Baseline data for socioeconomic environment has been generated irrespective of seasons. The report contains baseline data for all environmental components i.e. physical, biological and socio-economic components.

2.1. Air Environment

Ambient Air Quality Monitoring reveals that the minimum and maximum concentrations of PM_{10} for all the 8 Air Quality monitoring stations were found to be (i) During Winter Season- SPM- 63.0µg/m^3 and 116.0µg/m^3 respectively, while for PM_{10} varies between 39.0µg/m^3 and 68.0µg/m^3. As far as the gaseous pollutants SO_2, NO_2, & CO are concerned, the prescribed limits under NAAQ Standards for residential and rural areas has never surpassed at any station. The

minimum and maximum concentrations of NO_2 were found to be 14.0µg/m^3 and 31.0µg/m^3 respectively. The minimum and maximum concentrations of SO_2 were found to be 5.0µg/m^3 and 15.0 µg/m^3 respectively.

During pre monsoon Season-

SPM- 58.0g/m^3 and 95.0µg/m^3 respectively, while for PM_{10} varies between 35.0µg/m^3 and 74.0µg/m^3. As far as the gaseous pollutants SO_2, NO_2, &CO are concerned, the prescribed limits under NAAQ Standards for residential and rural areas has never surpassed at any station. The minimum and maximum concentrations of NO_2 were found to be 14.0µg/m^3 and 29.0µg/m^3 respectively. The minimum and maximum concentrations of SO_2 were found to be 5.0µg/m^3 and 13.0 µg/m^3 respectively.

During Monsoon Season-

SPM- 53.0µg/m^3 and 87.0µg/m^3 respectively, while for PM_{10} varies between 25.0µg/m^3 and 56.0µg/m^3. As far as the gaseous pollutants SO_2, NO_2, &CO are concerned, the prescribed limits under NAAQ Standards for residential and rural areas has never surpassed at any station. The minimum and maximum concentrations of NO_2 were found to be 10.0µg/m^3 and 29.0µg/m^3 respectively. The minimum and maximum concentrations of SO_2 were found to be 5.0µg/m^3 and 14.0 µg/m^3 respectively.

2.2. Water Environment

Interpretation of Water results in the Study Area:

Surface Water:

- The analysis results indicate that the pH value is 7.50 to 8.04 which is well within the specified standard of 6.5 to 8.5. The TSS was observed as 2 to 5mg/L.
- DO ranges between 6.7 to 7.4 mg/L
- COD ranges between 16 to 125 mg/L
- BOD ranges between <4 to 16 mg/L

Ground Water

- The analysis results indicate that the pH value is 6.7 to 7.33 which is well within the specified standard of 6.5 to 8.5. The TDS was observed as 248 to 969 mg/L.
- The chlorides were found as 18 to 336 mg/L. The sulphate were found as 30 to 78 mg/L.
- Total hardness ranges between 122 to 876 mg/L.

2.3. Noise Environment

Winter season

The noise levels are found between 42.6 to 56.4 and 32.6 to 44.6 for day and night time respectively.

Pre monsoon Season

The noise levels are found between 42.8 to 55.2 and 36.2 to 41.6 for day and night time respectively.

Monsoon Season

The noise levels are found between 42.5 to 54.8 and 36.2 to 41.8 for day and night time respectively.

The high levels of noise in day for project site can be attributed due to construction, operation and vehicular activities. The night levels of Noise are low since the more activities are carried out in day time.

The noise levels at all location are well below the NAAQS standards w.r.t. noise

2.4. Soil Environment

Interpretation of Soil Characteristic has been dwelled in following sub-sections:

- Soil Texture: The soil textures refer to proportion of mineral composition of soil i.e., sand, and clay present in the soil sample. The most commonly observed soil textures are sandy loam.

- Soil pH: It measures the -ve logarithm of hydrogen ions activity of soil solution and defines the soil acidity and alkanity. The soil pH ranges from 6.82 to 7.94 thereby indicating the soils are acidic to slightly basic.

- Organic Matter: Soil organic matter plays a vital role in supplying plant nutrients, cation exchange capacity, improving soil aggregation and hence water retention and soil biological activity. The organic carbon content of soil varied from 1.64 to 3.46%

- Available Nitrogen: Deficiency of Nitrogen decreasing rate and extent of protein-synthesis and result into stunted growth and develop chlorosis. Available nitrogen content in the surface soils ranges between 13.2 mg/100gm to 18.3 mg/100gm.

- Available Phosphorus: The availability of phosphorous is restricted under acidic and alkaline soil reaction mainly due to P-fixation. In acidic condition it gets fixed with aluminum and iron and in alkaline condition with calcium. Available phosphorus content ranges between 0.54mg/100gm to 0.84mg/100gm.

- Available Potassium: It is important in grain formation and tuber development and encourages crop resistance for certain fungal and bacterial diseases. Available potassium content in these soil ranges between 0.6 mg/100gm to 9.9mg/100gm.

2.5. Biological Environment

The study area of the project is quite rich in floral and faunal diversity. The vegetation of the study area is dominated by *Butea monosperma* forest. The species observed in the study area are generally found in abundance. At the submergence area, vegetation was very less with scattered distribution mostly having stunted growth. Only *Butea monosperma* and *Calotropis procera* were found abundantly. Among faunal species, six schedule I species of Wildlife (Protection) Act, 1972 i.e., *Antilope cervicapra* (Black Buck), *Gazella bennetti* (Indian Gazelle), *Panthera pardus* (Common Leopard), *Panthera tigris* (Tiger), *Pavo cristatus* (Indian peafowl) and *Python molurus* (Indian Python) have a significant presence in the region.

2.6. Socio-Economic Environment

The baseline data with respect to population and amenities available in the study area has been worked out as under:

Demographic particulars/population details:

S. No.	Description	Number	Percentage to Respective Total
1	Total Population	160587	100
	Male	82620	51.4
	Female	77967	48.6
	Sex Ratio	944	
2	Population (0-6 age group)	22662	100
	Male	11853	52.3
	Female	10809	47.7
	Sex Ratio	912	
3	Population- Scheduled Caste	23691	100
	Male	12132	51.2
	Female	11559	48.8
	Sex Ratio	953	
4	Population- Scheduled Tribe	31973	100
	Male	16369	51.2
	Female	15604	48.8

	Sex Ratio	953	
5	Total Literates	105968	100
	Male	59599	56.2
	Female	46369	43.8
	Gender Gap in Literates	12.4	
6	Overall Literacy Rate	76.8	
	Male	84.2	
	Female	69.0	
	Gender Gap in Literacy Rate	15.2	
7	Total Workers	78397	100
	Male	46001	58.7
	Female	32396	41.3
	Gender Gap in Work Participation	17.4	
8	Main Workers	71598	100
	Male	43108	60.2
	Female	28490	39.8
	Gender Gap in Work Participation	20.4	
9	Marginal Workers	6799	100
	Male	2893	42.6
	Female	3906	57.4
	Gender Gap in Work Participation	14.8	
10	Household Industrial Workers	467	100
	Male	330	70.7
	Female	137	29.3
11	Total Agricultural Workers	66382	100
	Male	39032	58.8
	Female	27350	41.2
12	Cultivators	21579	100
	Male	14376	66.6
	Female	7203	33.4
13	Agricultural Labour	44803	100
	Male	24656	55.0
	Female	20147	45.0
	Other Workers	4749	100

14	Male	3746	78.9
	Female	1003	21.1

The amenities available in the study area habitations have been given as below.

EDUCATION		
Educational Facilities	Type of Institutions	Number
	Pre - Primary School (Govt. & Pvt.)	244
	Primary School (Govt. & Pvt.)	130
	Middle School (Govt. & Pvt.)	75
	Secondary School (Govt. & Pvt.)	25
	Senior Secondary School (Govt. & Pvt.)	11
	Arts and Science Degree College (Pvt.)	01
	Total	486
HEALTH		
Health Facilities	Type of Facilities	Number
	Primary Health Centre	03
	Primary Health Sub Centre	24
	Maternity And Child Welfare Centre	03
	Hospital Allopathic	03
	Dispensary	09
	Mobile Health Clinic	04
	Family Welfare Centre	03
	Non Government Medical facilities Out Patient	15
	Non Government Medical facilities In And Out Patient	01
	Total	65
WATER		
Drinking Water Facilities	Means of Drinking Water	No. of Habitations
	Tap Water Treated	53
	Tap Water Untreated	25
	Covered Well	33
	Uncovered Well	90
	Hand Pump	75
	Tube Wells/Bore Holes	36
	River/Canal	28
	Tank/Pond/Lake	05

ELECTRICITY		
Electricity Supply	Power for Domestic Uses	93
	Power for Agriculture Uses	90
	Power for Commercial Uses	88
DRAINAGE		
Sanitation Facility	Open Drainage	81
	No Drainage	19
ROAD		
Approach Road	Major District Road	22
	Other District Road	74
	Black Topped (pucca) Road	81
	Gravel (Kuchha) Road	47
	All Weather Road	86
	Footpath	99
TRANSPORTATION		
Road Transportation Facility	Public Bus Service	79
	Private Bus Service	06
	Auto/Modified Autos	80
	Taxi	26
	Vans	06
OTHER AMENITIES		
Other Amenities	Public Distribution System (PDS) Shop	73
	Nutritional Centres-ICDS	88
	Pre Office	28
	Sub Pre Office	12
	Birth and Death Registration Office	78

Source: Desk Research & Census of India, 2011

The nearest railway station to the project site is Nandura railway station which is approximately 23.4 km from dam site (Islampur village.) The nearest Airport is Aurangabad which 150 Km from project site. The State Highway SH - 196 is at a distance of 8.9 km in ESE from Dam site in village Islampur.

3. Anticipated Environmental Impacts and mitigation Measures

3.1. Impacts on river bed stability

There is no impact on the river bed stability because of the coming of the project.

3.2. Impact on Land Environment

The impacts on land environment due to construction of KurhaVadhoda Lift Irrigation Project have been evaluated and it was found that the components of this project are located underground and aboveground. The over ground activities for rising mains of 10.784 km have already been completed. Hence the temporary/ permanent changes in the terrain around the project site would be very minimal.
Alternation of terrain due to construction of approach and access roads.
Generation of additional muck and localized increase in erosion due to excavation of dam involves
Generation of solid waste due to construction and deployment of construction workforce.

3.3. Soil Erosion

The runoff from the construction sites will have a natural tendency to flow towards river or its tributaries. For some distance downstream of major construction sites, there is a possibility of increased sediment levels which will lead to reduction in light penetration, which in turn could reduces the photosynthetic activity to some extent of the aquatic plants as it depends directly on sunlight. This change is likely to have an adverse impact on the primary biological productivity of the affected stretch of river. There is no river stretch is being affected by the project.

3.4. Impact Due To Submergence

The command area water table will be increased because the groundwater of the command area will be recharged through irrigation. The water provided to the crop for their growth is not completely utilized by the crops. Approx. 2% water gets evaporated and a part of water undergoes seepage, leaching and infilteration which will help to raise the water table of the command area at a very slow rate.

3.5. Impacts on Air Environment

In a water resources project, air pollution occurs mainly during project construction phase. The major sources of air pollution during construction phase are:

- Pollution due to fuel combustion in various equipments
- Emission from various crushers
- Fugitive emissions from transportation of RBM.
- Pollution due to increased vehicular movement
- Dust emission from muck disposal.
- Pollution due to fuel combustion in various equipments

The operation of various construction equipments require of combustion of fuel. Normally, diesel is used in such equipment. The major pollutant, which gets emitted as a result of diesel combustion, is SO2. The SPM emissions are minimal due to low ash content. Based on past experience in similar projects, SPM and SO2 are not expected to increase significantly. Thus, no significant impact on ambient air quality is expected as a result of operation of various construction equipments.

3.6. Blasting Operations

Blasting results in vibration, which propagate through the rocks to various degrees and may cause loosening of rocks/boulders. Earlier blasting was involved in construction of the project but in the remaining work there will be no blasting.

3.7. Pollution due to increased vehicular movement

During construction phase, there will be significant increase in vehicular movement for transportation of construction material. During construction phase, the increase in vehicular movement is expected to increase up-to a maximum of 4 to 5 trucks/hour. Thus the increase in vehicular density is not expected to significant. In addition, these ground level emissions do not travel for long distances. Thus, no major adverse impacts are anticipated on this account. However, green belt management has been developed to rescue the adverse impact due to vehicular movement.The mined out materials shall be covered properly with tarpaulin to reduce fugitive emissions.

3.8. Dust emission from muck disposal

A considerable part of the muck generated from the construction activities shall be used as aggregate for construction to the maximum possible extent, if found suitable from laboratory tests. 50% of the muck shall be reused for construction of roads and land development of low-lying areas. Five numbers dumping yards at various locations within TIDC land have been identified to dump the muck. After completion of excavation works of the major components, restoration and landscaping of the dumping sites shall be done.

3.9. Impacts on Noise Environment

Construction phase

In a water resource project, the impacts on ambient noise levels are expected only during the project construction phase, due to earth moving machinery, stone aggregate crusher and concrete mixing and batching plants etc. Likewise, noise due to quarrying, vehicular movement will have some

adverse impact on the ambient noise levels in the area. Ambient air noise level shall not increase and could be about 50 dB (A).

3.10. Operation of construction equipment

Under the worst-case scenario, considered for prediction of noise levels during construction phase, it is assumed that all these equipment generate noise from a common point. The major construction activity shall be at lifting point and at intake where different construction equipment shall be deployed.

It would be worthwhile to mention here that in absence of the data on actual location of various construction equipment used, these all equipment has been assumed to operate at a common point. This assumption leads to over-estimation of the increase in noise levels. Also, it is a known fact that there is a reduction in noise level as the sound wave passes through a barrier.

Thus, the walls of various houses will attenuate at least 30 dB (A) of noise. In addition, there is attenuation due to the following factors.

- Air absorption
- Rain
- Atmospheric in homogeneties.
- Vegetal cover

Thus, no increase in noise levels is anticipated as a result of various activities, during the project construction phase.

3.11. Noise Generated due to Drilling

The noise levels during various construction activities have been compared to various standards prescribed by Occupational Safety and Health Administration (OSHA), which are being implemented in our country through rules framed under Factories Act. It can be observed that for 8 hour duration, equivalent noise level exposure should be less than 90 dB (A). The Director General of Mines Safety in its Circular number DG(Tech)/18 of 1975, has prescribed the noise level in mining operations for workers in 8 hour shift period with unprotected ear as 90 dB(A) or less. This norm can be adopted for construction phase of the proposed project as well. The workers who are expected to be exposed to noise levels greater than 90 dB(A), should work in these areas up to 6 to 8 hours. In addition, they shall also be provided with earplugs. Thus, increased noise levels due to drilling are not expected to adversely affect the workers operating the drill or involved in other mining activities closely.

3.12. Due to Labor camp

The effect of high noise levels on the operating personnel has to be considered as this may be particularly harmful. It is known that continuous exposures to high noise levels above 90 dB (A) affects the hearing ability of the workers/operators and hence, should be avoided.

3.13. Impacts on Hydraulic Regime

The requirement of water for construction purpose shall be lifted from the river Purna itself, would not bring about appreciable change in hydrology. Further the existing drainage system in the area will not be modified or affected during the construction phase.

3.14. Impacts on Biological Environment

Impacts on Flora

It is evident from this study that from the submergence and influence zone of the proposed project none of tree species, shrub, herb or any climber or grass species are either vulnerable or endangered.

Interestingly the vegetation composition of the submergence zone is also widely distributed in the influence zone in abundance and there will be no significant loss to the habitat. However, any loss of riverine vegetation during the project activity period will be restored in the reservoir periphery in due course of time.

The floral abundance of the project area in Pre construction phase will increase by many folds as the plantation under catchment area treatment, reservoir rim treatment, green belt, restoration and landscaping will be completed.

No forest land shall be brought under submergence.

Impacts on Fauna

The project activity is not going to submerge any major habitat. As there are very sparse human habitation around the reservoir and project related activities are restricted only to reservoir area, there will be no alteration to the existing habitat of faunal species. There is also no wildlife sanctuary, national park and biosphere reserve near the project area.

A few mammalian species were recorded during the survey. The primary reason for this low figure could be large-scale anthropogenic pressures: disturbance due to agriculture activities, road construction, etc. It is anticipated that with the upliftment of rural economy dependency on forest

will be reduced as also the reduced poaching will ease out pressure on wild life. The anticipated impacts on the present status of fauna during and after construction are summarized below.

Construction Phase

Increase in temporary stress levels of wildlife during construction phase due to noise, human interference and reduction in present habitat. Threat due to poaching might increase.

Operational Phase

Improved habitat for mainly water birds, reptiles, mammals, amphibians and plankton due to reservoir creation.

Improvement in food chain of some reptiles, birds and carnivorous mammals due to creation of reservoir and increase in humidity level.

The butterfly diversity in the area would be enhanced, as scrub habitat around the submergence will receive substantial amount of moisture, which will help in natural regeneration of forest canopy.

3.15. Impacts on Aquatic life

The completion of the proposed project would bring about significant changes in aquatic life as the creation of reservoir would increase planktonic populations and nektons (fishes) in the submergence and due to presence of water along periphery of reservoir aquatic macropytes will also increase.

The propagation of fishes in the submergence is not proposed in KVLIS project as the flood water pumped from River Purna during monsoon will be utilized for irrigation during lean season (Rabi crop). Hence, fluctuation of water in reservoir would not be feasible to propagate fisheries in storage reservoir.

The proposed project would envisage construction of labor camps to accommodate labors engaged in the project. Sewage generated from the labor colony may have impact on the aquatic ecology, if discharged directly into nearby water streams without any treatment or in case of open defecation.

The proposed project would envisage construction of labor camps to accommodate labors engaged in the project. Sewage generated from the labor colony may have impact on the aquatic ecology, if discharged directly into the streams without any treatment or in case of open defecation.

The congregation of labor force in the project area may result in enhancement in indiscriminate fishing in the project area.

3.16. Mitigation Measures for minimizing the impacts on the Biodiversity

- The proposed project is not likely to cast major negative impact on the biodiversity of the area as the major linear components are underground and loss of habitat and vegetation will be negligible, and movement of animals will not be hindered to a large extent.
- The traffic on roads carrying men and materials should be carefully regulated and managed through check Pre and barriers to minimize the impact.
- All the vehicles including earth moving equipment's should be regularly serviced and well maintained to keep noise generation low.
- Worker shall be instructed not to move outside of the project area and uproot any plant/trees. Strict vigil will be kept to avoid poaching of any wild animal. Further to avoid this penalty shall be imposed on offenders.
- Necessary facilities such as fuel wood/ gas cylinder/kerosine oil/ electricity etc. should be provided to construction workers to minimize impact on nearby forest.
- The firefighting equipment's should be well placed to reduce loss of flora and fauna in case of manmade and natural fire. Proper training also needs to be imparted to workers and staff.
- The contour bunds and fringes of the waste dumps shall be regularly monitored and maintained properly.
- A layer of surface soil should be laid and grass grown to enhance soil binding and stabilization. Bare areas should be covered with suitable grass species to avoid soil erosion.
- Proper disposal of the excavated muck and its filling on the low-lying area with proper measures for the stabilization and greenery will minimize the impacts of the generated construction muck. The muck should not be allowed to go to water bodies.

3.17. Socio-Economic Impact of The Project

Impact on Demographic Composition

There will be no significant increase in overall population of the study area as preferably local people will be recruited for employment. Hence, there will be no significant impact on the population composition in the study area. Since there will be no significant change in population, the overall sex ratio will remain more or less the same.

Impact on Employment Opportunities

It is expected that local people may get direct employment opportunities including skilled and unskilled workers. During the construction phase of the project 50 direct and 25 indirect

employment/livelihood opportunities will be made available through the project. The benefits of employment to the job seekers are expected to include, at a household and individual level, with improvement in socio-economic and health status, improvement in their living condition, and the benefits from greater household expenditure on education & healthcare resources.

Impact on Law & Order

No major law & order problem is envisaged due to the proposed project. It is expected that the workers will attend to their duties from their residences and return to their homes after the day's work.

Impact on human health due to water / vector borne disease

The increase in water fringe area provides suitable habitats for the growth of vectors of various diseases and they are likely to increase the incidence ofwater-related diseases. Malaria could be the major water related vector-borne disease. The main breeding seasons of the anopheline mosquito (malaria vector) are the months of September and March. The preferred habitat is stagnant or slow moving fresh water open to sunshine or moderate shade. Malaria can be controlled by mosquito control and mosquito proofing measures.

Mosquito control measures aim at destroying the habitat and interrupting the life cycle by mechanical or biological or chemical means. The anti-malarial operations can be coordinated by various Primary Health Centres in the nearby villages and Hospital at District Head Quarters in association with the project authorities.

The suggested measures are given in following points:

- The site selected for habitation of workers shall not be in the path of natural drainage.
- Adequate drainage system to dispose storm water drainage from the labour colonies shall be provided.
- Adequate vaccination and immunization facilities shall be provided for workers at the construction site.
- The labour camps and resettlement sites shall be at least 2 to 3 km away from a main water body or quarry areas.

4. Environmental Monitoring Programme

Environment Monitoring Plan for Construction Phase

Aspect	Parameter	Location	Monitoring & Frequency	Responsible Person / Organization
Ambient Air Quality	PM_{10}, SPM, SO_2, NO_x	Three locations at major construction site and three in nearest settlements	Twice a week	External MoEF & CC / NABL Accredited laboratory services
Surface Water Quality	Physical, chemical and biological parameters including heavy metals	Three locations in vicinity (Lifting & dam of the project)	Once in three months	External MoEF& CC / NABL Accredited laboratory services
Ground Water Quality	Physical, chemical and biological parameters including heavy metals	Two locations	Once in three months	External MoEF& CC / NABL Accredited laboratory services
Noise Level	Sound level	Three location at major construction site and three in nearest habitations	Once in a month	External MoEF& CC / NABL Accredited laboratory services
Soil	Physical and chemical parameters with organic content	Three locations	Once in three months	External MoEF& CC / NABL Accredited laboratory services
Ecology	Visual damage assessment on flora and fauna	10 km radius from the project site	Once in a year	Horticultue Specialist
Meteorology	Wind speed & direction, temperature, rainfall and Humidity	At project site	Continuous hourly monitoring	Meteorological station shall be set up by Project Proponent
Aquatic Ecology	Qualitative and quantitative assessment of flora and fauna	10 km radius from the project site	Once in a year	Horticulture Specialist

Environment Monitoring Plan for Operation Phase

Aspect	Parameter	Location	Monitoring & Frequency	Responsible Person / Organization
Meteorology	Wind speed & direction, temperature, rainfall and Humidity	At project site	Continuous hourly monitoring	Meteorological station shall be set up by Project Proponent
Ambient Air Quality	PM_{10}, SPM, SO_2 and NO_x	Eight stations in and around pumping station	Twice in a month for 24 hours	External MoEF& CC / NABL Accredited laboratory services
River Water Quality	Physical, chemical and biological parameters including heavy metals	5 locations	Once in three months	External MoEF& CC / NABL Accredited laboratory services
Ground Water Quality	Physical, chemical and biological parameters including heavy metals	2 locations	Once in three months	External MoEF& CC / NABL Accredited laboratory services
Sewage characteristics	Physical, chemical and biological parameters	Inlet and outlet locations of Septic Pit or STP	Once in a month	External MoEF& CC / NABL Accredited laboratory services
Noise Level	Noise as per CPCB guidelines for airport	Ten stations at likely affected point within site and outside the project boundary	Continuous noise level monitoring by online integrated noise meters	External MoEF& CC / NABL Accredited laboratory services
Soil	Physical and chemical parameters with organic content	Five locations in and around project site	Once in three months	External MoEF& CC / NABL Accredited laboratory services
Ecology	Visual Impact on flora and fauna	10 km radius from the project site	Once in a year	Horticulture Specialist

Aquatic Ecology	Phytoplankton, zooplanktons, benthic life, fish composition	1 km up-stream of intake site and 3 km downstream of the dam	Thrice in a year	Horticulture Specialist
Compensatory Afforestation Scheme	Survival rate of tree saplings	Tree plantation locations	Yearly	Horticulture Specialist

Cost for Environment Monitoring during construction and operation phase

Component	**Stage**	**No. of Locations**	**Total No. of samples Annually**	**Frequency**	**Cost per Sample (Rs.)**	**Annual cost (Rs.) in Lakhs**
Air	Construction	4	48	Once a month	Rs. 3500	1.68
Water	Construction	Lifting Point and Dam site 2 Each	22	Monthly except Monsoon	Rs. 4500	0.99
		2 Near by Village	22	Monthly except Monsoon	Rs. 4500	0.99
Noise	Construction	4	44	Quarterly except Monsoon	Rs. 2000	0.88
Soil	Construction	6	24	Quarterly except Monsoon	Rs. 4000	0.96
Total						**5.5**

The Environment Monitoring Cost during Construction Phase is Rs. 5.5 lakhs per year.

The Environment Monitoring during the operation phase of the project will be done as per the requirement.

5. Additional Studies

5.1. Damage Assessment

The Damage Assessment of the project for Kurha Vadhoda Islampur Lift Irrigation Scheme UPSA Sinchan Yojna with CCA 32372 Ha at Village Rigaon, Tehsil Muktainagar District Jalgaon (Maharashtra) by M/s Tapi Irrigation Development Corporation, Jalgaon, Maharashtra has been

prepared to assess the damage caused with respect to the *various aspects including both living and non living covering the eco system as awhole.*

As per EAC that since the project is being appraised as a violation project the committee constituted for field visit has Mr. Gowrapan as an expert nominated by the MoEF& CC for calculation of the exact violation cost. Somehow Mr. Gowrapan could not join the field visit due to some personal reasons but he has assured that he will be able to do the needful based on the information to be providedby the PP for which he has already sent some proformas to the PP through MoEF&CC. The EAC took a decision that both the PP and Mr.Gowrapan will calculate the violation cost independently and the one which is higher will be accepted by the EAC and further action taken accordingly.

As per EAC recommendation the ecological damage assessment report was revised with respect to procedure followed and restoration cost calculation in various components viz. remediation plan, Cost of natural resource augmentation plan and Cost of Community Resources Augmentation in terms of Ministry's OM dated 7.07.2021 for Standard Operating Procedure (SoP) for Identification and handling of violation cases under EIA Notification 2006. Summary of Cost is given below.

COST SUMMARY

S.No.	Description	Estimated Cost (Rs. Crores)
1	Remediation Plan	2.50
2	Natural Resource Augmentation Plan	2.00
3	Community Resource Augmentation Plan	1.54
Total Damage Amount to be given under bank guarantee		**6.04**
4	Penalty as per OM dated 07/07/2021 to be paid to State Pollution Control Board	3.45
5	0.5% Contribution from Capital Cost (Rs.690 Crores) against Commitment via affidavit as per OM dated 30/09/2020	3.45

6. Project Benefits

The proposed project will have significant beneficial impacts on social infrastructure of the area. Improved income and employment opportunities for local people during construction and operation phase of the project, will significantly contribute to improvement in social infrastructure.

- Agricultural linkages will be considerably improved.
- Project improves yields through reduced crop loss due to erratic, unreliable or insufficient rainfall. The details before and after the advent of irrigation is given below.
- Extensive agricultural production supplies raw materials to the nearby small scale industries

thereby increasing the economy in the region.

- Altogether 88,608 households in the command area will be benefitted directly under the scheme.
- Direct employment opportunities for 23745 peoples (120 Technical and 23625 construction labourers) are expected to get employment for the construction of intake channel, jack well cum pump house, raising main, delivery chambers and distribution network consisting of Lift cum Flow Irrigation System. During operation phase indirectly labourers will be appointed operation and maintenance of the jack well.
- Total 572 ha land is required for this project. Out of which 562 ha is private land, 7.57 ha is Govt. land & 1.98 ha of forest land is involved for rising main pipelines and scheme does not envisage rehabilitation and resettlement.
- Agro forestry shall be taken up in command area and it improves the ecosystem services.

7. Environment Management Plan

The environment management plan, proposed for Kurha Pumped Storage Hydro Electric Project is useful during and after its development. It embodies 16 different management plans viz. biodiversity conservation and wildlife management plan, catchment area treatment plan, rehabilitation and resettlement plan, muck disposal plan, disaster management plan, solid waste management plan and some other important plans. It is believed that implementation of all these plans would ameliorate the condition of the environment that is likely to be resulted due to negative impacts during and after the development of the proposed project and also bring in socio- economic development of the region. The total financial layout proposed to meet the measures suggested in various management plans is Rs. 3,1853,387.

Budget for Implementation of EMP

Description	**Capital Cost** INR Lakh	**Working Costs** INR Lakh	**Total Costs** INR Lakh
Catchment Area Treatment Plan	376800	-	376800
Greenbelt Development Plan	21476587	-	21476587
Biodiversity Conservation and Wildlife Management Plan	2000000	-	2000000
Muck Disposal Plan	-	-	
Energy Conservation Measures	2000000	-	2000000

Restoration and landscaping of working Areas	1000000	-	1000000
Sanitation and Solid Waste Management Plan	450000		450000
Water and Air Quality & Noise Management Plan	550000		550000
Disaster Management Plan	1000000		1000000
Community Augmentation	3000000		3000000
Total EMP Budget	**31853387**		**31853387**

A total amount of Rs. 31853387 (Rs. Three Crores Eighteen Lakhs Fifty Three Thousand Three hundred and Eighty Seven) has been allotted for the implementation of environmental management/enhancement measures, compliance monitoring and catchment area treatment of the project.