

EXECUTIVE SUMMARY

of

DRAFT

EIA EMP REPORT



Proposed Expansion of Tembhu Lift Irrigation Project, Dist. Satara, Sangli and Solapur Maharashtra

Executive Engineer

Minor Irrigation Division, Sangli
Water Resources Department

Maharashtra Krishna Valley Development Corporation (MKVDC),
District Sangli 416 415

E-mail/contact No : mm.rasankar02@gov.in
Office 0233-2302880; Mob. 9404996464

Contents

Executive Summary	3
1.1. Preamble: -	3
1.2. Administrative Approvals & Financial Aspects:	3
1.3. Proposed Water utilization of the project.....	3
1.4. CWC Approval.....	4
1.5. Planning Commission Clearance	4
1.6. Land Acquisition	4
1.7. Environmental Clearance	5
1.8. Forest Clearance	5
1.9. Present Status of Project: -	5
1.10. Financial: -.....	8
1.11. Details of Command Area.....	12
1.12. Conservation reserve/ Sacred groves	13
1.13. Description of the Environment	13
Study Area	13
Study Period:	13
Meteorology.....	14
Seismology:	14
Ambient Air Quality:.....	14
Ambient Noise Level:.....	14
Water Quality Study :	14
Soil Quality:.....	15
Ecology and Biodiversity:	15
Land Use Land Cover Study	15
Socio Economic	16
1.14. Management	16
1.15. Budgetary Allocation for Environment Management.....	17

Executive Summary

1.1. Preamble: -

Tembhu Lift Irrigation Project envisages construction of Barrage across river Krishna near village Tembhu and lifting the impounded water in Six stages to irrigate 121475 Ha. (Existing ICA 80472 ha + Proposed expansion ICA 41003 ha) of land from drought prone regions of Satara, Sangli and Solapur districts of Maharashtra state.

Length of new pipeline proposed: 200km

Length of proposed Distributaries 1000 km

Total electricity requirement will be 22 MW

1.2. Administrative Approvals & Financial Aspects:

(Amount in Cr.)

Sr. No.	Approvals	Amount	DSR	Remarks
1	Original Administrative Approval	1416.59	1995-96	GOM vide letter No. Tembhu-1095/ 1427 /(361/95)/WRI dated 19/02/1996
2	1 st Revised Administrative Approval	2106.09	2000-01	MKVDC letter No MKVDDC/MP-6/(383/2002)/718 dated 22/01/2004
3	CWC Approval	3450.35	2009-10	In 109 th Technical advisory committee of Central Water Commission meeting on 14/03/2011
4	2 nd Revised Administrative Approval cost	4088.94	2016-17	(work portion Rs.3729.82 Cr.+ ETP Rs.359.12 Cr)
5	3 rd Revised Administrative Approval cost(Proposed)	7370.03	2022-23	(work portion Rs.6708.48. Cr.+ ETP Rs.661.55 Cr)
6	Up to date Expenditure September 2022	3388.33	2022-23	(work portion Rs.3155.52. Cr.+ ETP Rs.232.81.Cr)
7	Balance Cost of Project	3981.69	2022-23	(work portion Rs.3552.96cr +ETP428.73cr)

1.3. Proposed Water utilization of the project

Original Water utilization of the Tembhu Lift Irrigation project was 22.00 TMC and **Proposed Water utilization is 30.00 TMC**. This quantity will be available from following sources.

Sr.No.	Sources	Content
1	Koyana Dam	18.46 TMC
2	Wang Dam	0.97 TMC
3	Tarali Dam	1.67 TMC
4	Krishna river monsoon flow	0.90 TMC
5	Balance Water of Tembhu Project (As per 1st Tribunal report)	3.50 TMC
6	Krishna Canal Project-Differene in Total provision & actual use of water (as per 1st Tribunal report)	2.50TMC
7	Saving of water (Qty to be diverted towards western from Koyna Project)	2.00 TMC

Quantity of water shown in the above table at Sr.No.5,6& 7 is approved by Government of Maharashtra vide letter No. 2021/ (216/2021) dated 29/04/2022

1.4. CWC Approval

The IInd revised cost of the project was based on DSR 2016-2017 was Rs. 4088.94 crores. State Government has approved this IInd RPR vide Marathi letter शासन निर्णय क्र.टेंभू सुप्रमा- /0411प्रक्र/11/305.मोप्र1-दि2019/02/04..

1.5. Planning Commission Clearance

Planning Commission of India has accorded investment clearance of Rs.3450.00 cr. to Tembhu Lift Irrigation Scheme vide letter dated 09/06/2011As per investment clearance project was supposed to be completed by June 2016.

1.6. Land Acquisition

Total Land required for Tembhu Project in first RPR is 4621.52 Ha. Now after adoption of pipe network policy vide GR Dtd 13.01.2017 and suitable distribution system for micro irrigation in the command project has been revised. Now revised land requirement for the project is 2279.601 Ha. for which 1262.56 Ha. Landis already acquired. Required balance landi.e.1017.04 Ha will be acquired in stages as per requirement

Private land	2259.38+8.54= 2267.92 Ha			
Government land/Forest Land	7.051+7.63 = 14.981			
Submergence area/Reservoir area	NA			
Land required for project components	Nature of Land involved in (Ha)	Area Existing in Ha	Additional Area Proposed in Ha	Total Area required after

			expansion in Ha
Non- Forest Land	2259.38	8.54	2267.92
Forest Land	7.051	7.93	14.981
Total	2266.431	16.87	2282.902

1.7. Environmental Clearance

Ministry of Environment, Forest and Climate Change (MoEFCC) has accorded clearance to the project vide Letter No. 12011/43/2003-IA.I Dated August 17th 2007.

1.8. Forest Clearance

Total area of forest required for project is 16.681 ha. Out of which 7.051ha., area is principally approved by forest department vide Letter No. 8C/006/2001-FCW/594 dated March 3, 2005. The proposal for approval of 9.63 ha land is under progress.

1.9. Present Status of Project: -

Physical –

Head Works-

Stage	Total Pumps	H.P. of each Pump	Installed pumps	Commissioned Pumps	Rising mains/ No. of Rows			
					Total	Dia. in M.	Laying completed	Commissioned
Stage IA	30+3	1950	33	33	6	2.5	6	6
Stage IB	33+0 2+0	2200 1950	33 2	33 2	6 1	2.5 1.7	6 1	6 1
Stage II	2+1	1400	3	3	1	1.5	1	1
Stage IIIA	20+2	1940	22	22	4	2.5	4	4
Stage IIIB	4+1	1990	5	5	2	2.2	2	2
Stage IV	3+1	1075	4	4	1	1.8	1	1
Stage V	4+1	1235	5	5	1	1.8	1	1
Visapur L.I.S.	2 3 2	135 1096 437	2 3 2	2 3 2	1 1 1	0.39 1.95 0.66	1 1 1	1 1 1
Pundi L.I.S.	3 2 2 2	448 285 435 415	3 2 2 2	3 2 2 2	1 1 1 1	1.00 0.8 0.69 0.69	1 1 1 1	1 1 1 1
Stage VI-A (1)	2	475	0	0	1	0.75	0	0
Stage VI-A (2) Part 1	4	750	0	0	1	1.24	0	0

Stage VI-A (2) Part 2 Booster	4	920	0	0	1	1.24	0	0
Stage VI-B Booster	3	1000	0	0	1	1.18	0	0
Palshi LIS	2	265	0	0	1	0.47	0	0
Khatav Man LIS	5	2160	0	0	1	2.05	0	0

Pump House

Construction of Pump house Stage I to V is completed. All the V stages of pump houses are commissioned. Construction of Pump house Stage VI-A (1), Stage VI-A (2) Part 1, Stage VI-A (2) part 2 Booster, Stage VI-B Booster, Palshi LIS and Khatav & Man LIS is now proposed.

Main canals –

Name of Canal	Length of Canal (in K.M.)			Irrigated Area (ICA) Ha.	
	Total	Completed	Commissioned	Total (ICA)	IP
Surli canal	23	23	23	2375	3301
Kamthi canal	16	16	16	1625	2259
Link Canal 1	15	15	15	1280	1779
Link Canal 2	31	31	31	4645	6457
Stage III A to Ghanand Canal	19	19	19	0	0
Ghanand Hivthad Canal	32	32	32	12348	17164
Atpati Canal	10	10	10	3652	5076
Sangola Canal	50	50	50	17000	23630
Kavthe Mahankal Canal	35	35	35	10000	13900
Feeder Canal	0.7	0.7	0.7	0	0
Khanapur Tasgaon Canal	41	41	41	12175	16932
Stage- IV to V Link canal	7	7	7	744	1034
Kachrewadi Canal	18	18	18	2456	3414
Gorewadi Canal					
Left Bank Canal	26	26	26	1872	2602
Right Bank canal	15	15	15	1000	1390
Bhud -Devikhindi Canal	18	17	17	800	1112
1 B to Arfal	6.42	6.42	6.42	0	0
Visapur L.I.S. (Gravity Mains)	40	40	40	5208	11814
Punadi L.I.S. (Gravity Mains)	21	21	21	3292	
Stage VI-A (1)	-	-	-	2148	2986
Stage VI-A (2) Part 1	-	-	-	0	0
Stage VI-A (2) Part 2 Booster	-	-	-	594	826
Stage VI-B	-	-	-	5345	7430
Palshi LIS	-	-	-	850	1182
Man Khatav Atpadi	-	-	-	15776	21929

Name of Canal	Length of Canal (in K.M.)			Irrigated Area (ICA) Ha.	
	Total	Completed	Commissioned	Total (ICA)	IP
Bevnur Dy.	-	-	-	4000	5560
Gorewadi RBC	-	-	-	498	692
GorewadiLBC	-	-	-	5512	7662
Kamath	-	-	-	6280	8729
Total	437.12	435.12	427.12	121475	168851

- 1) Link canal I (Length 15 km.) and Link Canal II (length 31 km.) which provide irrigation facility to Kadegaon and Khanapur taluka and also connect stage IB to stage III are completed and commissioned.
- 2) Main canal from Stage IIIA to Ghanand M.I. Tank (Length 19 km.) is completed and commissioned.
- 3) Ghanad Hivthad canal (Length 32 km.) which serves area in Atpadi taluka is completed and commissioned.
- 4) Khanapur Tasgaon canal (Length 41 km.) which provides irrigation facility to Khanapur taluka is completed and commissioned.
- 5) Sangola canal (Total length 50 km.) which serves area in Sangola taluka of Solapur district is completed and commissioned
- 6) Kavathe mahankal canal (total length 35 km.) which serves area in Sangola taluka of Solapur dist and Kavathe mahankal taluka of Sanglidist is completed and commissioned upto km.1 to 20 open canal & KM 21 to 35 PDN completed & commissioned
- 7) Main canal from pump house stage IB to Arphal (length 6.42 km.) is completed and commissioned.
- 8) Kachrewadi Canal (Length 18 Km.) provides irrigation facility to Khanapur Taluka and Gorewadi left bank Canal (Length 26+12 Km.) which provide irrigation facility to Khanapur Taluka, Tasgaon Taluka & Kawathemahankal Taluka are planned as Pipe Canal. Entire length of Kacharewadi canal & Gorewadi left bank Canalis completed and commissioned.

Also close piped canals of Visapur and Punadi Lift Irrigation scheme are completed and commissioned. Visapur and Punadi Lift Irrigation Schemes serve 7700 Ha area in Tasgaon taluka.

Owing to above achievements water of Tembhu Project has reached command areas in all 7 benefited talukas of the project. Presently small tanks, M.I. projects. Medium projects in the command of Tembhu Project are being feeded through local nallas and approximately 15000 Ha. Of land has been brought under irrigation. Also this has served water for drinking to about 1.00 lakh population during draught period.

C) Distribution Network: -

In Tembhu project priority was given to complete the head works and main canal. Tembhu project is selected by MWRRA vide notification Dtd 4.02.2015 for adoption of micro irrigation in the command. Conventional distribution network is completed in Surli canal and Link 1 canal.

Topography of the command of Tembhu project is quite suitable for pipe distribution system. With the adoption of pipe network policy and distribution system suitable for micro irrigation, distribution system is now planned in pipe network. Pipe distribution network is completed in the command of Visapur and Punadi LIS, Gorrewadi L.B.C, Gorrewadi R.B.C and Kachrewadi canal.

1.10. Financial: -

Total expenditure on Tembhu project upto September 2022 is Rs.3388.33cr. ((work portion Rs.3155.51 Cr.+ ETP Rs.232.81.Cr)) against the approved cost in second RPR for Rs 4088.94 cr. Now third Revised Project Report is being prepared as there is increase in water utilization & cost on various grounds.

Cost of project (Rupees in Crore)	Existing Project	: Rs. 4088.14
	Proposed Expansion:	Rs.3281.89
	Total Cost	: Rs. 7370.03

Grounds for submission of third Revised Project Report

- 1) Second revised approved cost of Tembhu project was Rs. 4088.96 cr. This was based on CSR 2016-17. As project has not received funds timely cost of project has got escalated.

- 2) Government of Maharashtra has approved 8 TMC water for drought prone area adjacent to existing command of tembhu project vide letter No. 2021/(216/2021) dated 29/04/2022 . Command area as per IInd approved RPR WAS 80472 Ha now the revised command area of this project is 121475 Ha. As the command area increased by 41003 Ha cost of the project will increase.
- 3) As per approved original first RPR water utilisation of Tembhu project is 22.90 TMC, availability of water was proposed as below.

i) Koyana Dam	17.27	TMC
ii) Wang Dam	0.93	TMC
iii) Tarali Dam	1.70	TMC
iv) Solashi Dam	3.00	TMC
Total	22.90	TMC

Accordingly, provision for construction of Solashi Dam was made in the sanctioned project report. Subsequently Solashi Dam construction was cancelled by Govt of Maharashtra. Now the water required for planned utilization of Tembhu project will be available as below

i) Koyana Dam	18.46	TMC
ii) Wang Dam	0.97	TMC
iii) Tarali Dam	1.67	TMC
iv) Run off from Krishna River	0.90	TMC
Total	22.00	TMC

This revised water planning has been sanctioned by Hydrology directorate of Central Water Commission vide their letter Dtd 06.08.2009. Accordingly Solashi Dam construction was deleted in IInd approved RPR.

- 4) Govt, of Maharashtra has approved 8 TMC water availability to include 41003 Ha area, adajaent to the command area of tembhu project vide Marathi letter पत्र जा,क्र 2021/216. दि 2022/04/29..

Details of villages adjacent to command area of Tembhu Project is as given below

District	Taluka	No. of villages	ICA (Ha)	Water Requirement TMC
Sangli	1)Khanapur	11	6471	1.5
	2) Tasgaon	17	6026	1.00
	3) Kawathemahankal	9	2450	0.50
	4) Atpadi	12	5294	1.00
	5) Jat	4	2636	0.50

	Total Of Sangli District	53	22877	4.50
Satara	6)Khatav	21	7440	1.50
	7) Maan	27	5686	1.00
	Total Of Satara District	48	13126	2.50
Solapur	8) Sangola	8	5000	1.00
	Total Of Solapur District	8	5000	1.00
	Gross Total	109	41003	8.00

Proposed Water utilization including 8.00 TMC for adjacent villages is 30.00 TMC. This quantity will be available from following sources.

Sr.No.	Sources	Content
1	Koyana Dam	18.46 TMC
2	Wang Dam	0.97 TMC
3	Tarali Dam	1.67 TMC
4	Krishna river monsoon flow	0.90 TMC
5	Balance Water of Tembhu Project (As per 1 st Tribunal report)	3.5.00 TMC
6	Krishna Canal Project-Differene in Total provision &actul use of water (as per 1 st Tribunal report)	2.5 00 TMC
7	Saving of water (Qty to be diverted towards western from Koyana Project)	2.00 TMC

Total 30.00 TMC

Topography of the command of Tembhu project is quite suitable for adoption of closed pipe for canals of small capacity. So above all canals are proposed to be executed by using closed pipe Major financial savings due to this change are as follows

Major savings due to adoption of new distribution system is as follows

(Cost in Rs. Lakhs)

Sr. No	Component	Open System				Cost of Closed Pipe	Savings
		Open system Cost	Land acquire d (Ha)	Cost of Land	Total cost		
1	Distribution Network (67560 Ha) as per IInd RPR	43974.74	1651.16	31256.45	75231.19	49808.00	25423.19

	Total	43974.74	1651.16	31256.45	75231.19	49808.00	25423.19
--	--------------	-----------------	----------------	-----------------	-----------------	-----------------	-----------------

1. Adoption of suitable distribution network for implementation of micro irrigation in the command of the project

- MWRRA has issued notification regarding use of water saving techniques (Drip irrigation/ sprinkler irrigation) for perennial crops on irrigation projects. Authority has selected this project as pilot project for implementation of this policy & has given deadline of June 2017 for implementation.
- In view of above guidelines proposal for implementation of micro irrigation system in Tembhu project command was submitted to water resources department, Govt. of Maharashtra.
- In this regard water resources department has issued GR on DT. 02/05/2017 "Construction of distribution network in command of irrigation projects suitable for micro irrigation".
- On the basis of above changes in Government policies, suitable distribution network for adaption of micro irrigation methods is proposed.

Distribution Network:

- As per the GR Dtd 2.05.17 chak size is 100 Ha
- Project water along with surface and ground water in the command will be used in integrated manner.
- Distribution system is planned in such a way that there will be one outlet for every 100 Ha chak size on where there is storage available.
- Storage in the command will be fed through main distributary.
- Main distributaries are planned in closed pipe as topography of Tembhu project is quite suitable for pipe distribution.

Development of micro irrigation with the Use of existing storages in command for drip irrigation water availability on daily basis is needed. Irrigation canals can't cater this need.

Hence use of existing storages such as MI tanks, storage tanks, Percolation Tanks, K T weirs, bandharas, farm ponds, and wells will be used storing the water for one rotation period.

Existing wells and storages in the command are mapped. From this data it is seen that there are 3 Medium projects, 21 MI tanks, 423 Percolation Tanks, 321 KT weirs/ Cement nalla bunds are there in the command of Tembhu project.

2. CAD works

It is planned to establish water users association based on decentralized storages available in each chak / zone.

Measured supply of water will be provided in storages of each zone from outlet of canal.

It is expected that WUA in zone will lift the water from decentralized storage and implement drip irrigation method on their own. They may resort to different subsidy schemes of Govt. of India/ Maharashtra for implementation of micro irrigation method.

Provision of Rs.33,000/- per ha. (50% of CCA) has been made under head V- water courses for supporting this system.

3. Gorewadi LBC, RBC & Bhud-Devikhindi Canal-

Gorewadi RBC 15 km, Gorewadi LBC 26 km, Bhud-Devikhindi 19 Km lines originates from Delivery chamber constructed at FSL 858.00 M.Total command area of Gorewadi LBC & RBC & Bhud-Devikhindi is 1872 Ha,1000 Ha & 800 Ha respectively . All the three lines are completed & commissioned.

1.11. Details of Command Area

Sr No	Taluka	District	Command Area					
			GCA		CCA		ICA	
			Existing	Extended Area	Existing	Extended Area	Existing	Extended Area
A	Karad	Satara	1150	330	860	0	600	0
B	Khanapur	Sangli	41135	19691	32921	11902	18975	6471
C	Kadegaon	Sangli	20215	2799	16179	0	9325	0
D	Tasgaon	Sangli	20570	15280	15450	11083	7700	6026
E	Atpadi	Sangli	61569	9015	43100	9737	16000	5294
F	Sangola	Solapur	36500	20745	29200	5876	20000	5000
G	Jat	Sangli	-	6506	-	4848	-	2636
H	Kavathe Mahankal	Sangli	17475	12455	10300	7826	7872	2450

Sr No	Taluka	District	Command Area					
			GCA		CCA		ICA	
			Existing	Extended Area	Existing	Extended Area	Existing	Extended Area
I	Khatav	Satara	-	18362	-	13685	-	7440
J	Man	Satara	-	14033	-	10458	-	5686
	Total		198614	119216	148010	75415	80472	41003

1.12. Conservation reserve/ Sacred groves

Sr. No.	Name of the Grove	Deity	Tahsil	Distance	Direction
1	Arewadi	Biroba	Kavathe Mahankal	3km	SE
2	Raywadi	Lord Shiva	Kavathe Mahankal	3km	W
3	Shukacharya	Sukhdev	Khanpur- Atpadi	2km	NE
4	Mayani Bird Conservation Reserve	-	Khatav	1.2km	NE

The EIA EMP report has been prepared as granted Terms of Reference (ToR) vide **File No: J-12011/48/2023-IA. I (R) Dated 02/11/2023**

1.13. Description of the Environment

Study Area

Study area includes 10 km radius from the boundary of PDN

Table : Environmental Setting of the Study Area

SI.	Particulars	Description					
1.	SoI Toposheet	Topo sheet : 47 K/3, 47 K/4, 47 K/6, 47 K/7, 47 K/8, 47 K/10, 47 K/11, 47 K/12, 47 K/13, 47 K/14, 47 K/15, 47 K/16, 47 L/13, 47 L/9, 47 O/2, 47 O/3, 47 O/4, 47 O/7, 47 O/8, 47 P/1,					
2.	Nearest Major Town	Sangli : 35 km					
3.	Nearest Railway station	Karad Railway Station : 36 km					
4.	Nearest airport	Kolhapur Airport : 64 km					
5.	Nearest IMD station	IMD station Miraj (Sangli) -					
6.	Any Archaeological monuments	No within 10 km radius					
7.	Ecological sensitive area / Reserve Biosphere within 5 km / Reserve Forest	Sr. No.	Name of the Grove	Deity	Tahsil	Distance	Direction
		1	Arewadi	Biroba	KavatheMahankal	3km	SE
		2	Raywadi	Lord Shiva	KavatheMahankal	3km	W
		3	Shukacharya	Sukhdev	Khanpur-Atpadi	2km	NE
		4	Mayani	Bird Conserve Reserve	Khatav	1.2km	NE
8.	Seismic Zone	III					

Study Period:

The data collected was divided, for analytical convenience, in to the following 2 Seasons:

1. Season 1 – June to August 2023 (Monsoon Season) *
2. Season 2 – October to December 2023 (Post-Monsoon Season)

* *Air and Noise samples not collected*

Meteorology

The Meteorological data of IMD Sangli (Miraj) used.

Temperature: The average maximum temperature is 41.0°C and average minimum temperature is 11.1°C recorded

Humidity: Annual Average or Mean maximum and minimum humidity is 78.5 & 51 % respectively

Rainfall: The average annual rainfall observed to be 681.8 mm

Wind Speed: The average wind speed in the region is observed to be in the range of 2.2 to 5.3 kmph.

Seismology:

Project area falls in Seismic Zone III. It suggests that the area is a moderately affected

Ambient Air Quality:

The ambient air quality monitoring were carried out at 14 location in the around command area of the project. Air quality measured at various stations were within the permissible limit.

Ambient Noise Level:

The noise levels were measured at 25 locations. Noise levels recorded at various stations were within the permissible limit

Water Quality Study :

Water sampling locations were selected in and around command area of the project. The samples were collected from river, lake/dam, dug well as well as bore well.

Surface water samples from 11 Location & Ground water samples from 36 locations were collected in winter season.

Most of the physico-chemical parameters are found well within prescribed limits of IS 10500:2012.

Soil Quality:

Soil is the naturally occurring, unconsolidated or loose covering on the Earth's surface. Soil samples from 30 representative areas were taken in winter and rainy season.

In the project area, majority of the soils were found to be silty clay in nature. Soils found in the project area are fertile with moderate NPK and micro nutrients.

Ecology and Biodiversity:

Total 147 floral species were recorded in and around the project area (i.e. 10 km radius study).

Among them 42 % Herbs, 71% Trees, 279 % shrubs & climbers.

Species	Total Number	Class	R.E.T. as per IUCN status
Flora	147	Tree	<i>Santalum album</i> L.= VU <i>Khaya senegalensis</i> (Desv.) A.Juss = VU <i>Dalbergia melanoxylon</i> Guill. & Perr = NT <i>Aegle marmelos</i> (L.) Corrêa= NT
Fauna	15	Mammal	Rusty Spotted Cat = NT
	109	Fish	<i>Schismatorhynchus nukta</i> = EN <i>Gonoproktopterus curmuca</i> =EN <i>Hypselobarbus kolus</i> = VU <i>Hypselobarbus mussullah</i> = EN <i>Labeo potail</i> = EN <i>Pethia sanjaymoluri</i> = EN <i>Ompok bimaculatus</i> = NT <i>Glyptothorax poonaensis</i> = EN <i>Glyptothorax trewavasae</i> = VU <i>Gagata itchkeea</i> = VU <i>Monopterus cf. indicus</i> = VU <i>Anguilla bengalensis</i> =NT
	135	Aves	Greater Spotted Eagle = VU River Tern= VU Asian Woolly-necked Stork = VU Painted Stork=NT Black-headed Ibis = NT
		Reptiles	Bengal Monitor = EN

Land Use Land Cover Study

Land is classified as Agriculture, built-up area, Reserve Forest, Scrub Land, & water bodies, etc. classes. Land use of the study area varies, and is predominantly agricultural as seen from

below table

LULC Class	Area ha	Area sq.km.	In %
Agriculture	350659.69	3506.60	67.49
Built up	11271.91	112.72	2.17
Reserve Forest	32951.80	329.52	6.34

Scrub land	106675.45	1066.75	20.53
Waterbody	17995.89	179.96	3.46
Grand Total	519554.74	5195.55	100.00

Socio Economic

The study area comprises of 387 villages

Demography: Sangole Tehsil has the highest number of villages in the study area followed by Atpadi Tehsil. Whereas Kadegaon tehsil has the highest household followed by Khanapur Tehsil

Literacy Status: On an average 68% population is literate while 32% of the population is reported to be illiterate

1.14. Management

The mitigation measures to be taken-up during the construction and operational phases are suggested below.

Ambient Air Quality

To control the fugitive dust emission during construction phase regular sprinkling of water suggested. However, during construction and operation phase regular upkeep and maintenance of vehicles is suggested to keep the air pollution level within the permissible limit

Ambient Noise Level

During operation phase all the construction activities will be over and the impact on ambient noise levels during this phase will be marginal limited to vehicle movement in the project area.

Water Quality

- ❖ Care should be taken in not to cut vegetation from the project activity area to avoid;
- ❖ A regular monitoring programme of water quality in and around the periphery should be undertaken to evaluate the actual alterations of water quality and their effects
- ❖ In addition to the above, ground water quality and water table fluctuations in the vicinity of the project, should be monitored.

❖

Ecology & Biodiversity

- ❖ The judicious sequencing of construction, operation and appropriate location of labour

camps, project colony etc.

- ❖ The movement of vehicles should be strictly monitored and excessive blowing of horn and lighting in the night should be avoided. Such activities may cause disturbance to the local fauna.
- ❖ Strict law enforcement should be undertaken for conservation of wildlife; and
- ❖ Awareness program among the, drivers, school children & local community about the ecology & biodiversity.
- ❖ sign boards/ Notice Boards at the site like, NO HORN PLEASE, SILENCE ZONE etc.will be fixed
- ❖ As a corporate social responsibility, project authorities should undertake plantation of native species in the vicinity
- ❖ Control of Poaching; taxidermy and Illegal Trade in Wild Animal and Plant Species is strictly prohibited as per the various laws related to the Wildlife Protection. In cases any of such things are noticed, it is required to be brought to the notice of the forest officials.
- ❖ The movement of the project vehicles should be strictly monitored and excessive blowing of horn, lighting in the night should be banned. Such activities may cause disturbance to the local fauna.
- ❖ Adequate allocation for the financial resources required to be made to implement the wildlife management plan.

Greenbelt should be developed in the following areas:

- ❖ Plantation along the PDN/Canal;
- ❖ Plantation at Raising main, Pump House and colony area
- ❖ Plantation along approach roads; village area and
- ❖ Afforestation

1.15. Budgetary Allocation for Environment Management

Table : Costing for Environment Management

SI	Pollution Control & Other Environment Infrastructure	Capital Cost Rs. Lakhs	Recurring Cost (per annum) Rs. Lakhs
1.	Ambient Air Quality	-	18.00
2.	Noise Level	-	12.00
3.	Surface and Ground Water Quality	-	25.00

SI	Pollution Control & Other Environment Infrastructure	Capital Cost Rs. Lakhs	Recurring Cost (per annum) Rs. Lakhs
4.	Soil Quality	-	15.00
5.	Solid/ hazardous wastes	03.00	15.00
6.	Ecology & Biodiversity /Green Belt Development &	50.00	15.00
7.	Health & Safety	-	25.00
8.	Corporate Environmental Responsibility	820.00	-
Summary of allocation of fund for EMP			
1.	EMPs: (eg.: Air Environment, Water Environment)	70.00 L	
2.	Capital Cost (in Cr.)	3281.89	
3.	Recurring Cost per annum (In Lakhs)	125.00 L	