

Executive Summary of Environmental Impact
Assessment Report

For

Late Balasaheb Thakare Lift Irrigation Scheme,
Sangola

At Taluka – Sangola, District – Solapur, Maharashtra



Prepared for:

Bhima Canal Circle, Solapur

Water Resources Department, Govt. of Maharashtra

Prepared by:



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Laboratory

Introduction:

The aim of the project is to increase the agricultural productivity and thus improve the living standards of farmers in 12 water scarce villages of Sangola Taluka of Solapur District (Maharashtra), by providing irrigation to the designated command area of 20,000 Ha (CCA) through lift irrigation from the Ujjani right bank canal. This will lead to the utilization of limited water resources efficiently and ensure equitable assured water supply to the command area. This scheme, requiring 2.00 TMC of water, aligns with the approved water planning of the Bhima Ujjani Project.

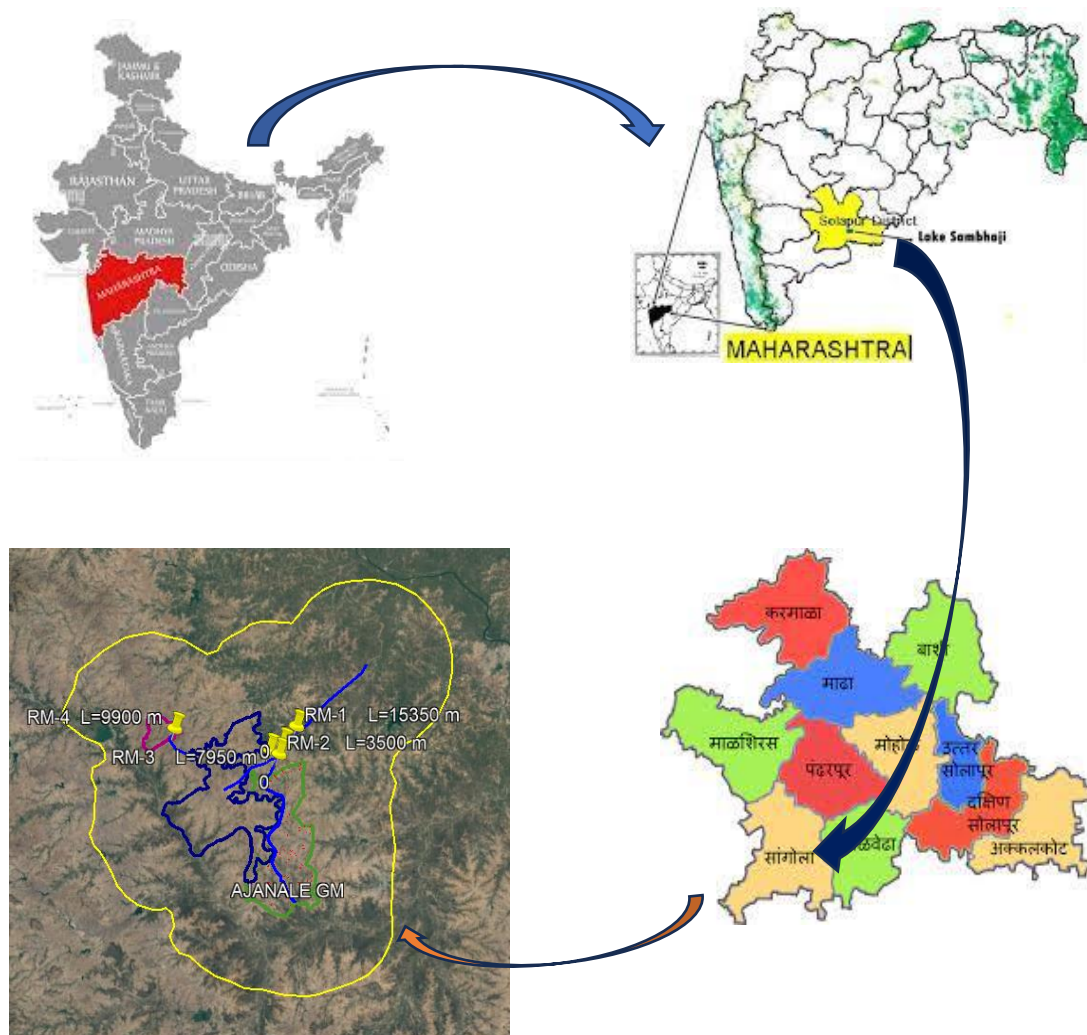


Figure 1: Map of Project Location

Project Description:

The Late Babasaheb Thakare Lift Irrigation Scheme aims to address water scarcity in the Sangola taluka of Solapur district by targeting 12 villages that have remained untouched by existing irrigation systems. Given the vast expanse of the Bhima sub-basin and Sina sub-basin, conventional gravity-based irrigation faces challenges. In response, the lift irrigation scheme is proposed as a pragmatic solution to meet the region's water demand. Implementing this scheme would uplift the agricultural landscape and improve socio-economic conditions for local farmers.

The Balasaheb Thakare lift irrigation scheme involves three phases:

1. **First Stage:** Lifting water from an elevation of 471.00 meters to 550.00 meters.
2. **Second Stage** (divided into 2 segments):
 - o Stage 2A: Water elevation from 545.00 meters to 576.00 meters.
 - o Stage 2B: Water elevation from 545.00 meters to 604.00 meters.
3. **Final Stage:** Lifting water from 589.00 meters to a height of 644.00 meters

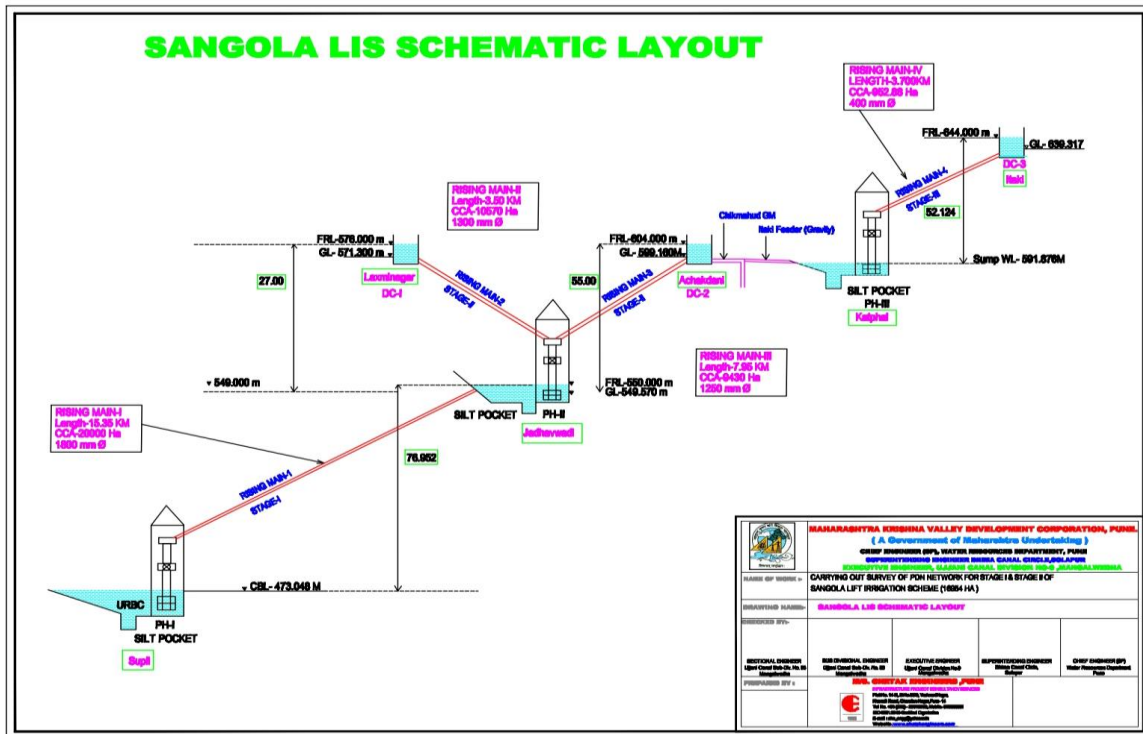


Figure 2: Schematic layout of the project

The intake pumphouse (PH-1) is at Supali village, the second pumphouse (PH-2) is at Jadhavwadi, and the third pumphouse (PH-3) is at Katphal village. The Distribution chambers are at Laxminagar (DC-1), Achakdani (DC-2) and Itaki (DC-3). These locations have been selected based on the topography of the study area. The rising mains and the distribution network have been designed as piped canals, i.e., underground pipelines. Details of village-wise irrigable area are as under.

Table 1: Details of village-wise irrigable area

S. No	State	District/ Taluka	Village	Area benefitted in Ha		
				GCA	CCA	ICA
1	Maharashtra	Solapur/ Sangola	Laxminagar	1267.50	1140.75	878.38
2			Achakdani	1521.00	1368.90	1054.05
3			Bagalwadi	1327.45	1194.71	919.92
4			Sonalwadi	1695.81	1526.30	1175.25

5		Ajnale	3296.76	2967.08	2284.65
6		Mangewadi	999.15	899.24	692.41
7		Bandgarwadi	114.03	102.63	79.02
8		Chikmahud	598.43	538.59	414.71
9		Katphal	2484.46	2236.01	1721.73
10		Khawaspur	1755.03	1579.53	1216.24
11		Lotewadi (New)	2517.22	2265.50	1744.43
		Lotewadi (Old)	202.21	181.99	140.13
12		Itaki	1058.76	952.88	733.72
Total			18837.81	16954.11	13054.64
Sangola Branch (Kalwa Branch no. 5)			3384.00	3046.00	2345
Total			22222.00	20000.00	15400

Source: Detailed project Report

The power requirement for this project is 12.7 MW. This power will be provided by MSEDCL and an assurance letter for the same has been signed by the Superintending Engineer, Maharashtra State Electricity Distribution Company Limited, Solapur. Furthermore, 12 DG sets will be kept as backup once the project is initiated.

The total land requirement for the proposed LIS is 60.74 Ha. The proposed scheme is not a storage scheme hence no land will be submerged, and no land will be permanently acquired for pipeline system and land only for pump house, rising main and approach road to pump house and for building construction of pump house (total 39.27 Ha) will be permanently acquired. The land for the distribution system (21.47 Ha) will only be acquired temporarily and compensation will be paid for any standing crops on this land. Land acquisition is not yet initiated, but the proposal for the same is sent to Honourable District Collector, Solapur. The division of the total land requirement of 60.74 Ha is as follows:

Table 2: Land acquisition for establishing various components of the LIS project.

Project Component	Proposed area requirement (in Ha)	Financial provision objective for land acquisition
Titles		
Pumphouse 1	2.13	Compensation as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 has been provided. A provision of Rs. 2358.54
Pumphouse 2	0.4	
Pumphouse 3	0.4	
Rising mains 1	15.35	
Rising main 2	3.50	
Rising main 3	7.95	
Rising main 4	3.70	

Distribution chamber 1	0.40	lakhs for 60.74 Ha area has been proposed
Distribution chamber 2	0.40	
Distribution chamber 3	0.40	
Approach road to Distribution chamber 1	0.55	
Approach road to Distribution chamber 2	0.54	
Approach road to Distribution chamber 3	1.04	
Approach road to pumphouse 1	1.44	
Approach road to pumphouse 2	0.03	
Approach road to pumphouse 3	1.04	
Distribution system		
Ajnale Gravitational mains	8.68	
Lotewadi Gravitational mains	2.04	
Chikmahud Gravitational mains	7.04	
Itaki Gravitational mains	2.18	
Itaki feeder	1.53	
Total	60.74	

Source: Detailed Project Report

The total cost of the project would be Rs. 88377.83 Lakhs which equates to 5.74 lakhs/ Ha and the cost-benefit ratio of the project is 1.51.

Description of the Environment

Environmental baseline data of site and surrounding region prior to construction of the lift irrigation scheme at Sangola covering land, ambient air, water, noise, biological & socio-economic environment in the study area was collected by undertaking primary surveys through field visits, sampling/ monitoring, laboratory analysis, questionnaire surveys and discussions with farmers and other residents. Secondary data was collected from relevant agencies, such as Primary Health Centres, Forest Department and Directorate of Census Operations. For the purpose of assessing the impacts, a study area of 10 km radius from project site was identified for the EIA.

Secondary data has been presented in terms of meteorology, geology, geomorphology, groundwater, cropping pattern, socio-economic parameters, etc., whereas primary data was collected for soil, surface & groundwater, noise, vegetation, and air. Data has been presented in the EIA report in detail. It has been observed that there is vast scope for agriculture in this area but due to scarcity of water and low groundwater levels the agricultural efficiency and type of crops grown are not very productive/lucrative. Vegetation found as per the land use landcover present in the study area is comprised of scattered small patches of agricultural crop fields as per the availability of water to them. The data of the same has been presented in EIA report.

As per the CGWA reports on the annual rainfall data of last ten years for Solapur district, the project area faces vagaries (uncertainty) of rainfall and the district has been experiencing low and declining rainfall trends. The main rock in the study area is basalt and soil cover for vegetation is quite adequate in the command area. However, the study area has poor agricultural practices due to the poor quality, shallow soil that does not retain moisture and the limited water availability.

In most parts of Solapur district, the surface water quality is within permissible limits except for some instances of localized bacterial contamination. The results of the groundwater sampling and

analysis revealed that, in general, the water quality of aquifers in Sangola taluka is generally hard and high in total dissolved solids. However, the water samples do not pass the biological tests as coliforms were found in all the samples tested, indicating poor sanitary practices/contamination. Hence, the water is not safe for drinking, but may be used for other purposes such as irrigation.

The primary sources of air pollution in this area are vehicular movement and dust rising from village roads/empty fields. Fortunately, the air environment around the project site is devoid of any significant pollution sources and all tested parameters were within prescribed limits. Noise levels were higher than the prescribed limits in some locations because of human and vehicular activities.

In the agricultural areas, the floral composition is primarily dominated by trees, followed by herbs and shrubs. Despite the water scarcity in the study area, both trees and herbs thrive due to available water resources. The study area possesses small patches of Reserve forests within the command area where open scrub and grassland type habitats were observed. The dominant species were *Acacia nilotica*, *Azadirachta indica*, *Bauhinia racemosa*, *Cassia auriculata*, etc. During the biodiversity survey, several floral and faunal species were observed in the study area and at the project site. These have been listed in the EIA report.

As per the socio-economic survey of the project area, it was observed that locals/farming communities have a positive opinion about the planned lift irrigation scheme. To combat persistent droughts and water shortage in this area and boost agricultural incomes, people reflected that this proposed lift irrigation scheme should be started as soon as possible.

This baseline data, together with the relevant project activities will be considered for identifying the likely impacts of the project on the environment.

Anticipated Environmental Impacts & Mitigation Measures

Impact on noise and air quality: In a water resources project, air and noise pollution mostly occurs during the project construction phase whereas, during the operation phase no major impacts are envisaged.

Impact on water resources: Improved availability of water to these water scarce villages will lead to reduced extraction of groundwater for irrigation and domestic use thus reversing the groundwater decline in the region. No adverse impact on downstream users is anticipated.

Muck generation: Muck will be generated during the construction of various components of the project like - pump house, distribution mains, rising mains, gravitational mains, etc. A total of around 1114233 cum amount of muck would be generated during the construction of these components of which 771814 cum would be reused for filling the trenches of the pipelines whereas the remaining muck will be spread over low-lying areas. Land requirement for construction of various components of the project is about 60.74 ha. The land acquisition is not yet initiated, but the proposal for the same has been submitted to Hon. District Collector, Solapur for necessary approval.

Change in cropping pattern: There would be change in cropping pattern, as more area would come under crops because of an increase in water availability.

Floral and Fauna: No significant impact is envisaged on flora-fauna due to as laying of pipeline is underground. However, 2 TMC water will be diverted from Ujjani right bank canal and the migratory waterbirds may get affected during low rainfall years.

Social Benefits: Improved water availability for irrigation and drinking purpose will obviously have positive impacts on all socio-economic parameters including health.

Detailed mitigation measures for the anticipated impacts of this project have been described in the EIA report.

Environmental Monitoring Plan

Based on the identified & assessed impacts as well as the baseline environmental status of the study area, an environmental monitoring program is suggested for implementation during various stages of the project.

Table 3: Environmental monitoring plan

Environmental parameters	Number of locations	Frequency
Surface water	9	Once during construction period and once after completion of project
Groundwater	9	Once during construction period and once after completion of project
Land use/land cover	Entire project area	Three years after commissioning the project using latest high resolution satellite images
Air	8	One time monitoring at all ongoing construction sites for 24 hours once every six months during the construction period
Noise	8	One time monitoring at all ongoing construction sites for 24 hours once every six months during the construction period
Soil	10	Once every six months during the operational phase of the project

The records of the monitoring program viz ground and surface water, air, noise, and soil shall be prepared and preserved properly. The records showing results of the monitoring programs will be submitted as per the schedule above.

Monitoring reports will be reviewed regularly by Dy. Engineer along with Environmental Consultant for necessary improvement of the monitoring plan/ mitigation measures/ environmental technologies as well as for necessary actions of environmental management cell. A total of 31.50 lakh has been allotted for all the monitoring and environmental clearance for the project. In addition, as the proposed project is a Greenfield project, the Irrigation dept. is allocating Rs. 8.83 crores (1%) of project investment of Rs. 883.544 crores) for Corporate Environmental Responsibility (CER) activities.

Environmental Management Plan

The Ujjani Canal Division no. 9 of the Water Resources Department (WRD) at Mangalwedha, Solapur, is dedicated to minimizing any negative effects of the proposed Late Balasaheb Thakare Lift Irrigation scheme and making sure that all national and state environmental regulations are followed to reduce any potential harm from the proposed project. The Environmental Management Plan (EMP) aims to ensure that the planned steps to reduce and monitor any negative effects are carried out by the responsible agency.

Muck disposal: As mentioned above, of the total 1114233 cu.m. muck generated, 771814 cu.m. will be used at the same place for filling in the trenches of the pipeline to be laid whereas, remaining will be used for spreading in low lying areas.

Preventive measures for leakages, bursting, and corrosion in pipeline: The entire system is a closed conduit for conveyance of water up to the tail end/ farm level. The arrangement for leak detection, prevention of burst of pipes and preventive /control measure for the various components like desilting arrangements, anti-corrosion measures have been prescribed.

Floral/ Faunal management (Plantation in Command area): To improve the green cover in the command area, it is proposed to a total of 2500 tree saplings along a width of 1.5 to 5 meters along the boundaries of pump houses, distribution chambers, and vacant scrub land. For doing this a total fund allocation of Rs. 33.66 lakhs has been allocated to cover a total greenbelt area of 2.4 Ha. The details of species proposed for plantation will be shared in detail in the EIA report.

Land Compensation: As discussed above, 60.74 Ha would be required for constructing the various components of the project. Compensation will be paid as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

Awareness and training of farmers: The micro-irrigation by lift i.e., pumping is going to be done for the whole of this command area, and is being introduced on a large scale. For this, a need was felt to create awareness amongst the farmers for dissipation of information, training and motivated to adopt the new technology. This will be done at the Water User Agency (WUA), panchayat and Jan Pad level. Herein they will be made aware of limiting the use of chemical fertilizers and increasing the use of bio fertilizers as well as water-efficient irrigation techniques such as drip irrigation.

A total budget of Rs. 1004.64 lakhs has been allocated for the Environmental Management Plan including the CER and Monitoring Programme. A detailed breakup of the same is given in following table:

Table 4: EMP budget

Sr. No.	Particulars	Cost in Lakhs
Construction Phase		
1	Muck management	
	Dust Suppression	15
	Cleaning and clearing of site and excavation	7
	Transportation to Storage site/filling site	5
	Storage	10
	Disposal of remaining Muck	5
2	Greenbelt development	16.5
3	CER Initiatives - Solar power	100
4	Site management and Worker's Welfare	30
5	Environmental Monitoring Programme	
	- Surface and Ground water	2
	Ambient Air and Noise	5
Operational Phase		
1	Greenbelt Maintenance	17.14
2	CER Initiatives	
	Water Facility (deepening village pond, implement water conservation schemes)	185

	Sanitation Facility (Drainage, community toilets and Garbage collection vehicles)	140
	Education (classroom construction provide, computer, sports equipment)	105
	Road construction	225
	Recreation (Gym, playground, library, garden)	45
	Woman empowerment	83
3	Environmental Monitoring Programme	
	Landuse/ land cover	3
	Soil characteristics	4
	Surface and groundwater	2
Grand Total		1004.64

Summary and Conclusions

Thus, the proposed lift irrigation project of the Bhima Canal Circle, Solapur; will have low adverse impacts with due implementation of control measures as suggested. Continued vigilance with budgetary support is required from the department in order to implement the Environment Management Plan. Overall, the project will cater to 12 water-scarce village of Sangola Taluka in Solapur district and thus be of benefit to the local farmers and the overall socioeconomic environment of the region.