Executive Summary

Preamble

Krishna Koyna Lift Irrigation Project (KKLI Project) comprises of **two independent** lift irrigation schemes namely **Takari LIS and Mhaisal LIS.** Both serve the purpose of supplying water for irrigation in drought prone and water deficient areas of Sangli and Solapur districts. Total ICA of project 109127 ha. Mhaisal LIS is now proposed for expansion in deprived area of 26500 ha from 65 villages of Jath Taluk in Sangli District. Thus now overall ICA of KKLI project is 135627 ha. Proposed expansion of ICA is 25% of original ICA.

Takari LIS consists of lifting **9.34 TMC** water from River Krishna near village Takari in four stages and catering it to irrigate **27430 ha. ICA** for drought prone areas from Walwa, Palus, Kadegaon, Khanapur, Tasgaon and Miraj Taluks from Sangli District .

Mhaisal LIS consists of lifting **18.44 TMC** water from River Krishna near village Mhaisal in six stages and catering it to irrigate **81697 ha. ICA & feeding tanks and storages** from drought prone areas from Tasgaon, Miraj, Kavathe- Mahankal, Jath Taluks from Sangli District and Sangola, Mangalvedha Taluks from Solapur District.

Mhaisal LIS Jath expansion consists of lifting **5.0 TMC** water from River Krishna near village Mhaisal in 3 stages and catering it to irrigate **26500 ha. ICA** from drought prone area of deprived 65 villages from Jath Taluk of Sangli District

Salient Features of the Project : Mhaisal LIS : Jath Extension (Proposed)

Jath taluk is the draught hit area lying in Eastern part of Sangli district having a large expanse with very scanty rain.

Out of 125 villages 77 are getting irrigation benefits from existing Mhaisal LIS. However, remaining 48 villages are deprived of the benefits fully and 17 villages partially. In all 65 villages are not getting benefits at all.

As this area gets scanty annual rainfall of 300 mm most of the time there is scarcity of water for irrigation and drinking. Most of the tanks run dry immediately after monsoon.

Govt. Of Maharashtra has to incur lot of funds to cater for drinking water and fodder for livestock every year. Due to such condition people residing in this area are troubled and downcast. People's representative and the farmers are demanding water vehemently to earn their livelihood. In response to which Jath Extension Scheme has been sanctioned in 5th RAA. It is going to be fulfilment of demand for these 65 villages.

GoM has accorded sanction to reallocation of 6.0 TMC water from Warna Major project as below vide marathi letter संकीर्ण 2019/ प्र.क्र. 136/ 19/ जसं अ dated- 11/08/2021

Mhaisal LIS – Jath Extension Scheme: Technical Salient Features

- Scheme comprises of 3 stages with 4 pumps in each stage.
- Distribution scheme is designed as closed pipe distribution network (PDN) with gross length of 462 km.
- This Scheme is estimated to cost Rs. 1930.38 Cr.
- This Scheme is a part of Sanctioned 5th RAA of KKLI project. BC ratio of the project cum out to be 1.87 which is (>1) and IRR is 11.55%(>8). Despite inclusion of the extended portion cost economics is within the prescribed yardsticks.
- Distribution chamber of this scheme is situated near Village Mallyal (Taluka- Jath) at an elevation 740.00 m . Rising Main comprises of 20.63 km length pipe in 2 rows and gravity main is of 35.61 km length in 2 rows. Design layout alignment of these mains is sanctioned by the Chief Engineer (WR) , WRD, Pune.
- 4 Gravity pipes are will design to emerge from distribution chamber and distribution network thereon is proposed though closed pipe network to provide water in entire command area.
- Pump house parameters are approved by Standing Committee in the meeting dated 18/11/2022.
- Tunnel of length 1360m (Chainage from 14/080 to 15/440)

Hydrology and Water Planning

Water Availability

Krishna Koyana Lift Irrigation Scheme is a major complex lift irrigation project which envisages lifting water from Krishna River at Takari and Mhaisal. Availability of water for this project is as under

Availability of water for KKLIP

Koyna Dam	19.07 TMC
Warna dam	6.00 TMC
Run-off of the Krishna River during Kharif	7.71
Total	**32.78 TMC**

Water requirement

The command area is suitable for irrigation. The taluka wise details of command area are as below.

1. Takari Part

Desecription	**Taluka/District**						**Total**
	Walava /Sangli	**Palus/ sangli**	**Kadegao/ Sangli**	**Tasgaon /Sangli**	**Khanapur/ Solapur**	**Miraj/ Solapur**	
G.C.A	939	2995	22465	17210	7795	724	**52128**
C.C.A.	799	2549	19116	14645	6633	616	**44358**
I.C.A.	494	1576	11821	9056	4102	381	**27430**

2. Mhaisal Part

Desecription	**Taluka/District**						**Total**
	Miraj /Sangli	**Tasgaon/ sangli**	**K,Mahankal/ Sangli**	**Jath /Sangli**	**Sangola/ Solapur**	**Mangalvedha / Solapur**	
G.C.A	57551	6060	29516	146650	7579	11369	**258725**
C.C.A.	47627	5015	24427	131061	7579	11369	**227078**
I.C.A.	30372	3198	15577	49050	4000	6000	**108197**

The EIA EMP report has been prepared as granted Terms of Reference (ToR) vide F.No. J-12011/5/2009-IA.I (R) dated 6th March 2023

Description of the Environment

Study Area

Study area includes 10 km radius from the boundary of Command Area

Environmental Setting of the Study Area

Sr. No.	Particulars	Description
1.	SoI Toposheet	47 L / 9, 47 L / 10, 47 L / 13, 47 L / 14, 47 K / 3, 47 K / 4, 47 K / 7, 47 K / 8, 47 K / 11, 47 K / 12, 47 K / 16, 47 O / 3, 47 O / 4, 47 O / 7, 47 O / 8, 47 O / 11, 47 O / 12, 47 P / 1, 47 P / 5, 47 P / 9
2.	Nearest Major Town	Sangli town 15 km from Proposed and 10km from Mhaisal existing canal
3.	Nearest Railway station	Miraj Railway station15 km from Mhaisal Existing and 27.20km from Proposed canal
4.	Nearest airport	Kolhapur Airport 89 km from Mhaisal Existing Canal and 105 km from proposed Canal
5.	Nearest IMD station	IMD station Miraj (Sangli) -
6.	Nearest Water body	Krashna river
7.	Nearest Road	NH-160, 448 B, 266, 166 E etc.
8.	Any Religious / Historical Place	No within 10 km radius
9.	Any Archaeological monuments	No within 10 km radius
10.	Ecological sensitive area / Reserve Biosphere within 5 km / Reserve Forest	
11.	Seismic Zone	III

Sr No	Village Name	Latitude	Longitude
1	Arewadi	17° 6'34.75"N	74°57'16.89"E
2	Banali	17° 8'27.08"N	75°12'57.04"E
3	Dandoba	16°55'37.18"N	74°44'49.96"E
4	Raywadi	17° 8'23.21"N	74°54'10.34"E
5	Sagareshwar	17° 9'8.86"N	74°22'41.24"E
6	Shukachary	17°13'32.52"N	74°50'46.50"E

Study Period: The data collected was divided, for analytical convenience, in to the following 3 Seasons:

1. **Season 1 – March 2022 to May 2022 (Pre-Monsoon Season)**
2. **Season 2 – June 2022 to August 2022 (Monsoon Season) ***
3. **Season 3 – January 2023 to March 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 13 location from submergence and 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 13 locations. Noise levels recorded at various stations were within the permissible limit

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

Surface water samples from 5 Location & Ground water samples from 12 locations were collected in winter and summer season.

Surface water is not suitable for drinking purpose as the all the samples present Total Coliforms and Fecal coliform.

Soil Quality: Soil is the naturally occurring, unconsolidated or loose covering on the Earth's surface. Soil samples from 15 representative areas were taken in winter and summer 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 201 floral species were recorded in and around the project area (i.e. 10 km radius study). Among them 39% Herbs, 37 % Trees, 19 % shrubs & climbers were 5% each.

Also, 113 tree species including 2 infra specific taxa belonging to 85 genera covering 35 families have been recorded from dry deciduous forests of Dandoba hills

Sacred groves in the study area

Sr. No.	Name of the Grove	Deity	Area (Acres)	Tahsil
1	Arewadi	Biroba	350	Kavathe Mahankal
2	Banali	Banshankari	27	Jath
3	Dandoba	Dandnath	200	Miraj
4	Raywadi	Lord Shiva	20	Kavathe Mahankal
5	Sagreshwar	Lord Shiva	12.34	Kadegaon
6	Shukacharya	Sukhdev	500	Khanpur-Atpadi

Land Use Land Cover Study

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

LULC Class	Area ha	Area sq.km.	In %
Agriculture	576984.25	5769.84	79.13
Built-up	16833.69	168.34	2.31
Reserve forest	8772.98	87.73	1.20
Scrub land	101832.62	1018.33	13.97
Vegetation	9371.17	93.71	1.29
Waterbody	15373.09	153.73	2.11
Total	**729167.80**	**7291.68**	**100.00**

Socio Economic

The study area comprises of 436 villages

Demography:

Jath Tehsil has the highest number of villages in the study area followed by Tasgaon Tehsil. Whereas Miraj teshil has the highest household (165934) followed by Jath Tehsil (47038).

Literacy Status: On an average 72.36% population was literate while 27.64% of the population was reported to be illiterate

Out of 125 villages 77 are getting irrigation benefits from existing Mhaisal LIS. However, remaining 48 villages are deprived of the benefits fully and 17 villages partially. In all 65 villages are not getting benefits at all.

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 with in 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
- Afforestration

Budgetary Allocation for Environment Management

SI	Pollution Control & Other Environment Infrastructure	Annual O & M Cost in Rs. Lakhs
1.	Ambient Air Quality	16.00
2.	Noise Level	10.00
3.	Surface and Ground Water Quality	23.00
4.	Soil Quality	10.00
5.	Solid/ hazardous wastes	10.00
6.	Ecology & Biodiversity /Green Belt Development	755.58
7.	Health & Safety	25.00
8.	Command Area Development Plan	790.32
9.	Corporate Environment Responsibility	400.00
	Total	**2039.9**

Analysis of Proposal (Final Recommendations)

- With increased land parcels from draught prone area getting irrigated, farmers are shifting from food crops like sorghum, pearl millet and wheat to Cash crops like sugarcane, pulses, grapes, and Pomegranate.
- Provide better consumer experience and improved operational performance with an end-to-end coverage from pump house to water distribution network with minimum water charges cost to farmers.
- The drought prone area earlier is transforming to horticulture hub.
- Improvement in operational performance and reliability in water supply by futuristic interventions enabled through SCADA interventions qualifying smart utilities and digital utilities
- Solarization of Mhaisal LIS to establish a sustainable energy supply solution that decouples irrigation sector from power subsidy burden to Government of Maharashtra.
- Generation of Employment - The draught prone area under the jurisdiction of Mhaisal LIS has limited activities for income generation. Construction and operational activities for proposed Solar PV power project will lead to employment generation for local rural population at the site. Also, the local population may be employed in the maintenance of the Solar PV plant