KONKAN IRRIGATION DEVELOPMENT CORPORATION

MUMARI DAM,

SARANGPURI TAL: SHAHAPUR DIST THANE

EXECUTIVE SUMMARY

1.0 Project Background

The proposed dam site is situated on Mumari River, a tributary of Bhatsa River near village Sarangpuri Tal-Shahapur Dist- Thane. Mumari dam is proposed on western side of Sahyadri hill ranges near village Sarangpuri. The said river flows west words through the hilly track in the same Taluka and joins Bhatsa River at about 8 km Downstream of Bhatsa dam.

Bhatsa River is tributary of Ulhas River which is west following. Mumari dam having capacity of 72.40 Mcum is proposed to Mumari River which is sub-tributary of Bhatsa River near village Sarangpuri

As the non-irrigation demand has been increased, there is no water available for irrigation purpose to Shahapur Taluka. Hence the water from storage of Mumari dam will be made available to meet out the irrigation demands of Shahapur Taluka. It is proposed to irrigate 6320 Ha area after completion of Mumari dam.

Salient Features

Sr.	**Item**	
1		**Mumari Dam**
	Location of Dam	
	State	Maharashtra
	District	Thane
	Taluka	Shahapur
	Village	Sarangpuri
	Latitude	19^{o}-28'-50"
	Longitude	73^{o}-25'-30"
	Toposheet	47-E/3, E/6, E/7
2	**Name of River**	Mumari
3	**Catchment area (Sq.Km.)**	41.47

4	**Average annual rainfall (mm)**	3302
5	**Average monsoon rainfall (mm)**	3302
6	**Water availability (Mcum)**	
i)	100% Dependable Monsoon Yield	35.71
ii)	90% Dependable Monsoon Yield	52.91
iii)	75% Dependable Monsoon Yield	65.36
iv)	Post Monsoon Yield.	--
v)	Upstream Reservation for Minor Medium and Major Project	--
vi)	Regenerations.	--
vii)	Total yield for planning Mcum	68.69
viii)	Carry over Mm^3	
ix)	Total (vii +viii)	
7	**Utilization(75% dependable flow)**	
i)	Irrigation (Mcum)	46.25
	Total	
ii)	Domestic Supply Mcum	13.75
iii)	Annual lake losses Mcum	4.00
iv)	Total utilization (i + ii + iii)	64.00
8	**Storage planning (Figures in Mcum)**	
i)	Silt pocket.	1.50
ii)	Dead storage	3.90
iii)	Fair weather Irrigation requirement	46.25
iv)	Fair weather water supply requirement	13.75
v)	Transit losses for water supply	--
vi)	Fair weather lake losses.	4.00
vii)	30 days reserve storage for late outbreak of monsoon.	--
viii)	Carry over	4.60
ix)	Total gross storage (Mcum)	**72.50**
9	**Controlling levels (Mtr.)**	
i)	Deepest river bed (m)	63.60
ii)	Silt level (m)	64.53
iii)	Outlet sill level (m) Left bank low level outlet (m)	77.00
vi)	M.D.D.L.(m)	79.40
v)	F.R.L.(m)	108.10
vi)	M.W.L.(m)	108.60
vii)	T.B.L.(m)	110.90
10	**Dam**	
i)	Type of Dam	Earthen Dam
ii)	Length of Dam (m)	1240
iii)	Maximum height of dam above river bed (m)	47.46
iv)	Maximum height of dam from deepest foundation (m)	49.90
v)	Free board (m)	

i)	Above F.R.L.	2.8
ii)	Above M.W.L.	2.3
11	**Spillway**	
i)	Type of spillway	Ogee Side spillway
ii)	Length of spillway (m)	42 (m) (Revised)
iii)	Maximum height above foundation (m)	48.6
iv)	Crest elevation (m)	103.1
v)	Design flood (Cumces)	1630 cum.
vi)	Food routing(outflow)	
	F.R.L. (Cumces)	849.90(Revised)
	M.W.L.(Cumces)	878.51(Revised)
vii)	Number of gates.	3
viii)	Type & size of gates (m)	Radial gates 12 x 6.5
12	**Outlet**	**Mumari Dam**
i)	Design discharges (Cumces)	**10.42**
ii)	Outlet sill level (m)	77.00
iii)	C.B.L. at start (m)	76.77
iv)	Size of conduits(m)	1 x 1.25 x 1.25
v)	Bed gradient of conduits:	1:3500
13	**Canals**	
i)	Type of canal	Lined
ii)	Bed width at bed (m)	5.10
iii)	R.S.D.(m)	2.10
iv)	Free Board (m)	0.60
v)	Side slopes	1:1
vi)	Bed gradient at start.	1:3500
vii)	Basic discharges required (Cumces)	10.36
viii)	Designed discharging capacity(cumecs)	10.42
ix)	Length Km.	50 km
x)	Coefficient of rugosity	0.025

Scope and Methodology:

As per the EIA Notification 2006Mumari dam falls under the Category 1(c)-River Valley Project; and will be appraised by the SEIAA as the command area is less than 10000 Ha. The Bhatsa Dam Division No.1 under whom the construction of Mumari dam falls, decided to study the Environmental Impact Assessment of the above mentioned project.

In 96th Meeting of SEAC held on 11th -13th Feb 2015 State Level Expert Appraisal Committee (SEAC) has approved Terms of Reference (TOR). Accordingly EIA and EMP studies have been carried out.

The project through this EIA study is being assessed for its positive and negative impacts with justifiable explications to reduce the severity of the negative impacts and augment the gains from the positive impacts.

2.0 Description of The Environment:

2.1. Physical and Biological Environment:

The project envisages construction of storage dam at sarangpuri village across Mumari River to irrigate 6320 Ha from Shahpur & Kalyna district in Thane district.

Land use pattern of the command area indicates that the most of the land is under the category of open land. Climate of the area is hot and humid with annual temperature ranging from 19.0^{0}C in winter to 35^{0}C during summer season. This command area is spread across Shahpur and Kalyan taluka of Thane District.

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.

The current water level in the project area ranges between 7 m to 15 m. below ground level. Therefore the command area is not subjected to water logging if the proper irrigation planning is carried out. However the ground water quality results show that physic chemical properties of all the groundwater samples are well within limits.

The vegetation of the area is deciduous type along with patch of the reserve forest. Total 73 tree species recorded & no RET floral species is reported in the study area. The most abundant species in the study areas are *Tectona grandis* L.f., *Carissa congesta* Wigh, *Butea monosperma* L., *Bauhinia racemosa* Lam., *Bombax ceiba* Linn, *Madhuca longifolia* (Koen.) Mac. and *Mangifera indica* L etc.

Six species of Mammals & 21 species of birds were recorded in and around the periphery of the project during the study period. Animals, which are found within the study area and categorized under schedule I to Schedule IV of Wild Life Protection Act 1972 & subsequent amendment along with IUCN status respectively and are strictly protected.

2.2. Socio-Economic Environment:

Proposed project submerged area will be Shahpur taluka and command area spread across in Shahapur and Kalyna taluka.

Agriculture is the main source of livelihood in this area. Very little population is engaged in business, employment or dairy as a secondary source of income. The lower income levels can be attributed to high dependence on the agriculture.

Due to construction of this dam two *pada's* i.e. Avakalpada and Chafayachipada affected from village Kothare and Sarangpuri respectively.

Total 54 families from above villages are affected and are being rehabilitated as per 'Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013'

3.0 Anticipated Environmental Impacts And Mitigation Measures:

The ENVIRONMENTAL IMPACT ASSESSMENT (EIA) study is carried out to assess environmental and socio-economic impacts resulting from the construction and operation of the project. Adoption of Environmental Impact Assessments (EIAs) will enable the project authority to plan water and land use in an integrated manner, avoiding irreversible environmental damage. Contrary to common perceptions, this would lead to higher economic benefits and sustainable resource use. This is usually done through comparison of pre-project condition to the present project and environmental conditions. The EIA's also distinguish and evaluate the impacts that are likely to be associated with future construction and operation during the inception of the project. In addition the EIA's also assess the impacts of developments and activities with respect to its utility and viability to the region. In fact, the EIA studies act as a guide to a systematic approach to develop a basic understanding of the environmental problems and a methodology to assess the scope and magnitude of environmental damage that may be caused by irrigation and drainage. The Environmental Management Plan (EMP) component of the study dwells on minimizing negative impacts of the projects, and enhancing its positive impacts. In a broader

sense, the environmental impact assessment identifies compares, assesses and recommends measures for eradicating or reducing negative impacts.

The project is likely to generate the following impacts:

3.1 Impact on Climate

Command area of the project located in a good rainfall area but area does not have storage facility perennial irrigation. The main affected parameters will be wind, evaporation rate, ambient temperature, relative humidity and to some extent visibility.

Micrometeorological changes are expected to take place at local level in the command area where the water availability and the irrigated area is going to increase by the proposed dam. The main affected parameters will be ambient temperature, relative humidity, wind velocity, evaporation rate etc. Availability of water to the command area will help enhance greenery, which can help minimizing the ambient air temperature in the project area as well as surrounding areas to the some extent.

3.2 Biological Resources

Due to inception of the present project water will be available for almost round the year and would enhance the existing vegetation cover. Water availability and plantation of shrubs and trees along the canals will provide suitable conditions for nesting and breeding of birds. Water availability in the project area will enhance vegetation cover in the area, this might promote marginal increase in wildlife population around. However, during construction phase increased vehicular traffic coupled with various construction activities reduces the movement of the local fauna near the project site temporarily. The initial construction works at the project site involves land clearance, cutting, filling and leveling for canal construction however, vegetation in the command area is sparse and degraded. The construction activities lead to inward migration of a labor force in the area and thus there would be pressure on local vegetation in the area due to household fuel demand.

3.3 Human Use Values

The command area lies in good rainfall area but area does not irrigation facility. Due to this proposed dam increase the land under irrigation and improve the vegetation cover. Thus many areas which are at present fallow will be put to irrigate agriculture.

3.4 Quality of life

- Impact on social and community structure:

The project has envisaged more land brought under cultivation, thus the productivity of the area will increase. This will attract various agro-based industries services in the area and creating new avenues for jobs and entrepreneurships. Overall, economic upliftment of local communities is expected in the command area due to inception of the project.

- Impact on civic amenities:

The impact of economic development on civic amenities will be substantial. The area will attract amenities in the areas of water supply, drainage, education, health services, sanitation and electricity and also overall boost in transport and communication facilities like roads and buses. The overall impacts will be positive and beneficial.

- Impact on public health and nutrition

Comparison of water scarce and water sufficient areas has revealed that an irrigation of project proves beneficial for socioeconomic progress of the communities in the area. The health problems associated with scarcity of water will be mostly eliminated.

- Impact on Aesthetic value

The plantation along canals and greenbelt development would enhance the aesthetic value of the site. This may attract water birds and create a pleasing atmosphere. Greening of barren areas because of year round availability of water is another such activity enhancing the aesthetics of the region. Overall, this would result in a pleasing atmosphere and may attract tourists from various places.

3.5 Impact on Topography:

Various components of the project such as dam & canal envisage an slight impact on the topography of the area.

3.6 Impact on Agriculture productivity:

Water availability to the command area will enhance the agriculture productivity substantially. The beneficiaries of the project include the small and marginal farmers, as they will be able to cultivate cash crops, varieties of high yielding / improved crops, short-term crops, floriculture, horticulture, oil seeds etc. which are economically viable options to enhance the present economical status of the local communities.

3.7 Impact on air quality:

The main impact on the air quality of the proposed project is during the construction phase due to excavation, site leveling, transportation of materials etc., wherein there will be an increase in the suspended particulate matter (SPM) level at the construction site. There are also chances of gaseous pollution (NOX, CO & HC) due to automobile exhausts and construction machinery, which uses diesel. However, the impact on the present ambient air quality will be localized, temporary and reversible in nature, distributed all over the command area.

3.8 Impact on noise levels:

The noise produced during the construction will not have a significant impact on the existing ambient noise levels in the command area. The major operation generating the noise will be restricted to daytime and scattered all over the command area leading to minimal impact on the nearby wildlife. The construction activities will not affect the livelihood of the people.

3.9 Impact on Soil and ground water:

This project will be useful for undertaking dry-lands under cultivation by providing irrigation facility. This will help to increase groundwater levels of in the area and vicinity. Availability of water will increase the productivity of the area by following the

recommended practices and cropping pattern. However, excess use of water, chemical fertilizers and pesticides in the command area may lead to disturb the existing quality of soil and water in terms of salinity, electrical conductivity etc. Since, the district is agriculturally advanced, with increasing preference of farmers towards micro-irrigation techniques, reduction of fertilizer dosages and promotion of organic fertilizers is proposed through involvement of the experts from the Agricultural University. Seepage from the canals in the command area may cause water logging problems at the low-lying areas. However, the command area lies at a higher altitude and in a water scarce zone. The overall soil type is loamy and soils are well drained which will reduce chances of negative impacts on the soil quality. Also in the command area development plan, provisions have been made to advice farmers on the cropping pattern, soil quality enhancement and water use with the involvement of experts of the agriculture university.

4.0 Mitigating Measures:

General Recommendations:

- During excavation and transportation over un-metalled roads along the canals, there is a scope for local dust emission. Frequent water sprinkling in the vicinity of the construction activity should be done, as there is a scope for vehicular movement to mitigate the problem of air pollution.

- Since the changes on topographical features are irreversible, the activities like excavation, dumping and leveling should be carried out in a manner that will least affect the topographical arrangements.

- Fertile top soil layer from the construction site should be retained for the landscaping or gardening purpose. Surplus earth should be utilized to fill up low-lying areas.

- The green belt development plan along the canals should be implemented to reduce the fugitive dust emissions (during activities such as movement of the trucks, construction activities, excavation etc.) and also noise levels. This will

increase the aesthetics of the surroundings and provide nesting, feeding and breeding sites for fauna.

- 10 % environment flow will be maintained in river for conservation & enhancement of aquatic life.
- Adequate sanitary measures need to be taken at the labour colonies so as to minimize the water contamination problem.
- A synchronized operation for construction activity should be followed to minimise impact on the surrounding area. Noise prone activities should not be carried out during nighttime, particularly during the period 10 p.m. to 6 a.m. in order minimise the impact on wildlife
- The workers should be provided with alternate fuel for their daily needs so as to reduce the pressure on the nearby vegetation.
- Instructions should be given to the workers and contactors to prevent hunting of any faunal species and cutting of vegetation along the canal network.
- The waste generated during the excavation operation for the deep cuts, canals and related structures should be used for the backfilling of the pit and low lying areas.
- Planting of local plant species on the slopes, terraces, trenches, canal sides etc. are recommended to enhance soil binding so as to avoid soil erosion.
- It is suggested that the health sector should take the responsibility for the monitoring of the health status during the operational phase.
- Recommended agriculture practices should be followed so as to minimize negative impacts like water logging, salinity and loss of agricultural productivity.
- Feasibility of agriculture based small processing units required to be investigated. This would enhance employment opportunities locally. This will discourage

migration for jobs also and reduce the problem associated with migration such as spreading of infectious diseases

- Monitoring of meteorological parameters, water and soil quality parameters, ecological status of the project area during construction and operational phase should be done regularly and appropriate feedback needs to be generated for effective management as suggested in Environmental Management Plan.

- Project authorities should take the help of agricultural college/University to train the farmers in the command area in selecting appropriate crops, irrigation methods, and improved agricultural practices, use of bio-fertilizers and biopesticides, marketing channels and tackle improved agriculture and economy in a sustainable manner.