

EXECUTIVE SUMMARY OF NARMADA - KSHIPRA LINK

MULTIPURPOSE PROJECT

INTRODUCTION:-

The main objective of **NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT** is to provide irrigation facilities to the water-scare areas in upper reaches of Chambal basin where the level of irrigation is very much less as compare to national irrigation percentage. The **NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT** has been conceived to catter irrigation water to about 30000 ha. of CCA in Ujjain, Shajapur districts of Malwa region.

It is proposed to catter irrigation water to about 30000 Hact. of CCA in Ujjain & Shajapur Districts. Total 99 Villages of Tarana Tehsil, 07 Villages of Ghattiya Tehsil of District Ujjain & 56 Villages of Shajapur Tehsil of Shajapur District will be benefitted by the scheme .

Thus total 162 villages of 3 Tehsils of 3 Districts will be benefitted by the scheme.

Location of Project :

The project area is spreaded in two regions of M.P. The supply source i.e. Omkareshwar Project reservoir, lifting point, pump houses and rising main lie in Khandwa District while the linking river Kshipra & Piped Canal System (command area) lie in Ujjain and Shajapur districts of Malwa region.

Access & other Communication facilities:

As described above, the supply source and lifting point (OSP Reservoir) are about 78 km. from commercial capital Indore of the State & is approachable by Indore-Omkareshwar road. The supply source & lifting point is just adjoining to OSP Project-site Omkareshwar, Tehsil- Punasa, Distt. Khandwa. The Punasa is about 40 km from Sanawad on Indore-Edlabad state highway.

The 45.00 km long rising main runs in Vindhya ranges. The rising main terminates at Break Pressure Tank (BPT) near Kakukhedi Village Distt. Indore. From BPT the water will reach to Junction Structure near Village- Dewas. The present alignments of rising main is based on toposheet studies and are likely to be changed during execution after detailed survey work.

The command area has been selected near Tarana Tehsil, Shajapur Tehsil to irrigated 28,000 Ha. land in Ujjain and Shajapur districts between GM-2 & GM-3 Piped Canal and 2,000 Ha. Area has been selected in initial reach of GM-1 after BPT. The

command area is well approachable by a network of district roads & PMGSY roads connecting every corner of command area.

Climatic Conditions : -

The command area of this project lies in Doaab of Kshipra River of Chambal Basin, which is mostly semiarid, sub-tropical zone accompanied with long dry season. Maximum part of rain fall occurs in the month of July and August. The annual average rainfall varies between 850 to 900 mm and the distribution of rainfall is erratic. Maximum precipitation is in between the months Mid July to August. Occasional North-East Monsoon occurs in October to December, winter rains occurs in January and February and summer rains from March to May, which helps to some extent in raising of rainfed winter and summer crops.

Temperature data collected from metrological laboratory of Agriculture College, Indore reveals that temperature rises since February and it reaches maximum in the month of May and then it continues to decline till December. Thus May and December are the hottest and coldest months of the year respectively. In summer, though day temperature remains high, but nights are cool and pleasant which is significant feature of climate of this region. Wide variation in temperature has also been observed as it varies, from 1.0⁰ Celcius to 44⁰ Celcius.

Topography, Phsycography & Geology : -

The river Kshipra originates near village Ujjaini of Indore Tehsil of district of Indore runs in the plains of Malwa covered with a thick cover of B.C. Soil.

The command area is also covered with either B.C. Soil or yellow Soil with good drainage and gentle slope.

Soico-Economics aspects:

NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT be the model and example to create a story of economic development and of equitable development. The construction of the proposed Project will be a mile stone in the path of the forthcoming development of the area as well as of the Project Benefitted Families living in Malwa Region. Therefore construction of NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT may bring many Socio-Economic changes for the betterment of the area and in the lives of the Project Affected Families of this Project.

When we analyze the above impacts of the proposed Project it can be concluded that the overall positive impacts of the proposed Project are of high magnitude. No development can take place without the availability of water. Water is necessary not only for drinking purposes but for Industrialization and Irrigation purposes also. Ujjain, Dewas and Nagda Districts need water and Projects like NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT Irrigation Project are the need of the time. Therefore the construction of this Project will be beneficial not only for the local population but for the State and Nation as a whole.

History of Project :

It is a new concept derived looking to the scarce condition of water in Malwa region. The scheme on completion shall provide water for irrigation, domestic and industrial purpose.

Choice of Project :

Since there is no major scheme either constructed or under proposal to irrigate such a huge topographically rich command having scarcity of water, hence this inter-basin scheme is proposed.

15.0 cumecs water from OSP reservoir will be lifted through 3000 mm dia M.S. pipe rising main of about 45.00 km length up to Near village Kakukhedi in Indore Tehsil, District Indore. The present alignments of rising main are based on toposheet studies and are likely to be changed during execution after detailed survey work. This will further be bifurcated into piped canals namely GM-2 & GM-3 of 54.00 Km & 55.00 Km. respectively to irrigate total 30,000 ha. of CCA in 162 villages of 03 Tehsils of Ujjain and Shajapur districts. The number of benefitted villages are tentative & likely to be changed after detailed command area survey. The Project will also serve Drinking & Industrial demand of Dewas, Ujjain and Nagda Industrial Area for which separate GM-4 & GM-5 Pipeline proposed from Dewas to Ujjain and Ujjain to Nagda respectively .

Stages / Phases of development of project:

It is proposed to construct the scheme in 4 years and the command will also be developed in 4 stages as detailed below:

	Ist Year	IInd Year	IIIrd Year
i) Construction of pump house & rising main.	15%	85%	-
ii) Construction of Main Canal.	Nil	60%	40%
iii) Construction of Disnet.	Nil	30%	70%
iv) Development of Irrigation (in Ha.).	Nil	9000	21000

Fitment of the scheme in overall development of the river basin:

The command area lies in sub basins of Kshipra Basin, which forms a part of major Chambal Basin. On full development of command area, the scheme will prove its fitment in respect of overall upliftment of status of cultivators.

Intimation to the other development authorities regarding this scheme :-

The scheme has been discussed at the highest level of State Government and every related authority is well known about its benefits and are ready to extend their co-operation at every level. The most related departments are Water Resources Department, Public Health Engineering, Road development corporation, Agriculture Department,

local bodies, marketing societies, Panchayats. *In facts the residents of villages of command area are anxiously waiting for this scheme to be taken up in hand, as they have recently seen the Kshipra river being flown even in summer season with fresh Narmada water.*

Public Announcement and Public Hearings :

It is a conceptual plan and as soon as mandatory clearances are obtained, public hearings & announcements shall be made before according Administrative Approval.

Inter-state/International aspect(s) :

It is not a interstate project & the state is using water of its own allocated share, hence no interstate / international aspect is involved.

Cost & Benefit of the Scheme:

The scheme mainly comprise of construction of pump house at 3 various stages and laying of rising main & piped canal system to provide irrigation to 30,000 Hectare command area in 162 villages of 03 Tehsils of Ujjain and Shajapur districts. The Project will also serve Drinking & Industrial demand of Dewas, Ujjain and Nagda Industrial Area for which separate GM-4 & GM-5 Pipeline proposed from Dewas to Ujjain and Ujjain to Nagda respectively .

(A) Cost Estimates :-

The estimated cost of NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT has been prepared on the basis of USR of Water Recourses Department enforced in the department w..e.f. 01-09-2017 where, the rates for a particular item is not available in departmental USR the rates of SOR of other department has been adopted . The unit wise cost is as below :-

Allocation	Total
Unit- I	1612.91
Unit- II	602.73
Total	2215.64

(B) Benefits :

The main objective of NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT is to provide irrigation facilities to the water-short areas in upper reaches of Chambal basin where the level of irrigation is very less as compared to available

culturable area and to the national percentage of irrigation. The NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT is conceived to cater irrigation water to 30,000 lakhs ha. of CCA in 162 villages of 03 Tehsils of Ujjain and Shajapur districts. The Project will also serve Drinking & Industrial demand of Dewas, Ujjain and Nagda Industrial Area for which separate GM-4 & GM-5 Pipeline proposed from Dewas to Ujjain and Ujjain to Nagda respectively . The list of tehsil wise & district wise nos. of benefited villages in command area are attached as **annexure- 4**.

Public Cooperation and Participation :-

The scheme shall be funded by state Govt, AIBP & Nabard. The Public Co-operation & Participation shall be obtained in water management activities.

Provision for Domestic & Industrial Water supply :-

Yes, There is provision for Municipal & Industrial water supply to Dewas, Ujjain and Nagda Industrial Area .

DESIGN FEATURES & CRITERIA FOR DIFFERENT RIVER VALLEY STRUCTURES :-

(a) Head works :

Since the water is being lifted from already constructed Omkareshwar Project reservoir hence no head work will be constructed under this project.

(b) Lifting Arrangement :

It is proposed to execute the work on EPC basis, hence the construction agency will submit its own design and drawings for lifting arrangement such as pump houses, rising main etc. & which will be vetted either by IISC Bangalore/any IIT or by department in accordance with relevant IS code, WRD circulars and CPHO manual, before execution.

(c) Piped System :

Total 15.0 Cumecs of water lifted in this scheme which will be used for irrigating 30,000 hectare of command area through Piped Canal system and to fulfill Industrial & Drinking Water demand of Dewas, Ujjain and Nagda area. The details of Piped Canal system and Industrial / Drinking supply System are as below:

	RM	GM-1	GM-2	GM-3	GM-4	GM-5
Discharge	15.0 cumecs	15.0 to 14.0 cumecs	4.75 to 0.50 cumecs	4.75 to 0.50 cumecs	3.00 cumecs	1.50 cumecs
Diameter (in mm)	3000	2900	1600 to 750	1600 to 750	1450	1000
Command Area(Net C.C.A.)	NIL	2000 Ha.	14000 Ha.	14000 Ha.	NIL	NIL
Length (Pipe Canal)	45.00 Km	38.00 Km	54.00 Km	55.00 Km	39.00 Km	51.00 Km

Cut off Statement & Design discharge data :

Based on the topographical and command area survey, the alignment of main pipe canal and distribution network has been planned & accordingly cut off statement for GM-2 & GM-3 Piped Canal considering requirement of water for irrigation use have been prepared with 0.333 lps/ha. demand at Canal Head.

Canal operation & Criteria :

To minimize the water losses, the sprinkler / drip irrigation system has been proposed in the command and the water from the piped canal will be released according to Warabandi system and this will be controlled by elected WUA.

Canal Structure/ gates :

The complete system will be piped system with SCADA. The water in the distribution net work will be controlled by different types of valves. The canal structures will be constructed as per requirements of topography.

Power House (Pump and Rising Main):

Presently, it is proposed to lay 45.0 km long rising main of MS pipe 3000 mm diameter of appropriate thickness to deliver 15.0 cumecs water. The total motor rating for 15.0 cumecs pumps capacity will be about 76 MW and 3 MW for auxiliary use. Thus total power requirement for the project will be about 79 MW. However assessment of pipes and type of pumps/ motors shall be carried out at detailed design stage.

Land requirement:-

The rising main shall be aligned in such a way, that it traverses minimum in forest area and the total length from lifting to delivery point becomes shortest. The topo sheet study reveals that out of total 45 Km. length of Rising Main, 35 Km. length shall be in forest area & rest 10 Km. will be either in private or in Government land. The affected forest land has been assessed on the basis of topo sheet studies and there is a possibility of changes in the affected area specially in forest land. Thus for Rising Main it is proposed to acquire Private Land about 11.0Hact. and for GM-1, GM-4 & GM-5 it is proposed to acquire Private Land about 14.08 Hact. .

For laying of Rising main (3000 mm dia), Electrical lines and Establishing Pump Houses in forest area about 39.50 hectare will be required. The entire pipe line either Gravity or Rising Main shall be laid 1.00 m. below average ground level except in forest area where the pipe line will be passed through the tunnel and or on the pedestal above the ground level, for which 35.00 Hact. Forest Land is proposed to be acquired . Thus total 39.5 hact. forest land and 25.08 Hact. Private Land is proposed to be acquired for this project .

RESERVOIR : -

No Reservoir Study is required as 15.00 Cumecs of water will be lifted from already constructed Omkareshwar Project Dam reservoir and proposed irrigation is through underground piped system only.

WATER PLANNING :-

The live capacity of ISP is 7.9 MAF and that of Omkareshwar is about 0.25 MAF and the utilization is about 1.46 and 1.02 MAF respectively. The required release to met the requirement of Sardar Sarovar is 6.09 MAF . Thus the total utilization and releases requirement from ISP add up to (6.09 + 1.46 + 1.02 = 8.57) about 8.57 MAF against live storage of 8.15 MAF. The shortfall in demand 0.42 MAF as above and 0.383 MAF required for NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT and evaporation losses at ISP reservoir are met by incoming flows in ISP reservoir during non-monsoon period.

As the irrigation system is piped canal, therefore irrigation duty at Canal Head it is considered as 0.333 lps/ha. Thus the water required for the irrigation for proposed 30,000 hectare. CCA works out to be 10.00 cumec and a provision of 5.00 cumecs for Drinking and Industrial water supply .Thus total 15.00 cumec (0.383 MAF taking 365 days water lifting) of water is proposed to be lifted from Omkareshwar Project reservoir.

Proposed irrigation facilities in command area :-

Total 30,000 Ha. command of Ujjain and Shajapur districts will be benefited from this scheme. The details of the Proposed irrigation facilities in the command of NARMADA - KSHIPRA LINK MULTIPURPOSE PROJECT are as below.

Area are in Hectare

S. No.	District	Tehsil	Total Number of Villages	Area in Ha. (Geographical)	Net C.C.A. in Ha.
01	UJJAIN	Tarana	99	32934	18333
		Ghattiya	07	2329	1296
	Sub Total		106	35263	19629
02	SHAJAPUR	Shajapur	56	18629	10371
	Grand Total		162	53892	30000

In addition to above the water will also be delivered to the existing tank coming in the vicinity of the command area by providing suitable outlets at various locations.

