

## PROJECT AT A GLANCE

- 1) Name of the scheme : Basaveshwara (Kempwad) Lift Irrigation Scheme  
2) Location : Lifting point near Ainapur village on Left Bank of river Krishna.  
3) Water allocation : 4 TMC (Under scheme 'B' Hippargi additional – K2 sub-basin)  
4) River bed level @ lifting point : RL 513.00 M  
5) Stages of lift : Single stage.  
6) Delivery point : RL 610.00m (Near Madhabavi)  
7) Length of intake canal : 1250m.  
8) Length of rising main : 15.90Km.  
9) No. of pumps : 10+2=12 Nos of 3244HP each  
9) Canals
- |                        | Length in km | Command Area |
|------------------------|--------------|--------------|
| a) Kempwad North canal | 59.52        | 26148.91     |
| b) Kempwad South canal | 3.68         | 1313.09      |
|                        | <b>63.20</b> | <b>27462</b> |
- 10) No. of villages befitted : 22 villages of Athani taluka  
11) Estimated cost of the project : **112036.00 lakhs.**  
12 a) Benefit cost ratio : 1.08  
b) Cost per Ha. : 410035.68  
13 Present status of project : The DPR was placed before the 145<sup>th</sup> TSC on Feb 25 2013 & after detailed deliberations, TSC cleared the DPR & recommended to place the DPR before “Board of KNNL” to obtain administration approval. The same was placed before the 60<sup>th</sup> Board meeting of KNNL held on 28.08.2013 and the board has approved the DPR.

## **BASAVESHWARA (KEMPWADA) LIFT IRRIGATION SCHEME**

### **GENERAL REPORT**

#### **1.0 RIVER KRISHNA**

1.1 The river Krishna takes off its origin near Mahabaleshwar in Maharashtra State in the Western Ghats at an altitude of 1336.55M (4385 ft) above MSL and flows across the peninsula from West to East for about 1392 Kms. (865 Miles) through Maharashtra, Karnataka and Andhra Pradesh, till it joins the Bay of Bengal. The drainages area of the river is about 2,58,949 Sq.km.(99,980 Sq.miles) out of which 1,13,271 Sq. km (43,734 Sq. miles) lies in Karnataka State. This is nearly 48% of total drainage area in Krishna Basin and this area incidentally forms as large as about 60% of the area of Karnataka State. The total length of the river within the limits of Karnataka State is 487.70 Kms. (300 miles) out of a total river length of 1392 Kms. (865 miles). The main river Krishna receives its water from its tributaries like Koyna, Yarla, Varna and Panchaganga before it enters into Karnataka State and from there Dudhganga, Ghataprabha, Malaprabha, Don and Bhima before it enters into Andhra Pradesh. When it enters the Karnataka State, the altitude of the river falls down to RL 544.50M (RL 1750 ft).

1.2 The river portion in Maharashtra is mainly on Western Ghats which is blessed with good rainfall on an average ranging from 6350mm to 3810mm (250 to 150 inches) annually. It gradually dwindles down to about 500mm (20 inches) in Bagalkot, Bijapur, Belgaum Districts and Gulbarga Districts in Karnataka State. The catchment area in the Upper reaches of the river generally consists of steep hills with forest growth and the lower reaches i.e., beyond Satara District in Maharashtra State, the catchment is generally plain. This area mainly receives rains from South West monsoon during June to October when the river receives floods. The discharge in the river recedes from November onwards.

#### **2. THE REGION AND ITS IRRIGATION NEEDS**

2.1 The areas comprising of Bijapur, Gulbarga and Raichur Districts and Athani taluka of Belgaum district situated in the Northern region of Karnataka area are in need of irrigation facilities. This region lies entirely in Krishna river basin in the Deccan Plateau of Southern India.

The entire population in this region is purely depending on agriculture, which in turn forms the back-bone of economy of the region. Food crops like Jowar, Bajara, Wheat, Gram Sugarcane etc, are grown in this area. But due to lack of adequate and timely rainfall, the region suffers from scarcity and periodical famine often.

**2.2** The annual normal rainfall in Athani taluk is 687mm and mainly this taluk lies in rain-shadow area. The soil is fertile and if irrigation facility is provided, farmers can grow crops with good yield, which will afford them much needed protection for survival and cultivating agriculture.

**3** The major portion of Northern part of Bijapur District and Athani taluk of Belgaum District is outside the scope of any flow irrigation. This area is very flat and the gradient of the Krishna River bed is gentle. A storage reservoir across Krishna river within the limits of State Boundary upstream of Allamatti Reservoir will involve huge submergence of land in the State of Maharashtra and Karnataka. Therefore, it is proposed to irrigate this area by providing Lift Irrigation Scheme, which is the only alternative measure to provide water for the development of drought prone areas of Athani taluk. The Hippargi project envisages the construction of Barrage across River Krishna at Hippargi with two Foreshore lift irrigation schemes at Halyal and Ainapur to irrigate an area of 74,742 Ha (1,84,688 Acres) utilizing 12.10 TMC of water for both Khariff and Rabi seasons (**under scheme-A**)

### **3.1 ADDITIONAL ALLOCATION OF WATER (UNDER SCHEME-B)**

Though Hippargi irrigation project was basically planned to mitigate the sufferings of drought prone villages of Athani taluak. But, some of the Northern side villages of Athani taluka had not been considered in Hippargi irrigation project. Considering the genuine request of farmers and Legislators of Athani taluka, the Master Plan Committee allocated an additional 4.00 TMC of water under K-2 sub basin to Hippargi irrigation project to mitigate the sufferings of drought prone areas of Athani taluka and to utilize for irrigation during Khariff season only.

### **4. BASAVESHWARA(KEMPWAD) L.I.S**

The Basaveshwara (Kempwada) LIS envisages creation of additional achcut to an extent of 27462 Ha covered under 22 villages of Athani taluk, which is deprived of irrigation. The proposed achcut is covered on the Northern and eastern part by the

boundary of Maharashtra, the southern and eastern part is covered under Ainapur LIS, Halyal and Karimasuti LIS schemes. In order to provide irrigation to the proposed area, this lift irrigation is bought by utilizing 4.00 TMC of water allocated to this scheme. The Project comprises the following components:

**A. Location of Intake:** The water is proposed to be drawn through an intake canal on left side of Krishna River bank situated near Ainapur village which is 25 Kms away from Hippargi barrage along the river course and also coming in the backwater of Hippargi barrage.

**B. INTAKE CANAL:** The intake canal is proposed at RL of 514.500 and the GL at this point is 532.500 m. The HFL of the river is 531.500 m and the FRL of the reservoir is 524.870. Since the water is proposed to be lifted from 16<sup>th</sup> of June, the intake level is considered at RL 514.500 i.e., 2.978 m below MDDL and 1.50 m above river bed level of 513.00m. As verified from the inflow data from 1991, the available water at 75% dependability is 32.65 Mcum against the requirement of 24.72 Mcum (as per the statement enclosed under page .....). The length of intake canal is 1250 m and is designed for 33.653cumecs based on the requirement of water. The Intake canal is submergible under high flood conditions and at FRL of reservoir.

**C. PROPOSED LIFTS:** This scheme envisages lifting water in single stage and the details are as follows:

I. **The lifting system** with a static head of 95.322mtrs (from RL 517.478 to 612.85m)is proposed with pumping arrangements consisting of 12 Nos.(including 1standby) of pumps of 3244 HP capacity each and water will be pumped through rising main of 15.90 Km. length up to delivery chamber number.( DC)

II. **From Delivery Chamber,** the North canal is taking off with a designed discharge of 22.126cumecs (Required discharge= 21.46cumecs) and runs to a length of 59.52Kms all along the boundary of Maharashtra to irrigate an area of 26148.91Ha. The alignment and the cut-off sttement are prepared based on the contour maps prepared by the consultant who had been entrusted with the work. The alignment crosses major valley of Agrani River and the length of the aqueduct is 7.50Km and it is also crossing two tributaries of Agrani River having a length of 1.00 Km and 2.00 Km

respectively. The position and type of CD works are also accessed based on the alignment proposed. The line estimates are prepared for similar structures based on the discharge in the canal for service structures and the catchment area of cross drainage works.

**The South canal** takes off from delivery chamber with a designed discharge of 1.131cumecs (Required discharge= 1.08cumecs) and runs to a length of 3.68Kms to irrigate an area of 1313.09Ha. The detailed surveys are yet to be conducted. The approximate cost is accessed and included in the DPR.

### 5. WATER REQUIREMENT AND CROPPING PATTERN:

The water requirement is worked out by adopting modified penman method and demand table is prepared for Khariff season adopting the cropping pattern shown as below. The hydrological aspect is enclosed in the DPR.(Pg no..... to ).

	Crop	Intensity (%)	Area(Ha)	Water Depth		Requirement (M.cum)
				(mm)	(mm)	
<b>I</b>	<b>Khariff</b>					
1	Local Jawar	1.16	318.56	395.00	15.55	1.24
2	Hybrid Maize	11.50	3158.13	398.40	16.00	12.58
3	Bajara	3.45	947.44	398.40	16.00	3.77
4	Groundnut	45.98	12627.03	429.10	16.90	54.20
5	Hybrid Jawar	37.91	10410.83	398.40	16.00	41.48
			<b>27462.00</b>			<b>113.27 M.cum</b>

						4000 Mcft
						4.00 TMC

The canalwise and the discharge required is as follows:

Sl. No.	Name of the canal	Length of the canal in Km.	Irrigable command area in Ha.	Discharge required in cumecs	Remarks
1)	North canal	59.52	26148.91	21.43	
2)	South canal	3.68	1313.09	1.08	-
	Total	<b>63.20</b>	<b>27462 Ha</b>		

**8. WATER RATES:** Since the project involves lift irrigation scheme, it is proposed to work on no profit, no loss basis. The water rates levied are based on the quantum of water supplied and the crops benefited.

## 9. AYACUT ROADS

The command area is already served by a network of important roads. However provision is also made in the estimate for the construction of important ayacut roads for future use.

## 10. AGRICULTURE PROGRAMME

The programme for development of agriculture activities will be drawn in consultation with agriculture department after the commencement of project.

## **11. SOCIO-ECONOMIC ASPECTS**

Majority of people depend on Agriculture and due to uncertain rainfall, the living condition of people is far below as per required standards. With the development of irrigation, the per capita income of the agriculturist is expected to rise, there by improving the economical conditions of the people. In addition to this, agro based industries like edible oil extractions can come-up by providing gainful employment and good opportunities to a large number of people.

The project is taken up to maintain a sustainable development of the entire drought prone area and to take up a planned irrigation facility to enhance the food production for the overall socio-economic development of the drought prone area. And to improve the environmental quality and living status of the population by harnessing the vast potential of available water wisely.

## **12. CONSTRUCTION MATERIALS:**

The construction materials such as cement, sand, stone etc, are abundantly available in the vicinity of the project area.

Cement is available at Bagalkot cement factory, which is about 100kms from site of work. Sand is available in abundant quantity in riverbed itself.

Rubble required for concreting and slope protection works is available within a radius of 25km from the work site.

The pervious & impervious materials required for earthen flood banks are also available within a reasonable distance. Quarry map showing the approximate location of quarries is enclosed. Further materials like structural steel gate materials etc, can be transported by means of railway and the nearest railway station is at Ugar Khurd which is about 30 kms away from the site of work and also linked with a nearby state highway road for further transportation.

### **13. ESTABLISHMENT:**

Necessary provision is made in the estimate for housing the establishment required for the construction of the project. The establishment charges are considered @ 10% of the work cost.

### **14. ESTIMATES:**

A detailed reconnaissance survey work has been conducted to locate the lift points and the jack well position and location of delivery chamber. And also a detailed topographical study has been made to trace out canal alignment and related structures. Accordingly component wise detailed estimates are prepared under separate heads. The rates adopted in the estimates are based on S.R. W.R.D.O. 2012-13 and PWD Belgaum Circle, SR for 12-13, market rates are adopted for the items where S.R. rates are not available.

### **15. PHASING OF THE TOTAL EXPENDITURE:**

It is estimated that the entire project will be completed within five years phasing and expenditure will be incurred depending on the financial inflow provided time to time.

**16. BENEFIT COST RATIO:** Benefit cost ratio has been worked out by calculating the yield before canal irrigation and the anticipated yield after canal irrigation duly accounting for the loss of yield in the submergence area and also other area to be acquired for the construction of canal and other structure. The benefit cost ratio @ 10% rate of interest is **1.08**

**17. COST PER HECTARE:** The cost per Ha. of area irrigated is **Rs.406394.00**

### **18. CONCLUSION:**

Lift irrigation is the only alternative measure to overcome the sufferings of the peoples of Athani taluka of Belgaum District, where frequent drought are observed. and the people in these areas are mostly agriculturist and if the socio-economic standard has to be improved, providing irrigation facility is obligatory in the interest of the welfare of the people and the state. As the scheme is technically feasible and economically viable. It is strongly recommended that this scheme is to be sanctioned and its construction taken-up to avoid scarcity and famine conditions in Athani taluka of Belgaum District.

## SALIENT FEATURES

## **BASAVESHWARA (KEMPWADA) LIFT IRRIGATION SCHEME**

### **SALIENT FEATURES**

#### **1) INTAKE CANAL**

- a) Length : 1250 mtr.
- b) Discharge (required) : 22.435 cumecs
- c) Discharge (designed) : 33.65 cumecs
- d) MDDL of reservoir : 517.478
- e) CBL : 514.50m
- f) Bed width : 5.10 m
- g) Side slope : 1:1
- h) Bed fall : 1:2000
- i)  $\eta$  (lined canal) : 0.018
- j) Velocity : 1.698 m/sec.
- k) FSD : 3.00m
- l) Free board : 0.75m

#### **2) JACK WELL / PUMPHOUSE**

- a) Chainage 1.25km : GL 532.50
- b) CBL : 514.50m
- c) Floor level : 535.00m.
- d) Top level(Gantry Lvl) : 545.00 m.

- e) Length of rising main : 15.90 km
- f) Dia of pipes and rows : 2.75 mtr.dia(16mm Thk) and 2 rows(MS pipes)
- a) No. of pumps required : 12 Nos. including stand by of 3244HP each.
- b) Next to Peak discharge required : 19.07 cumecs

#### **Delivery Chamber**

- a) Level @ DC : 565.00 (GL)
- b) Size of DC : 26 x 26 x 4.50

#### **5) Kempwad South canal**

- a) Length : 3.68 Km.
- b) Bed width : 1.00m
- c) FSD : 0.70m.
- d) Free board : 0.45m
- e) Velocity : 0.788m/sec.
- f) N : 0.018
- g) Side slope : 1:1
- h) Bed fall : 1:1500

- i) Discharge required QR : 1.076 cumecs
- j) Designed discharge QD : 1.131 cumecs

**6) Kempwad North canal**

- a) Length : 59.52 km.
- b) Bed width : 4.30 mtr.
- c) FSD : 2.85 m
- d) Free board : 0.75 m
- e) Velocity : 0.905m/sec.
- f) N : 0.018
- g) Side slope : 1:1.5
- h) Bed fall : 1:7500
- i) Discharge required (QR) : 18.738 cumecs
- j) Designed discharge (QD) : 22.126 cumecs

**7) Cropping pattern**

- 1) Khariff season only :
- a) Local jawar : 1.16%
- b) Hybrid maize : 11.50%
- c) Bajra : 3.45%
- d) Ground nut : 45.98%

e) Hybrid jawar : 37.91%

**8) Power**

a) Power requirement for pumping units : 31.09 MVA

**7) Command area details**

Canal	Length	Command Area
South	3.68 Km	1313.09
North	59.52 Km	26148.91
<b>63.20 Km</b>	<b>27462.00HA</b>	

**10) FINANCIALFORECAST**

1. Total cost of the project :**112036.00lakhs**

2. Cost per Hectare of land irrigated : 410035.68

3. Benefit cost ratio : 1.08

**11) No of villages Benefitted : 22 Villages of Athani  
Taulka**