

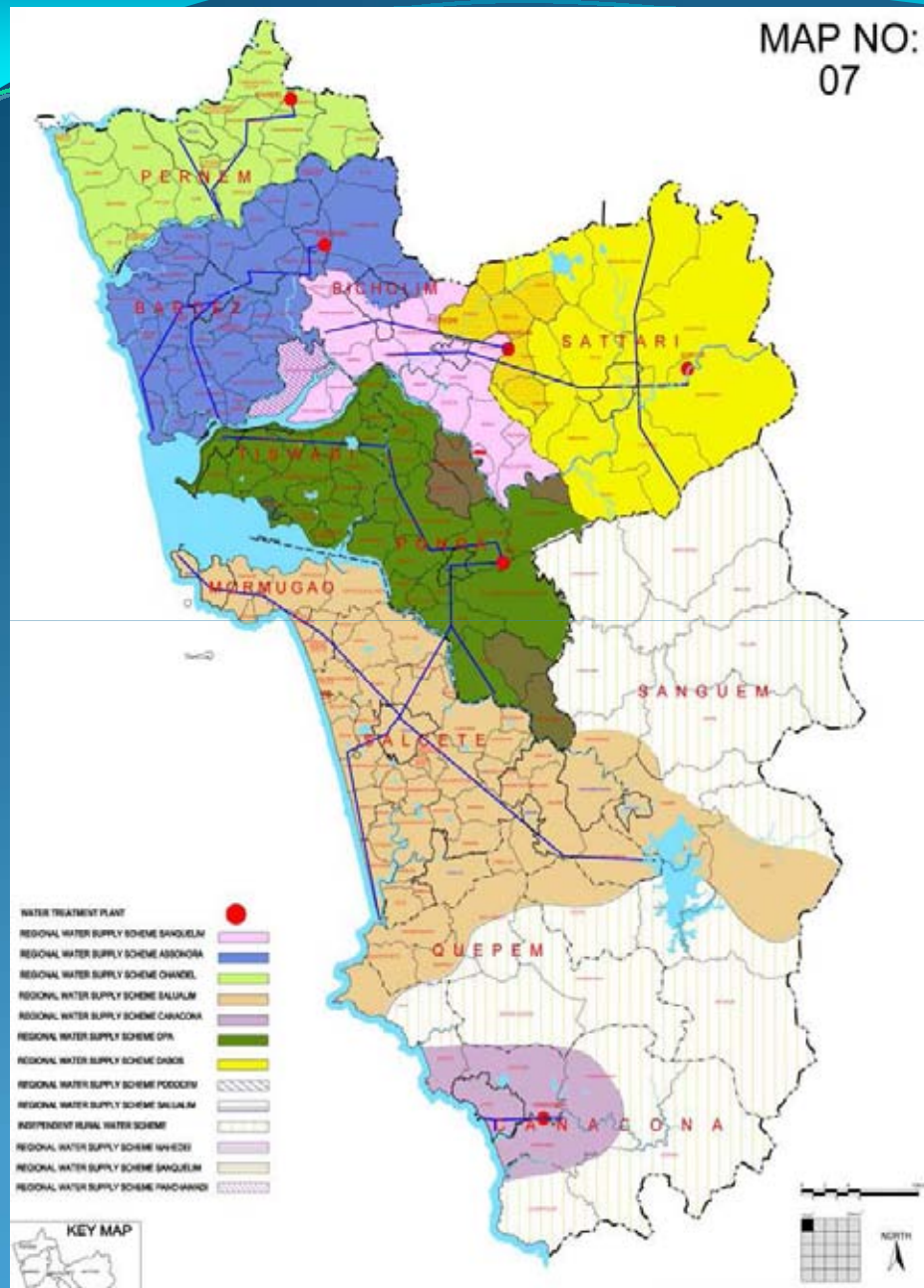


**GOVERNMENT OF GOA  
PUBLIC WORKS DEPARTMENT**

**WELCOMES YOU ALL FOR THE PRESENTATION ON**

**“WATER SUPPLY PROJECT OF THE CORPORATION  
OF THE CITY OF PANAJI” UNDER JNNURUM**





- Districts - 2 Nos.
- Talukas - 12 Nos.
- V.P. - 189 Nos.
- Villages - 337 Nos.
- Municipal Councils - 14 Nos.



# Our Achievements

- 100 % habitations have access to safe drinking water
- Uniform access to Urban & rural population
- Supply Levels much better than the GOI water norms

<u>GOI Norms</u>	<u>Average Supply Levels</u>	
• Rural areas ---	40 LPCD	82 LPCD
• Urban areas without underground sewerage	70 LPCD	143 LPCD
• Urban areas with underground sewerage	135 LPCD	143 LPCD

# Present Water Supply Scenario

**Presently, 92% of the water supply demand of the entire State of Goa is catered by 7 Regional Water Supply Schemes**

<b>Name of the Scheme</b>	<b>Qty MLD</b>	<b>Talukas Covered</b>
<b>Opa W.S.S.</b>	<b>140</b>	<b>Ponda, Tiswadi</b>
<b>Salaulim W.S.S.</b>	<b>180</b>	<b>Sanguem, Quepem, Salcete, Mormugao</b>
<b>Assonora W.S.S.</b>	<b>115</b>	<b>Bardez</b>
<b>Podocem/Sanquelim W.S.S.</b>	<b>52</b>	<b>Bicholim</b>
<b>Dabose W.S.S.</b>	<b>15</b>	<b>Sattari</b>
<b>Chandel W.S.S.</b>	<b>15</b>	<b>Pernem</b>
<b>Canacona W.S.S.</b>	<b>15</b>	<b>Canacona</b>
<b>Total</b>	<b>532</b>	

## VISION 2025

- Optimum utilization of water
- Providing 24 x 7 Sustainable water supply to all
- Supply levels- 100 LPCD to rural areas and 150 LPCD to urban areas
- Ensuring that every household in the State disposes of its sewerage in environmentally secured manner whether through sewerage network system or stand alone disposal system and ensuring that every household has access to toilets.



## ***JNNURM – PANAJI***

➤ Public Works Department is the Executing Agency for The Corporation City of Panaji for “***WATER SUPPLY & SEWERAGE FACILITIES***” Under ***JNNURM***

- ***Total Present Demand*** : ***30.00 MLD.***
- ***Total Supplied*** : ***20.20 MLD***
- ***Total Shortfall*** : ***9.80 MLD***



# PANAJI OUTLINE DEVELOPMENT PLAN-2011



The map illustrates the layout of the Pongar Water Supply System. It features a prominent blue line representing the main water supply pipeline, which branches out into smaller green lines. The system originates from a reservoir area in the upper left, indicated by a light blue shaded region. The terrain is depicted with green hatching to represent hills. A grey line indicates the road network. A north arrow is positioned in the top right corner. The map is titled 'INDEX MAP OF PONGAR WATER SUPPLY SYSTEM'.



## **EXISTING WATER SUPPLY SYSTEM**

- **The present water supply system of Panaji Corporation is a part of the combined water supply system for Tiswadi and Ponda Talukas.**
- **There exists 4 WTP's of 8 MLD 12 MLD at Opa and 55 MLD & 45 MLD at Curti. The water is transmitted from Curti to service reservoirs at Altinho, Panaji , a distance of 40 K.Ms by gravity mains and distributed to the city from there.**

# **PRESENT OPA WATER SUPPLY SYSTEM**

- **Water Treatment Plants (WTPs) at OPA:**

1. **Plant I (8 MLD) which was commissioned in 1954**
2. **Plant II (12 MLD) which was commissioned in 1967**

- **Water Treatment Plants (WTPs) at Curti:**

3. **Plant III (55 MLD) which was commissioned in 1972**
4. **Plant IV (40 MLD) which was commissioned in 2004**

# PRESENT WATER SUPPLY DISTRIBUTION

## ZONES OF CCP AREA

S. No.	Zone	Capacity of Service Reservoir	Localities Served	Quantity of Water Supplied (MLD)
1	Service Reservoirs at Altinho	10,100 Cu.M	Panaji city	15.00
2	Service Reservoirs at Ribandar	450 Cu.M.	Ribandar	1.20
3	Service Reservoirs at Nagali , Talegao	800 Cu.M. – 2 Nos. (Talegao), 650 OHR, 150 (Nagali)	part of CCP area in Talegao	4.00
	Total .....			20.20MLD



## **DRAWBACKS OF THE EXISTING WATER SUPPLY SYSTEM**

- **The present supply is intermittent and the supply is only for 2 hours.**
- **Some of the distribution mains are very old and there are heavy leakages in the system.**
- **Distribution of water is widely varying in terms of pressure and duration.**

## DRAWBACKS OF THE EXISTING WATER SUPPLY SYSTEM

- Most of the service connections in Panaji are G.I and are corroded and leaking
- Leaking pipelines have high potential for contamination.
- NRW is nearly 35%
- Lack of proper zoning.
- Multiple valve operations



# **Water supply projects proposed for the Sector in the City Development Plan**

- **Water Supply**

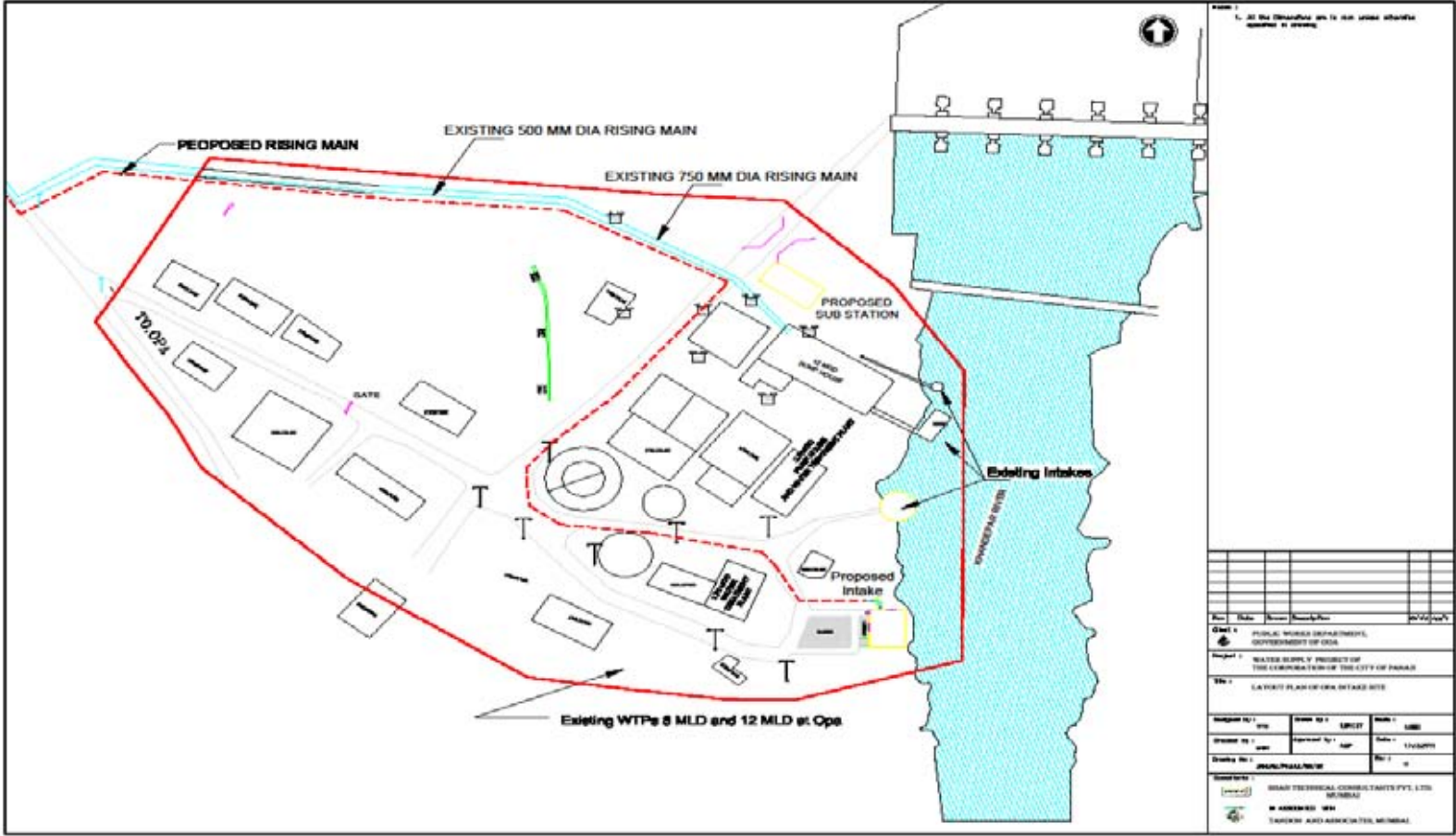
- a) Redesign of the distribution network to ensure adequate terminal pressure.
- b) GIS Inventory Mapping Database Management System. Additional WTP, reservoirs etc.
- c) Efficient NRW reduction mechanism.
- d) Sustainable tariff structure.
- e) Efficiency in Operation and Maintenance.
- f) Water Resources Management.
- g) Capacity building of staff.



## **SOURCE OF WATER**

- **The Khandepar river flowing through Opa at Ponda Taluka is the place of Intake. The river flow is controlled by Water Resource Department (WRD) and sufficient water will be made available for the exclusive use of Panaji and other areas of Ponda and Tiswadi Talukas.**

## PROPOSED INTAKE SITE - OPA



## ESTIMATION OF WATER DEMAND FOR THE YEAR 2045

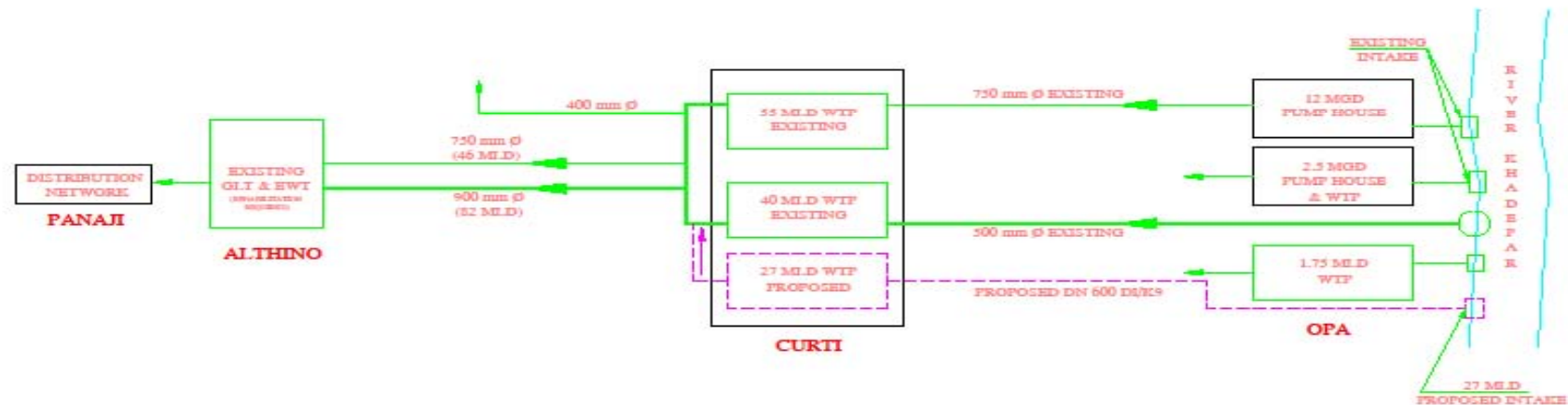
S. No.	Category	No. of persons / Beds / Seats	LPCD as per CPHEEO or NBC	Demand in MLD
1	Domestic	111710	135	15.08
2	Tourists	38926	45	1.75
3	Schools & Colleges	25088	45	1.13
4	Hostel	999	135	0.13
5	Hospital			
(i)	> 100 beds	1153	450	0.52
(ii)	<100 beds	261	340	0.09
6	Hotels			
(i)	5 star	1122	320	0.36
(ii)	Other	5102	180	0.92
7	Restaurant	3150	70	0.22
8	Office & Institutions	12228	45	0.55
9	Cinema Theaters	4072	15	0.06
10	Bus Station	39188	45	1.76
Add 15% Distribution losses (UFW)				3.98
Add 1.5 % transmission losses and 1.5% WTP Losses				0.70
Total projected Water Demand for 2045				27.26
SAY				27 MLD

## **PROJECT CONCEPT**

- **The shore intake structure on Khandepar river at Opa will provide dependable raw water supply.**
- **Plant & Machinery : Raw water pumps, motors, instrumentation inlet outlet piping and electrical substation.**
- **Raw Water Pumping main from Intake at Opa to WTP at Curti.**
- **27 MLD Capacity Water Treatment Plant are proposed at Curti.**
- **Treated water will be transmitted through the existing Gravity mains by gravity to the existing service reservoirs at Altinho.**
- **The distribution system is redesigned considering the demand of year 2045.**
- **It is proposed to replace old C.I. Distribution Network Lines by D.I / H.D.P.E mains.**
- **Pressure control valves are proposed to control the nodal pressures within the limit.**
- **Flow meters are proposed to be installed to monitor the flow in to the District Metering Areas.**



# SCHEMATIC DIAGRAM OF THE PROPOSED SCHEME



# **SALIENT FEATURES OF THE PROJECT**

- **INTAKE WORK :**

- **Individual delivery pipe of 450 mm ø .**
- **Horizontal Centrifugal Pumps (2W+1S), 400 KW Each**

- **RAW WATER RISING MAIN :**

- **DN 600 mm M.S. = 1.7 Km**

- **WTP :**

- **Conventional WTP : 27 MLD at CURTI**

**CLEAR WATER RESERVOIR CAPACITY: 1650 Cu.M**



## SALIENT FEATURES OF THE PROJECT

- **Distribution network**

Total length :

DI pipes 350 mm to 450mm - 7179 mts

HDPE pipes 90mm to 315 mm - 80347 mts

- Total Nos. of Service connection to be replaced - 15252 nos

- Reinstatement of Road ----- 71500 sqmt

# PROJECT COST

S.No.	Description	Cost
		(Rs. in Lakhs)
1	Intake & Pump House	1,088
2	Raw Water Pumping main	313
3	Water treatment plant & clear water reservoir	1,199
4	Distribution Network	4,076
5	Utility shifting & Rehabilitation	50
6	Rehabilitation of Service reservoirs	29
7	Reduction of NRW	58
	Sub Total	6,813
	Consultancy Charges (3%)	204
	Contingencies (3%)	204
	Administrative Charges (1%)	68
	GRAND TOTAL(Rs. In Lakhs)	7,290

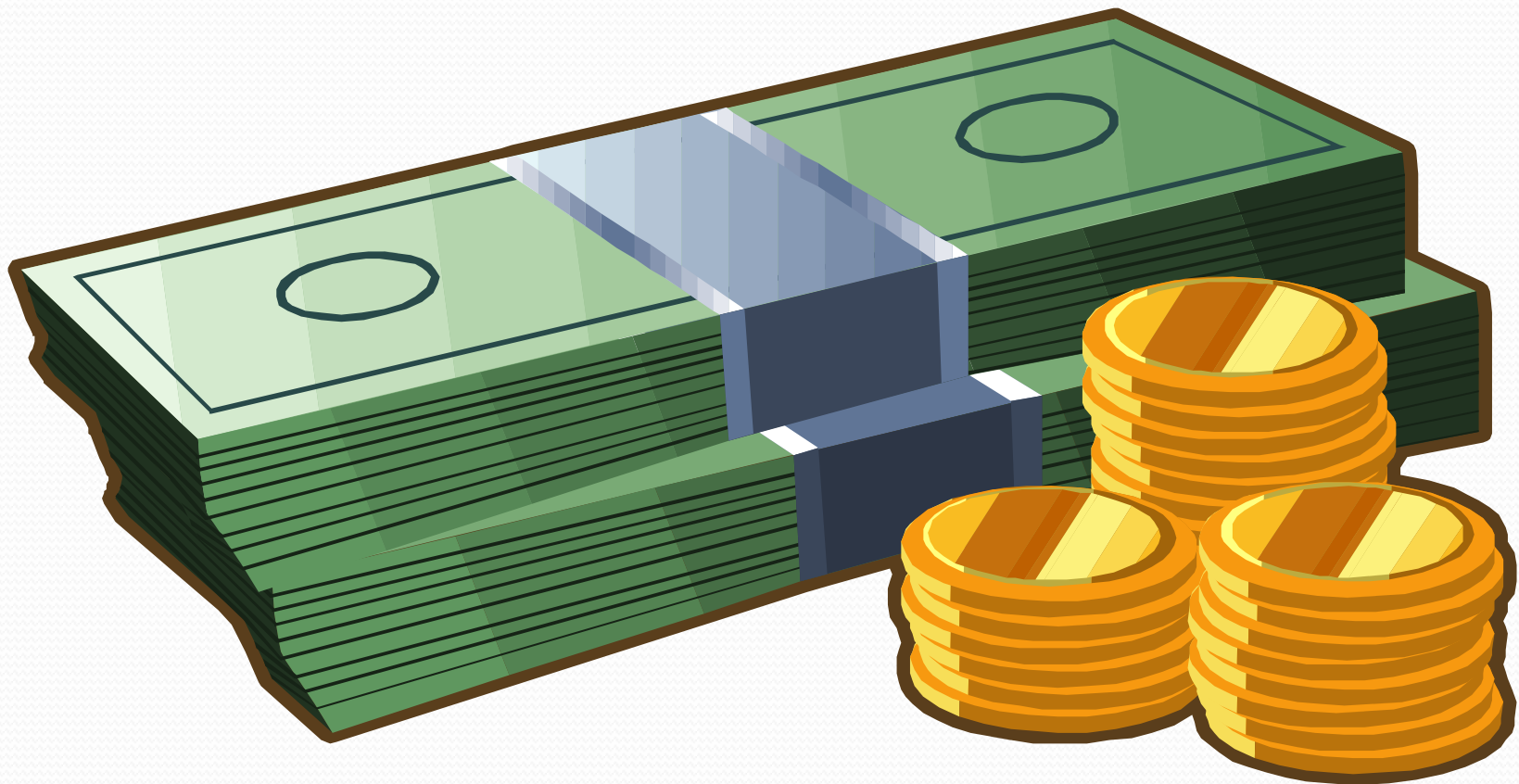
# PROJECT FINANCIAL STRUCTURING

S. No.	Govern-ment	Project Contribution Source	Amount (Rs. Lakhs)	% Share by specific source	% Share by govt. entity	Remarks
1	Central Government / JNNURM	ACA Grant	5450.44	80%		As per JNNURM Norms.
2	State Government of Goa	Grant towards its share in project	681.3		10%	Provision is made as required.
3	Corporation of the City of Panaji	CCP's own Contribution / Resources / Debt	681.3		10%	Provision is being made in the CCP's budget and the same will be released as and when required.



## **TARIFF & USER COST RECOVERY**

Presently with the existing tariff, the O & M cost of the water supply system being recovered



## PRESENT REVENUE FROM WATER SUPPLY

Total Quantity of water supplied in project area	Losses due to UFW @15%	Effective Quantity of water supplied in project area	70% of Water to Domestic Consumers		30% of Water to Commercial /establishment Consumers		Total revenue collected in project area
			Qty	Revenue collected @Rs 2.50/m3	Qty	Revenue collected @Rs 30/m3	
15000 m3	2250 m3	12750 m3	8925 m3	Rs 22313 per day	3825 m3	Rs 114750 per day	Rs 137063 per day
				Rs 8144063 per year		Rs 41883750 per year	Rs 41906063 per year

## ANNUAL O&M COST

S. No	Particulars	Quantity	Rate	Amount
1	Chlorine	7.35 M.T	23000.00	169050.00
2	Allum	19.08 M.T	12500.00	241875.00
3	Bleaching Powder	6.58 M.T	22000.00	144760.00
4	Lime	15.79 M.T	11500.00	181585.00
5	Electricity			18900000.00
6	Staff salary for Operation and Maintenance of Treatment Plant & Distribution system			60,72,000.00
			<b>TOTAL</b>	<b>25705895.00</b>

# INTERNAL RATE OF RETURN

- The Internal Rate of Return for the scheme is:

Total revenue collected in project area per year (A)	Details of Annual Expenditure for Distribution system (B)	Total revenue earned in Water supply sector per year (A-B)
Rs 4,19,06,063	Rs 2,57,05,895	Rs 1,62,00,168

## PROJECT IMPLEMENTATION PLANNING

Sr. no.	Components	Estimated cost in Lakhs	Tentative Date of finalisation of Bid	Tentative Date of commencement of work	Scheduled date of commissioning of project
1	Intake and Head works incl. substation And raw water pumping main from Opa to Curti.	1491.85	Sept. 2013	October. 2013	December 2014
2	27 MLD capacity WTP at Curti	1198.93	Sept. 2013	October. 2013	December 2014
3	Distribution system to CCP	4190.21	Sept. 2013	October. 2013	December 2014





**THANK YOU !**