Greetings from

Bangalore Water supply and Sewerage Board

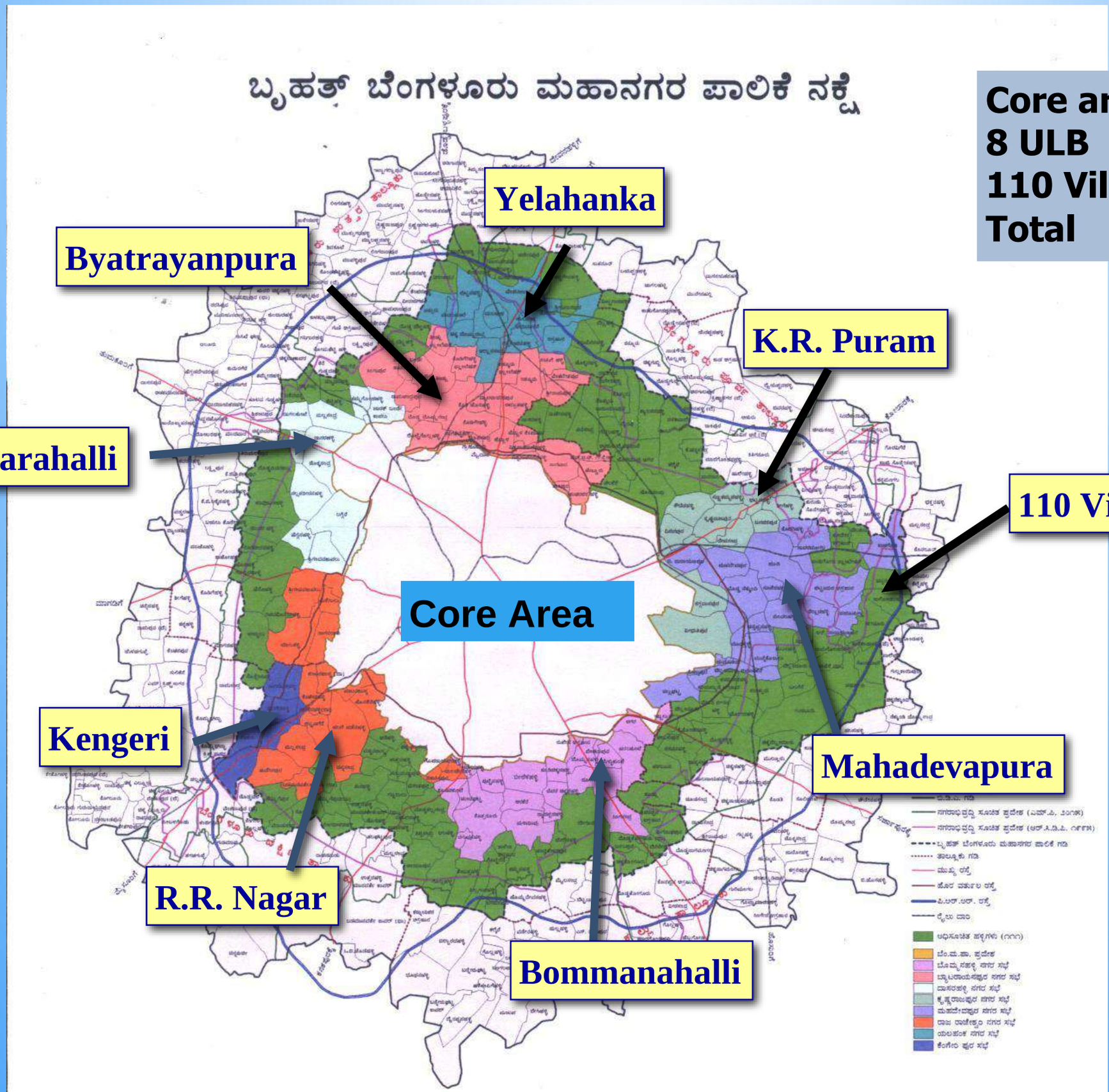
BWSSB AND ITS FUNCTIONS

- Board is an autonomous body Formed under State legislature GoK Act on 10-09-1964 for Water Supply & Sewage disposal.
- One of the first Water & Sanitation Utility in India
- Jurisdiction: BBMP Area
  - Bengaluru Core area of 245 Sqkm
  - 8 ULB's of 330 Sqkm (7 CMC AND 1 TMC)
  - 110 Villages of 225 Sqkm.
  - Total area on service : 800 Sq Km
  - Total population on service :13 Million
- Mandates:
  - Adequate water supply to meet demand, creation of sewerage network & safe disposal of sewage
  - Preparation, implementation of plans & schemes for augmenting water supply & safe disposal of sewage.
  - Levy and collection of water charges on 'no loss no profit basis' for sustainability of the system.

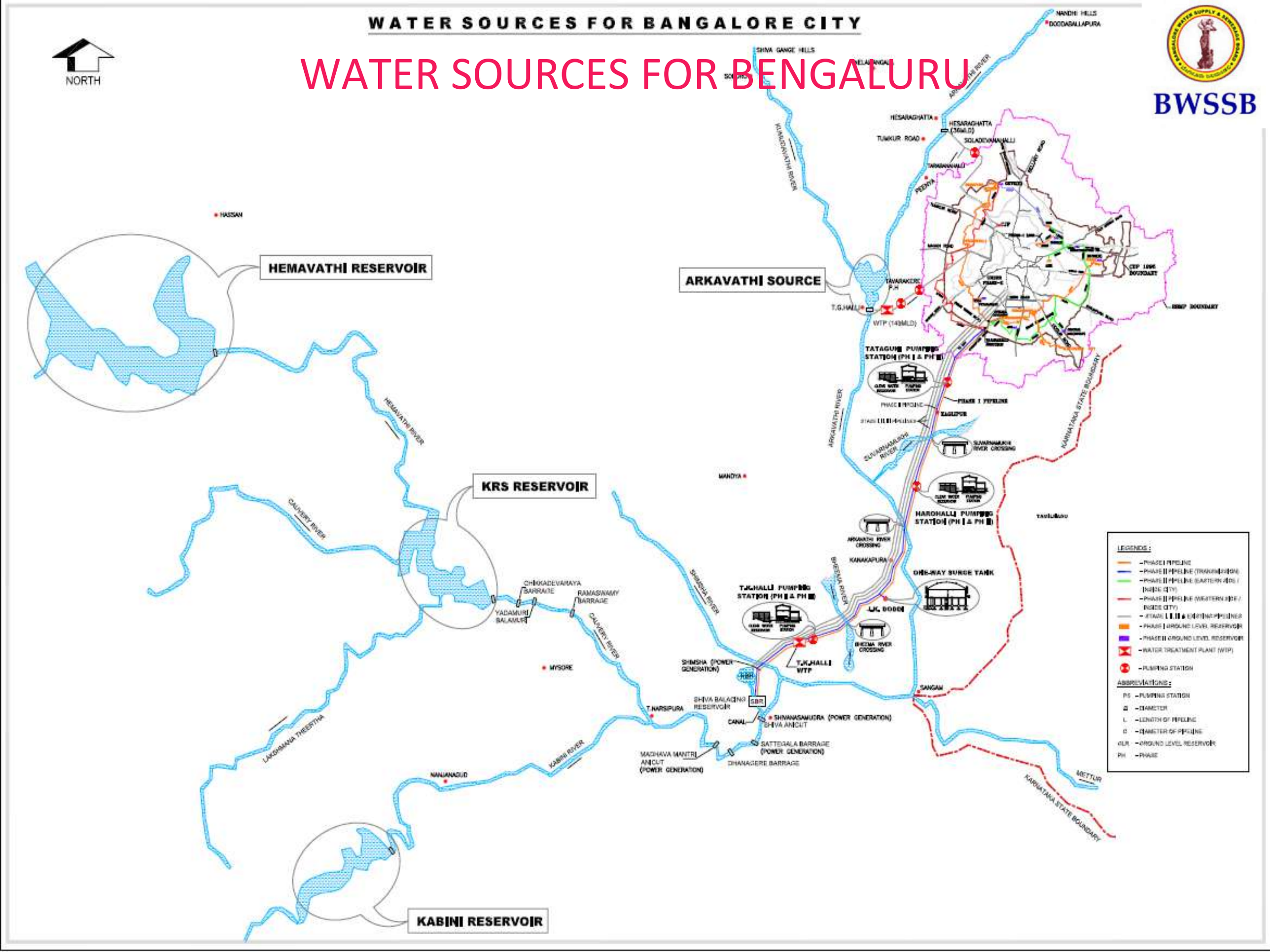
BWSSB Expanded Area

BWSSB

Core area	245 Sq. Km
8 ULB	330 Sq. Km
110 Villages	225 Sq. Km
Total	800 Sq. Km



WATER SOURCES FOR BENGALURU



CAUVERY ONLY SOURCE OF WATER SUPPLY

BWSSB

Shiva Anicut - river Cauvery is the source of water for Bengaluru.

BWSSB

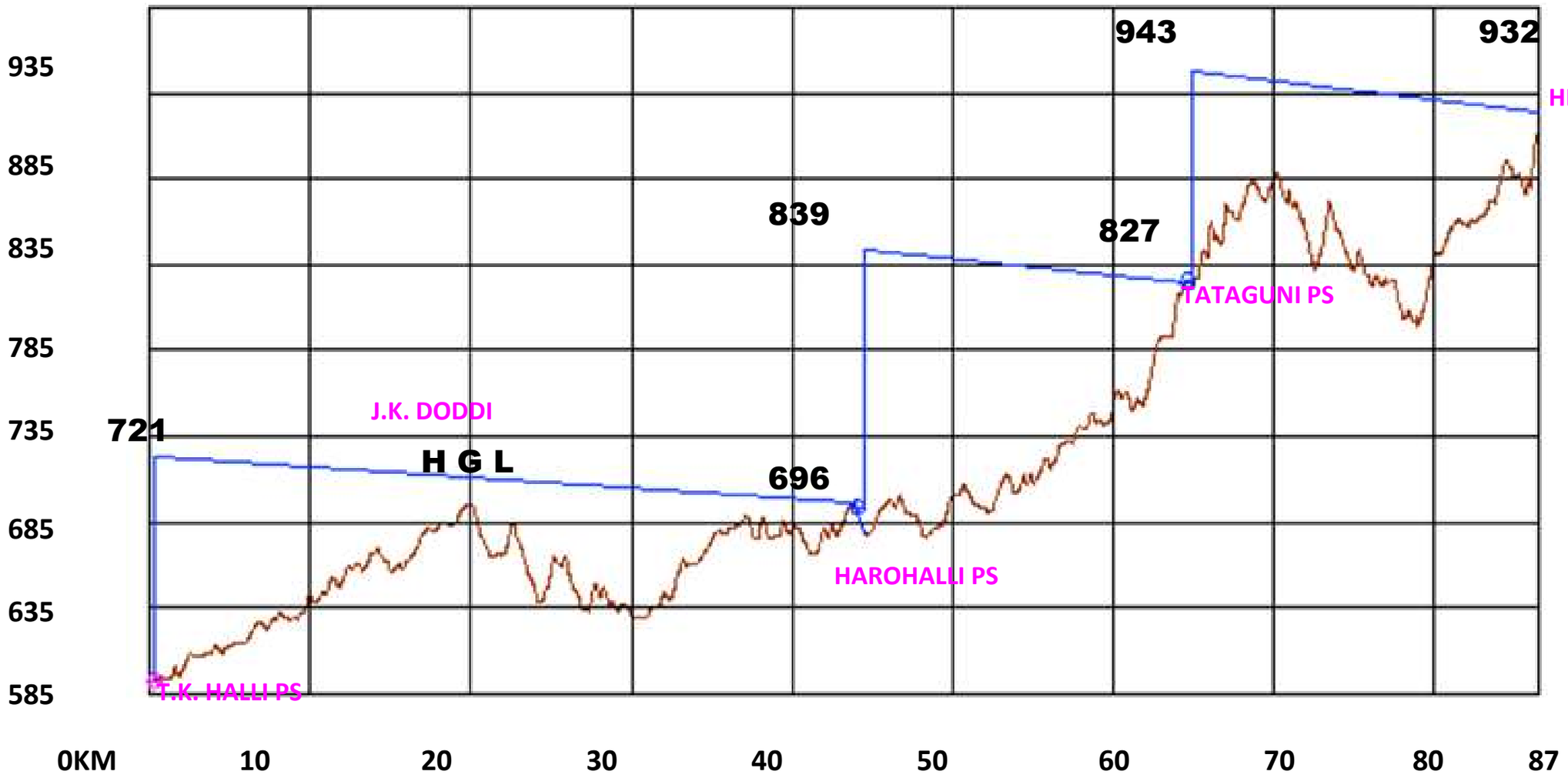
Water treatment plant at T.K. Halli

Pumping station at T.K. Halli

BWSSB

TRANSMISSION MAIN FROM T.K.HALLI TO BENGALURU

BWSSB



Length of pumping line - 100 Km

Static head - 358 Mtrs.

Frictional head - 105 Mtrs

Total head - 463 Mtrs.

BULK WATER SUPPLY

Projects	Year of commissioning	Installed Capacity (MLD)	Present Supply (MLD)
Arkavathy (TG Halli)	1933	Nil	NIL
Cauvery stages			
I	1974	135	140
II	1982	135	140
III	1993	325	325
IV, Phase – I	2002	300	300
IV, Phase – II	2012	550	550
Total Supply		1445	1455
Private and Public borewells			400
Grand Total Supply			**1855**

PROJECTED WATER DEMAND & SHORT FALL

BWSSB

Year	Population (Million)	Water Demand (MLD)	Water Demand (TMC)	Present Supply		Shortfall in Demand	
				MLD	TMC	MLD	TMC
2011	8.499	1400	18.05	950	12.25	450	5.80
2019*	12.90	2090	26.97	1450	19.00	640	8.25
2021	13.00	2150	27.70	1450	19.00	700	9.03
2024	13.20	2200	28.40	2335**	30.10	-135	-1.75
2031	14.296	2900	37.39	2335	30.10	565	7.30
2041	17.085	3400	43.84	2335	30.10	1065	13.75
2051	20.561	4100	52.86	2335	30.10	1765	22.75

*** Total population considered for 800 sq.km. of BBMP area**

****During 2024 from Yettinaholle source through T.G.Halli, 110 MLD treated water will be augmented**

**** During 2024 from Cauvery source through T.K.Halli 775 MLD water will be augmented**

GOK has allocated another 6TMC from Cauvery source for drinking water purpose

WATER SUPPLY SYSTEM

BWSSB

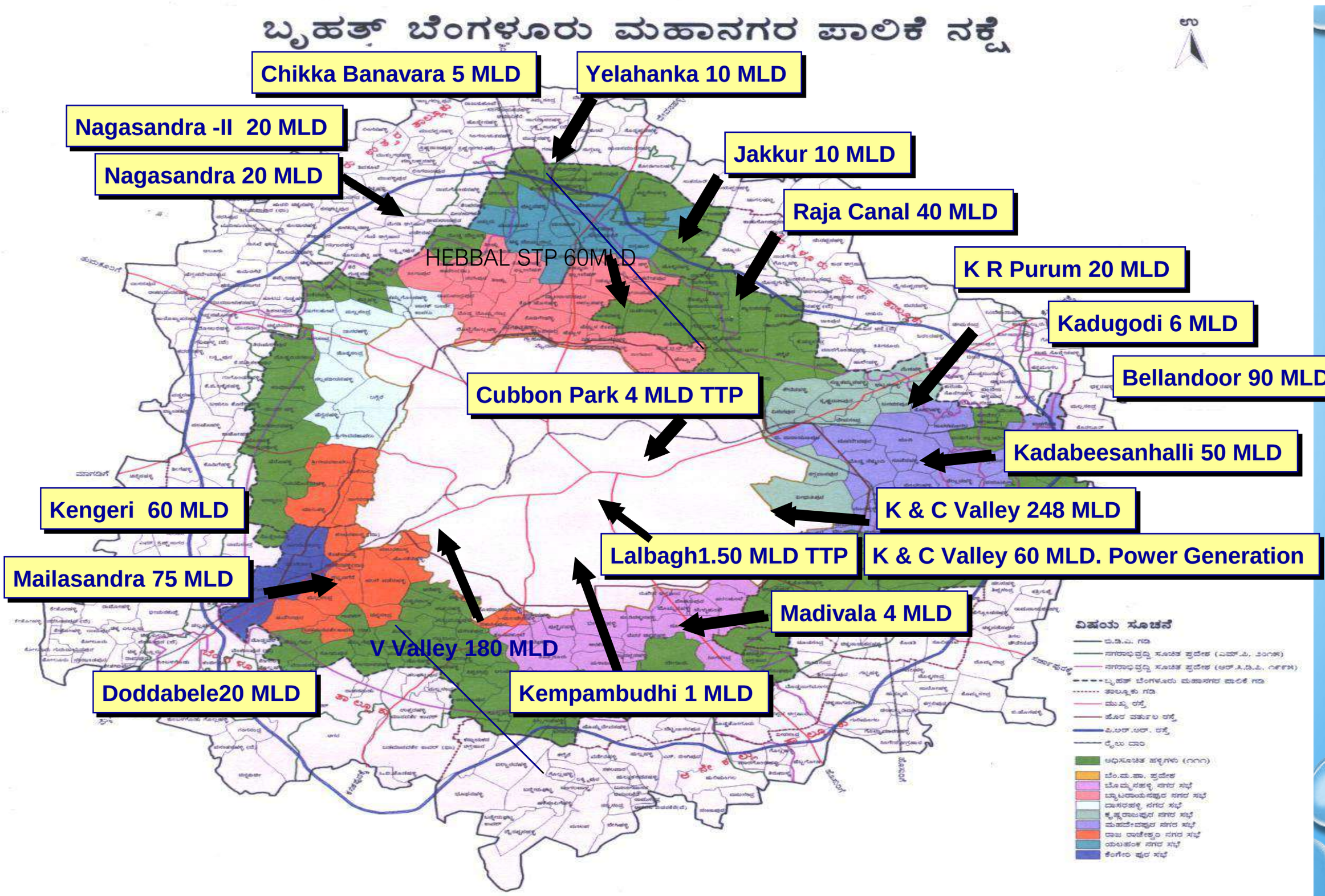
Present Supply from Cauvery source	1450 MLD
Present population including 110 villages	12.9 Millions
Area of water supply served Population served	570 sq. kms 10 million
House service connections	10.70 lakhs
Total length of water supply pipelines	14,194 kms
Pipe diameters' range	100 to 3000 mm
Number of Ground Level Reservoirs	70 (1067 ML)
Number of Over Head Tanks	59 (39.5 ML)
Booster pumping stations	62 nos
Public taps providing free water	7,477 nos
Water tanker lorries	65 nos
Non Revenue Water (NRW)	28%
Average per capita consumption	108 L/day
Average cost of water	41 Rs/kL

SEWERAGE SYSTEM

1. Total length of sewer system - 11,894 Kms
2. Number of manholes - 3.91 lakhs
3. Sanitary house service connections - 9.70 lakhs
4. Number of sewer cleaning combination of Jetting & Sucking machines for cleaning & maintaining of sewer system - 175 nos
5. Total no. of High Pressure Super Sucker cum Jetting Machine - 6 nos.
6. Recycling type sewer cleaning machine -1 no
7. Sewerage network
   - ✓ Laterals (< 300 mm dia) – 10413 Kms
   - ✓ Trunk Sewers (>300 mm dia) – 1481 Kms
   - ✓ Number of STPs – 32
8. Sewage generation – 1480 MLD
9. Sewage treatment capacity – 1381 MLD
10. Average treatment – 1200 MLD

Location Of existing STP's – 32 Nos of 1381 MLD capacity

BWSSB



BWSSB's ACTIONS TO MITIGATE WATER DEMAND

1.REUSE OF TREATED WASTE WATER

2.RAIN WATER HARVESTING IN MEGA-SCALE

3.Non Revenue Water (NRW) REDUCTION IN DISTRIBUTION

4.CIRCULAR WATER SUPPLY USING LAKE WATER TREATMENT

5.ARKAVATHI RIVER REJUVENATION TO USE T.G. HALLI AS WATER SOURCE WITH YETHINAHOLE WATER

6.COMMISSIONING OF CWSS 5 TH STAGE PROJECT-775 MLD.

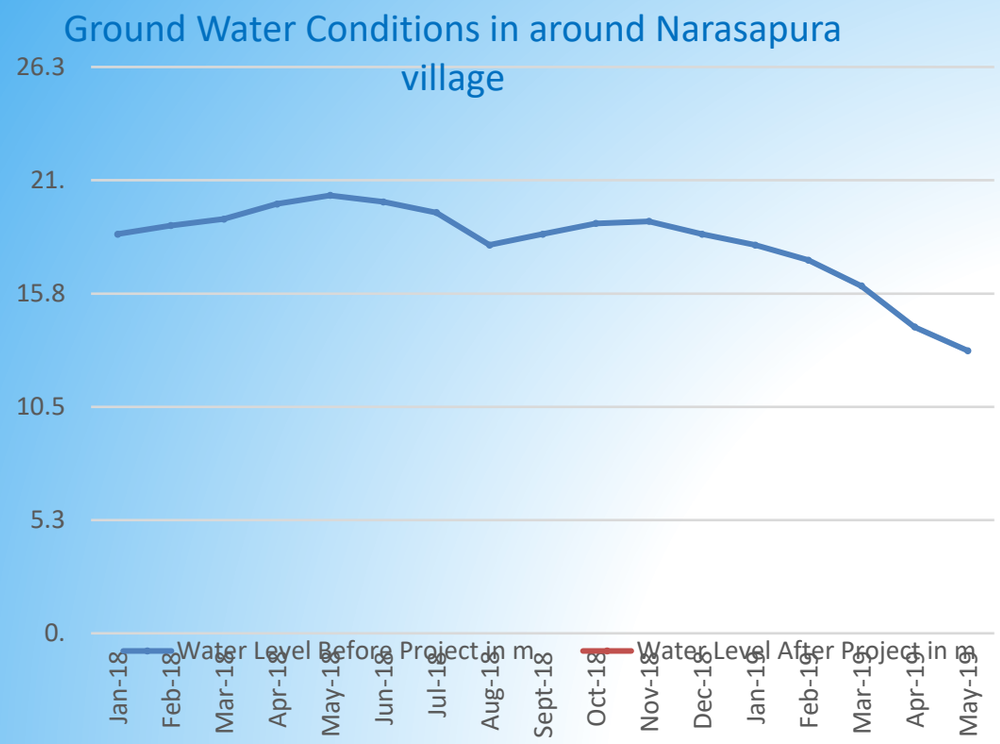
7.CWSS 6th STAGE. Additional 6 TMC WATER TO BANGALORE

8.FURTHER IMPROVEMENTS IN IT SECTOR OF BWSSB

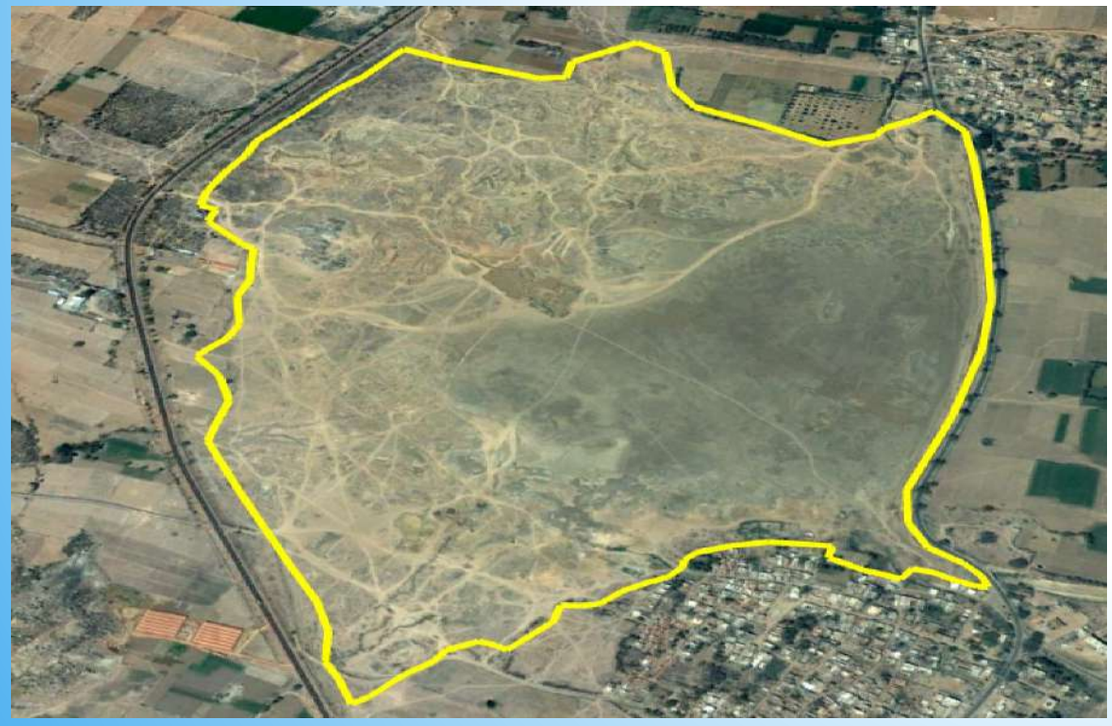
REUSE OF TREATED WASTE WATER

- ***850 MLD out of 1300 MLD treated waste water is being reused.***
- ***Treated water from 40MLD TTP at Devanahalli is being supplied to KIADB Industrial area.***
- ***Tertiary treated water from 10MLD TTP at Yelahanka is being supplied to KIAL, IAF, BEL, Rail Wheel Factory, ITC etc.***
- ***Tertiary treated water from 4MLD TTP at Cubbon park is being supplied to Raj Bhavan,Vidhana Soudha, High Court, Golf Course and Cubbon park etc.***
- ***Tertiary treated water from 1.5MLD TTP at Lal Bagh is being supplied to Lal Bagh.***
- ***Tertiary treated water from 15MLD TTP at Jakkur is being supplied to KPCL Gas Based Power plant at Yelahanka.***
- ***From 308 MLD STP at K&C Valley and 90 MLD STP at Bellandur, about 380 MLD of Secondary Treated Water is being supplied to Minor Irrigation for filling the lakes/tanks of Kolar District***
- ***From 40 MLD STP at Raja Canal, 90 MLD at Hebbal and 20 MLD STP at Horamavu, about 150 MLD of Secondary Treated Water is being supplied to Minor Irrigation for filling the lakes/tanks of Chikaballapur District***

Narasapura Tank Filled with Secondary Treated Sewage Water



Name of the Tank	Narasapura Tank
Latitude	13° 7'56.12"
Longitude	78° 0'5.18"E
RL (Mtrs)	864.342
Storage Capacity (MCft)	95.23



SCENARIO OF TANK BEFORE FILLING & AFTER FILLING

Name of the Tank	Sommbudi Agrahara Tank
Latitude	13°13'1.39"N
Longitude	78° 3'12.92"E
RL (Mtrs)	829.658
Storage Capacity (MCft)	395.00

S. AGRAHARA TANK

PRE AND POST IMPLEMENTATION OPEN WELL SCENARIO OF K&C VALLY AND HN VALLEY PROJECTS

Benefits :

- The shallow unconfined aquifer has responded well to the Secondary Treated Water falling Jodi Krishna Pura Lake
- The once dried up borewells are now filled with water which shows that there is an increase in ground water table in surroundings of Jodikrishnapura and Narasapura lakes
- This open well and borewells are full and irrigates 20 acres of land surrounding the lakes through drip irrigation

Recycle & Reuse of Water

As per Rule No. IX of BWSSB Act 1964 under Recycle water it indicates that where Recycled water is supplied from the treatment plants of Board, water charges shall be levied at the rates. The prevailing rates are as follows.

(i) Secondary treated water: (1) Rs. 10/- per KL for supply at the plant premises through lorry tankers (2) Rs. 15/- per KL for supply through pipeline subject to entire cost of the pipeline being borne by the beneficiaries.

(ii) Tertiary Treated Water: (1) Rs. 15/- per KL for supply at the plant premises through lorry tankers. (2) Rs. 25/- per KL for supply through pipeline subject to entire cost of the pipeline being borne by the beneficiaries.

- Recently BWSSB has started supply of tertiary treated water **through Tankers** for non potable purpose **@ Rs.360/- (6KL).**

- Presently tertiary treated water being supplied to BIAL, Horticulture Department, Raj Bhavan, Vidhana Soudha, High Court, BEL, Railways, Arvind Mills, ITC, IAF etc.

- Treated water is being used for various construction purposes.

1.50 MLD Lalbagh TTP

BWSSB

Process - Extended Aeration Process + Plate Settler + UV disinfection

60 MLD V Valley Tertiary Treatment plant.

BWSSB

60 MLD STP @ K&C VALLEY WITH POWER GENERATION

BWSSB

BWSSB

BELLANDOOR AMANIKANE STP 90 MLD

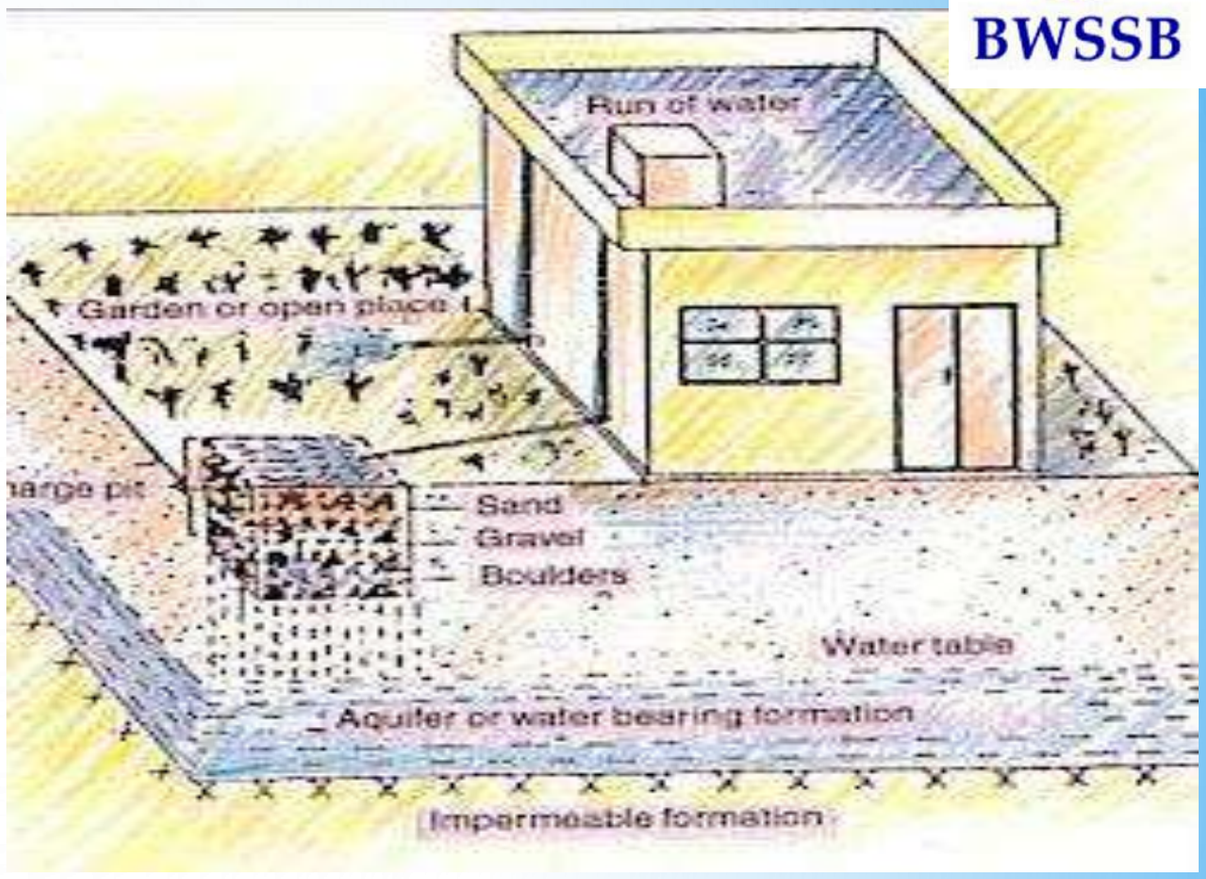
Rainwater Harvesting

BWSSB

BWSSB has made mandatory to adopt Rain Water Harvesting to all the prescribed buildings in the BBMP Area by 31st July 2023

- ***1.88 Lakhs buildings RWH installed***

- ***Existing buildings more than 2400 sqft shall install RWH New buildings more than 1200 sqft shall install RWH***

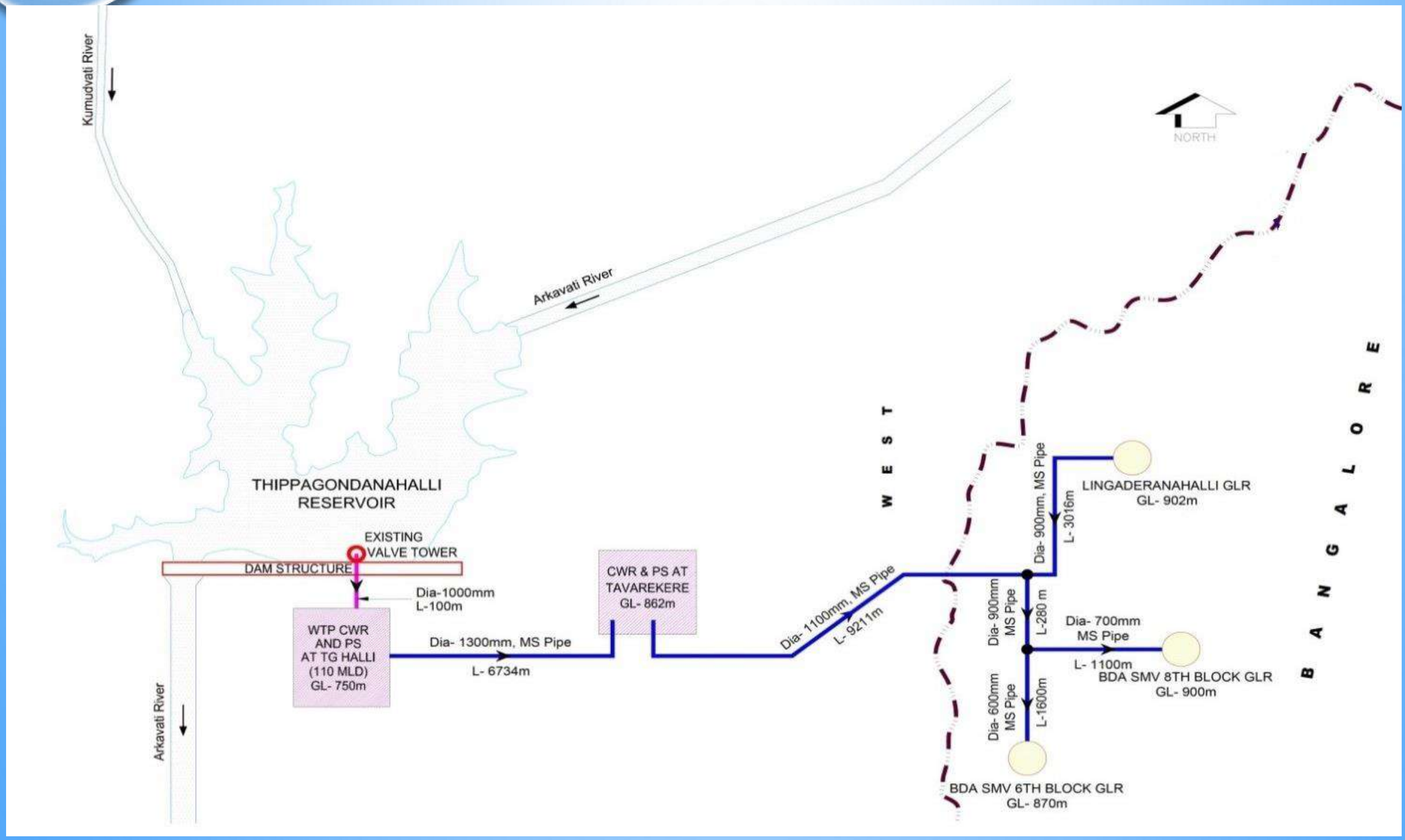


- ***Sir.M.Visvesvaraih RWH Theme park, a unique structure on water conservation and RWH to create awareness among the general public.***
- ***Maintains Help Desk at RWH Theme Park & at KSCST to create awareness.***

Rain water Harvesting Theme Park at Jayangara for providing information about RWH and conservation of water

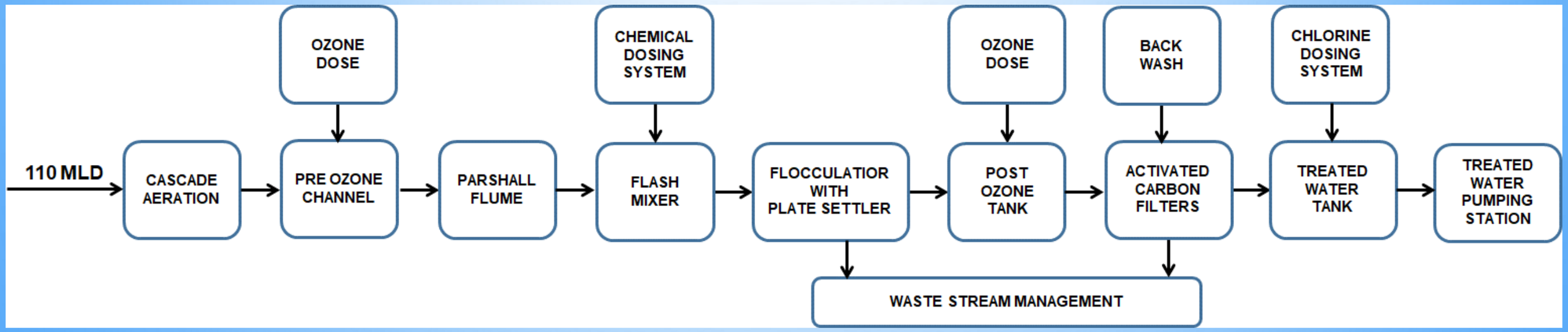
REJUVENATION OF TG HALLI RESERVOIR

KEY PLAN TG HALLI RESERVOIR SYSTEM



TG HALLI 110 MLD AWTP

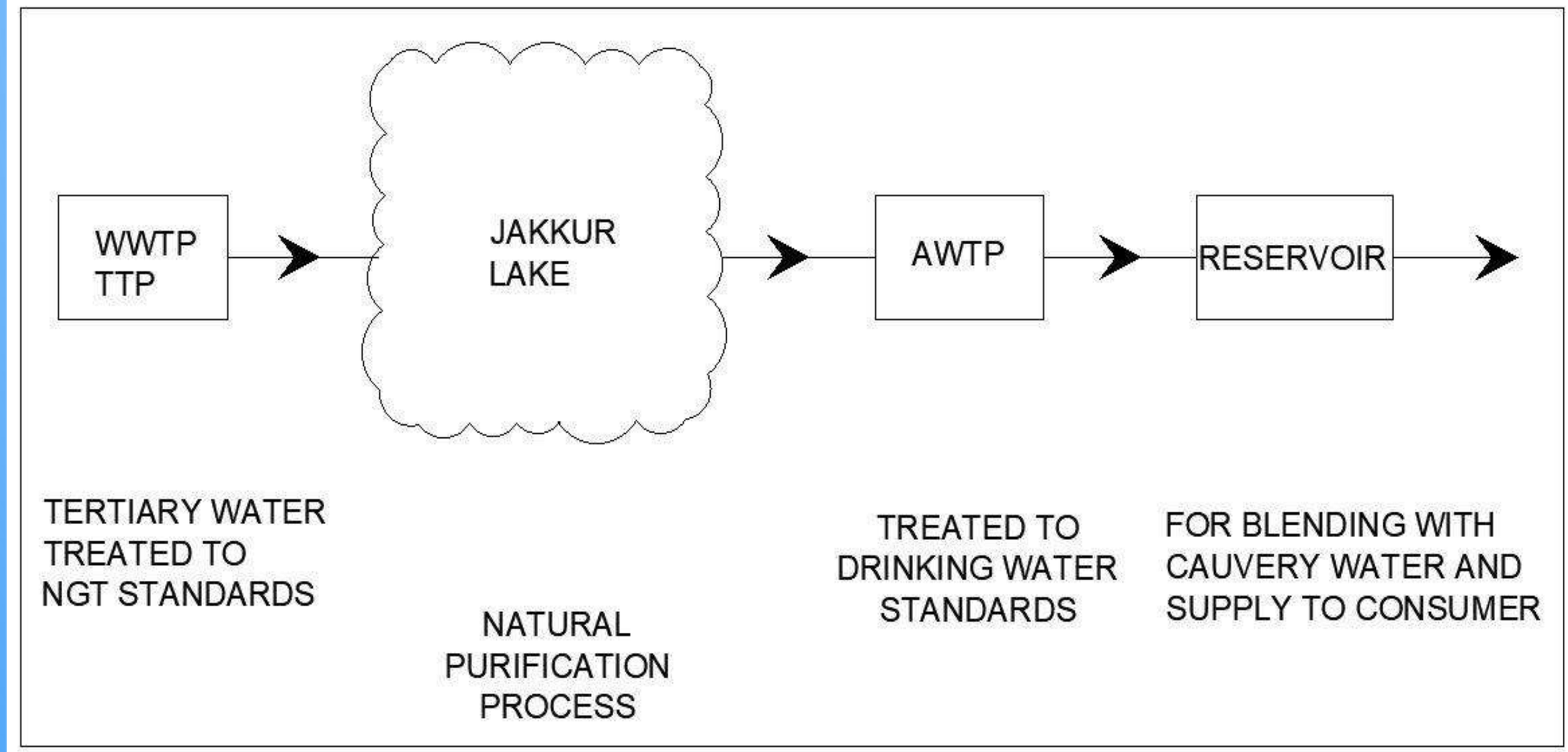
SCHEMATIC REPRESENTATION OF WATER TREATMENT PLANT



ADVANCED WATER TREATMENT PLANT (AWTP) AT JAKKUR

- In the recent years Bangalore has faced the severe water crisis.
- Failure of monsoon leading to lake dried and depleted ground water table, affecting the population of peripheral areas.
- Emphasising on water conservation and reuse of eco-friendly water.
- As a part of this, AWTP is proposed in Jakkur facilitating to treat the lake water
- The treated water from AWTP is proposed to be blended with Cauvery water, thus reducing the dependency on fresh water.

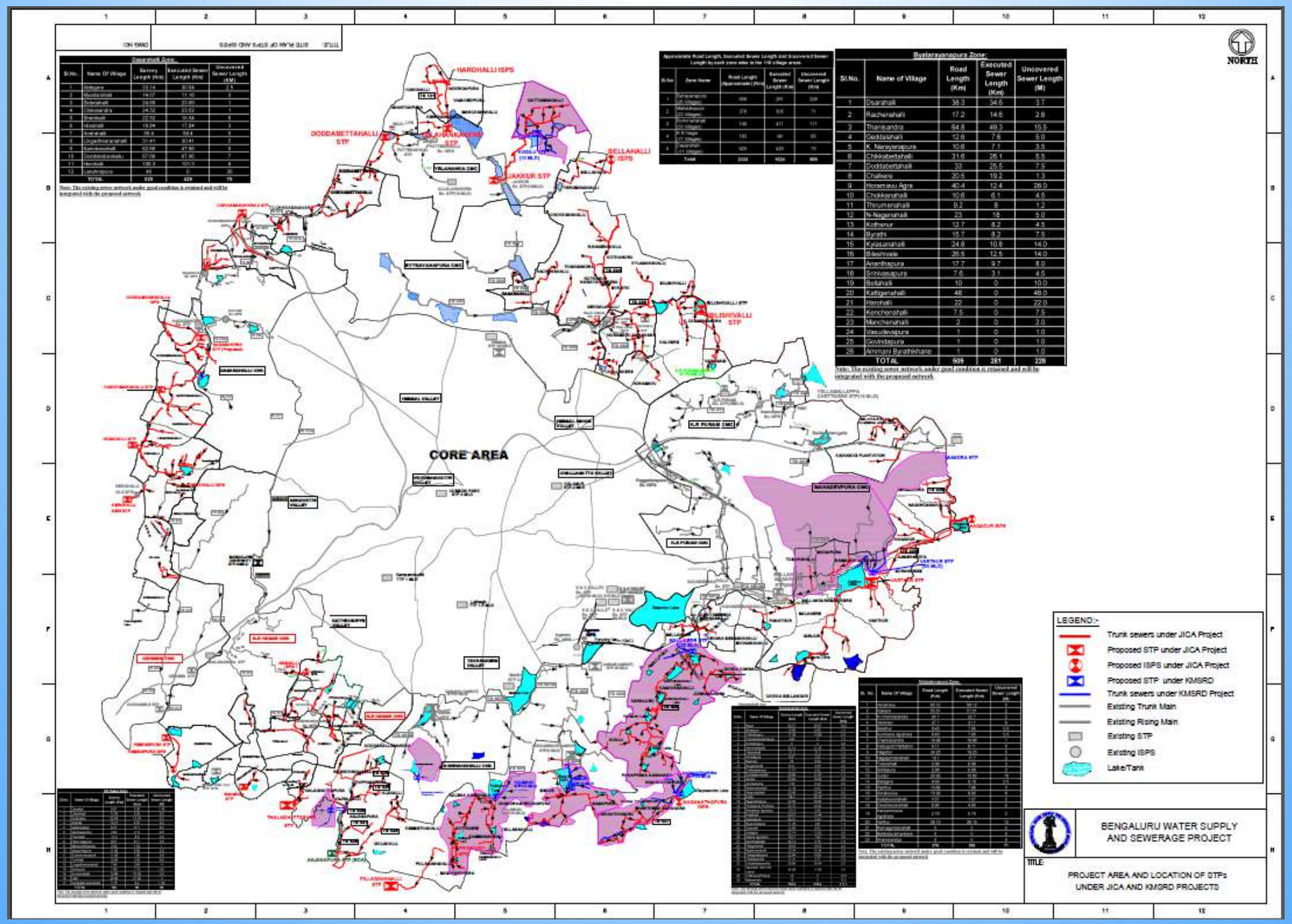
SCHEMATIC REPRESENTATION OF 6 MLD AWTP



JAKKUR LAKE VIEW

KARNATAKA MULTI SECTORAL RESILIENCE DEVELOPMENT PROJECT

CATCHMENT AREAS



Byatarayanapura Zone:

Sl.No.	Name of Village	Road Length (Km)	Executed Sewer Length (Km)	Uncovered Sewer Length (M)
1	Dsarahalli	38.3	34.6	3.7
2	Rachenahalli	17.2	14.4	2.8
3	Thanisandra	64.8	49.3	15.5
4	Geddanahalli	12.6	7.6	5.0
5	K. Narayanapura	10.6	7.1	3.5
6	Chikkabettahalli	31.6	26.1	5.5
7	Doddabettahalli	33	25.5	7.5
8	Challeng	20.5	19.2	1.3
9	Horamavu Agra	40.4	12.4	28.0
10	Chokkanahalli	10.6	6.1	4.5
11	Thirumenahalli	9.2	8	1.2
12	N-Nagenahalli	23	18	5.0
13	Kothanur	12.7	8.2	4.5
14	Byrathi	15.7	8.2	7.5
15	Kyalasanahalli	24.8	10.8	14.0
16	Bileshivale	26.5	12.5	14.0
17	Anantapura	17.7	9.7	8.0
18	Srinivasapura	7.6	3.1	4.5
19	Bellahalli	10	0	10.0
20	Kattigenahalli	48	0	48.0
21	Hennhalli	22	0	22.0
22	Kenchenahalli	7.5	0	7.5
23	Manchenahalli	2	0	2.0
24	Vasudevapura	1	0	1.0
25	Govindapura	1	0	1.0
26	Ammani Byrathikhane	1	0	1.0
	TOTAL	509	351	228

Note: The existing sewer network under good condition is retained and will be integrated with the proposed network

Additional Requirement of Waste Water Treatment Plants and Conveyance System

Sl. No.	Particulars	Under construction in Nos.	MLD capacity
A	Total sewage generation till 2025	_	474
B	On-going Projects		
1	JICA funded-14 WwTPS (on going project)	14	124
2	BDA funded (on going project)	4	38
3	WWM- BWSSB funds (which covers part of 110 villages)	9	164
Sub-Total of Under construction WwTP's		27	326
C	Gap Analysis till 2025 of 110 Villages (Total sewage generation - On going projects)		148 (474-326)

OBJECTIVE OF KMDCRP

- Separation of Sewage from Storm Water.
- Treatment of Sewage as per NGT norms to tertiary level with ultra filtration
- Reuse of Tertiary treated water for non-potable purposes.
- Drought Management: Lake filling during drought season to improve ground water with treated waste water
- Pumping of excess treated waste water to drought prone areas
- Reduction in dependency on Surface water/fresh water:
- Flash Flooding: To avoid flash flood during monsoon, by diverting sewage flow in sewers and treated in WWTPs. Thus avoiding mixing of rain water with sewage.

TREATED SEWAGE PARAMETERS

Sl. No.	Parameter	Unit	As per CPHEEO Manual (Table 7.19 modified)	For design (BWSSB)
1	Turbidity	NTU	< 2.0	< 2.0
2	SS	mg/L	As arising	As arising
3	TDS	mg/L	2100	< 1000
4	pH	-	6.5-8.5	6.5-8.5
5	Temperature	°C	Ambient	Ambient
6	Oil & Grease	mg/L	Nil	Nil
7	TN	mg/L	10.0	< 5.0
8	BOD	mg/L	≤ 6.0	< 5.0
9	COD	mg/L	As arising	< 30.0
10	TP	mg/L	1.0	< 1.0
11	Residual Cl	mg/L	1.0	~1.0
12	FC	MPN/100mL	Nil	Nil
13	Color	-	Colorless	Colorless
14	Odour	-	No foul odour	No foul odour

Cauvery Water Supply Scheme, Stage –V
Water Sources for 110 villages

Augmentation of 775 MLD of water from Cauvery River

Work commencement year :2020

Commissioning :2024- June

Dia of water supply pipeline :3000 mm

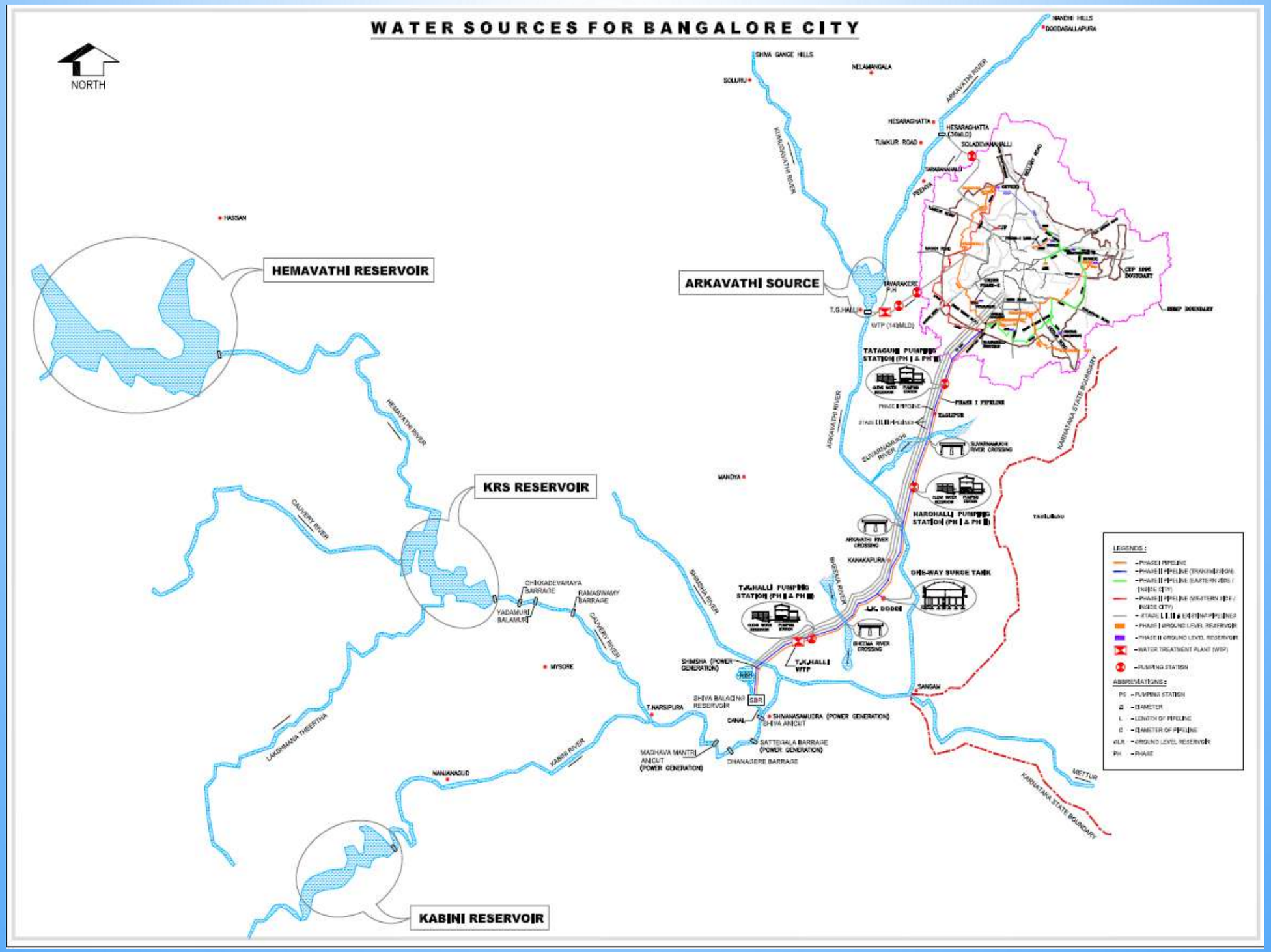
Length of pumping main : 100KM

City feeder main : 65 KM

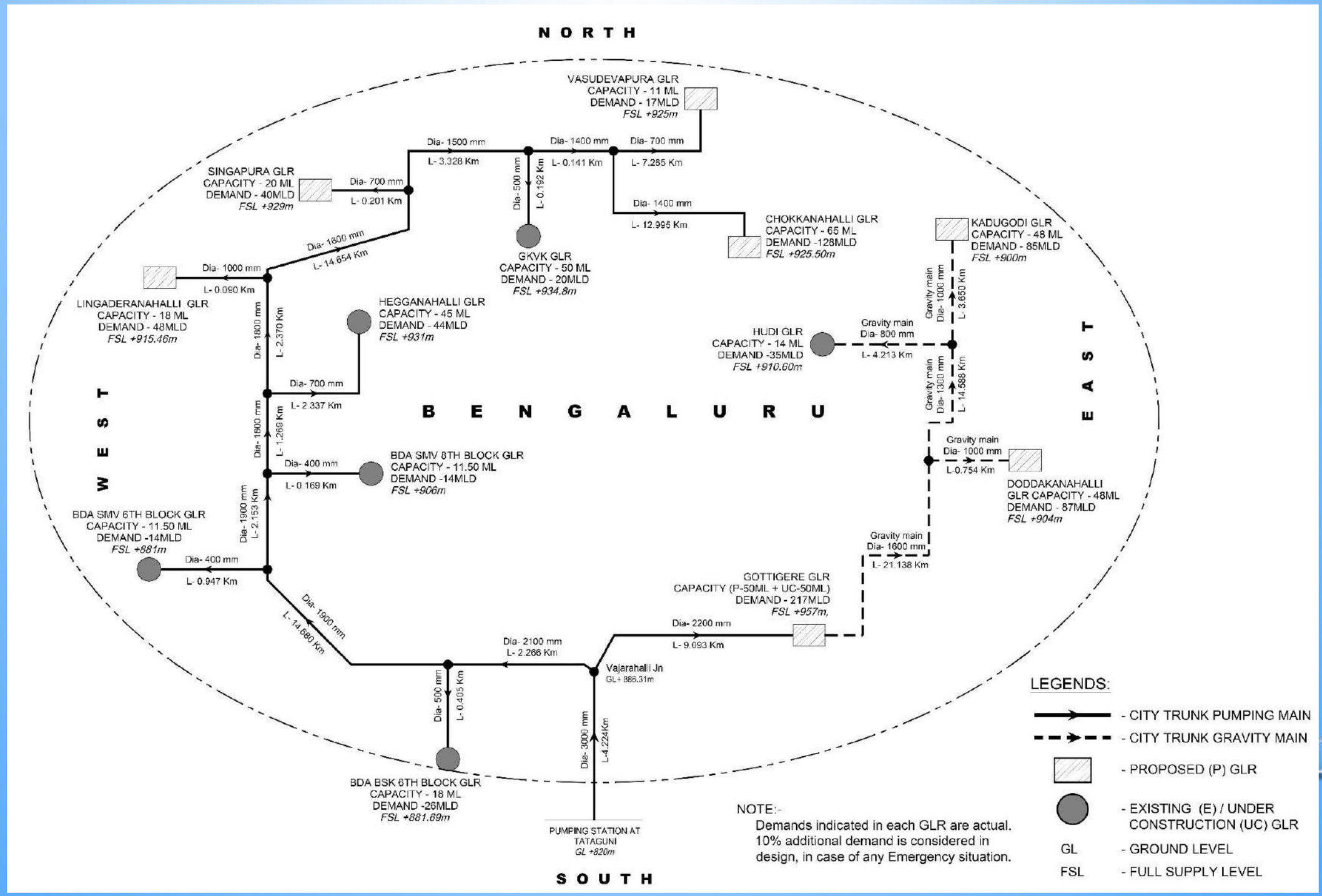
GLR’s in side city : 7 No

Total cost of project : Rs 4000 Cr

Cauvery Water Supply Scheme, Stage –V
Schematic view from source

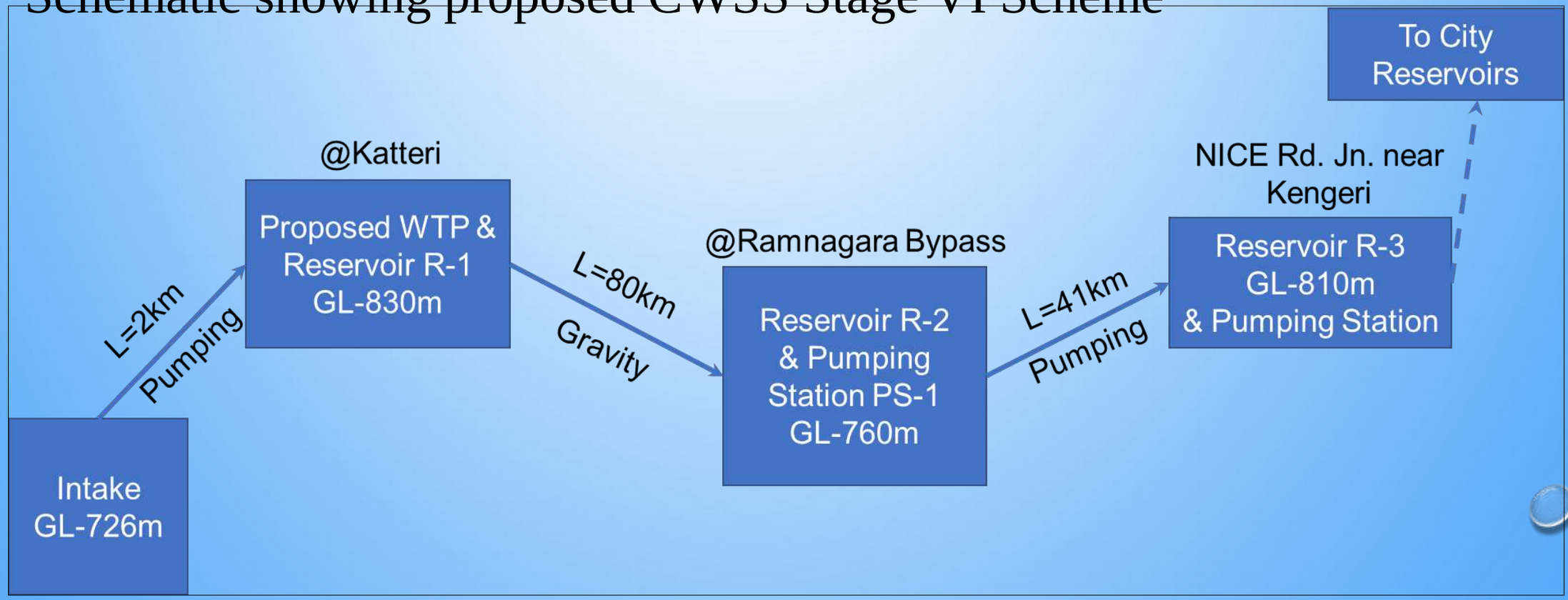


Cauvery Water Supply Scheme, Stage –V
Reservoir locations



Cauvery Water Supply System (CWSS) Stage VI

- The GOK in its order dated 07.11.2022 and 29.11.2022 has allocated additional 6TMC (150 MLD - suburbs & 350 MLD-Bangalore) of water to BWSSB for drinking water needs of Bangalore and its suburbs
- Schematic showing proposed CWSS Stage VI Scheme



- The DPR is under preparation

PRESENT -IT -INITIATIVES

1. *SAJALA- WEB BASED BILLING APPLICATION*
2. *ONLINE WATER CONNECTION*
3. *CENTRALIZED SCADA MONITORING CENTRE*
4. *COMPLAINT MANAGEMENT SYSTEM*
5. *WEBSITE*
6. *REAL TIME ONLINE WATER QUALITY MONITORING STATION*
7. *VEHICLE TRACKING SYSTEM*
8. *WATER INFORMATION HUB*
9. *GEOGRAPHIC INFORMATION SYSTEM*

BWSSB

SPECIAL ACHIEVEMENT IN GIS

A W A R D

Presented to

BWSSB, Bangalore

Karnataka, India

ESRI USER CONFERENCE

August 2004

San Diego, California

Jack Dangermond

President, ESRI

The Bangalore Water Supply and Sewerage Board (BWSSB) has bagged 2009 national urban water award in financial reforms category for Revenue Billing & Collection System.

BWSSB

The Bangalore Water Supply and Sewerage Board (BWSSB) has bagged Urban Sector Best Practices Awards 2009-10 from Government of Karnataka for computerization of Revenue Billing and Collection System.

BWSSB

GLOBAL WATER AWARD 2018- BWSSB

the international water association

CLIMATE SMART UTILITIES

Certificate of Recognition

This certificate is awarded to:

Bangalore Water Supply and Sewerage Board, India

for the successful Climate Smart Utilities application submitted

to the 2023 IWA Recognition Programme

TOM MOLLENKOPF

President, IWA

KALA VAIRAVAMOORTHY

Executive Director, IWA

BWSSB

THANK YOU

LONG TERM IMPLEMENTATION SCHEDULE