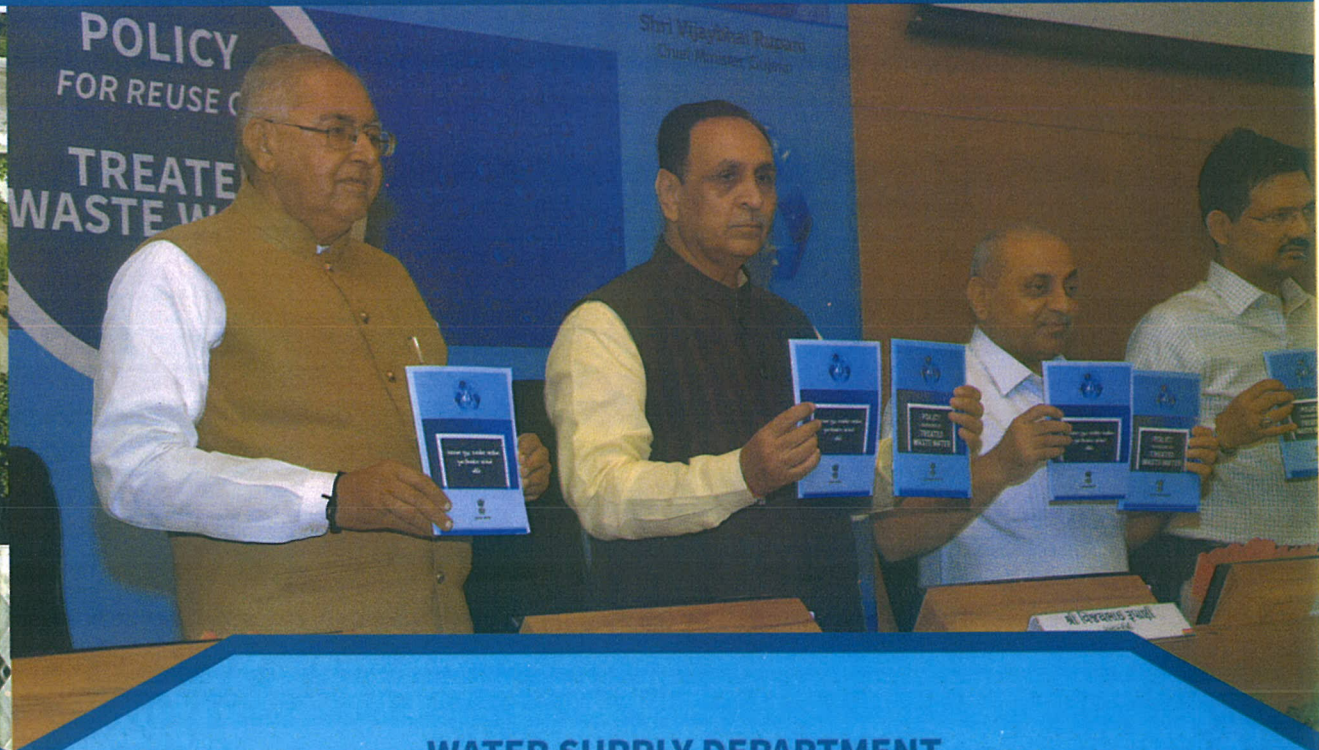
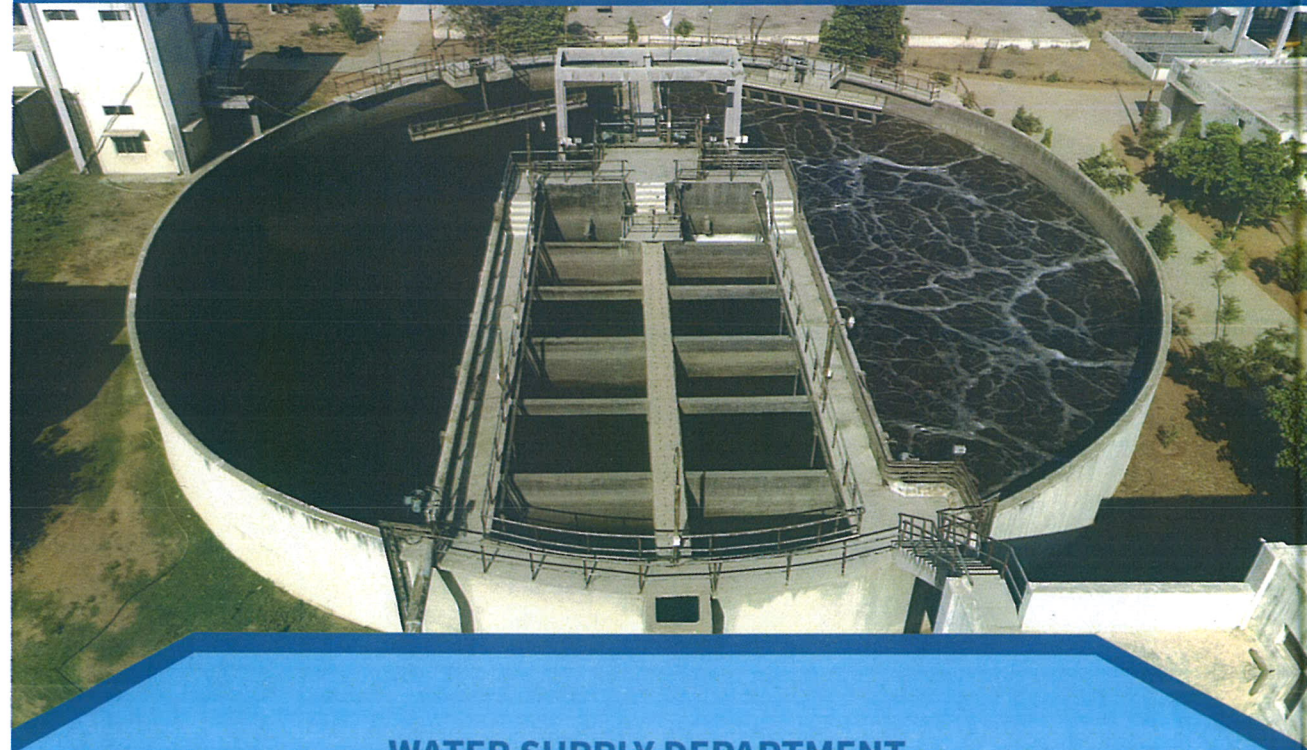


“ Reuse of treated waste water will usher a new era of water security and sustainable development in Gujarat ”

Shri Vijaybhai Rupani
Chief Minister, Gujarat



PROJECTS UNDER POLICY FOR REUSE OF TREATED WASTE WATER



**WATER SUPPLY DEPARTMENT
GOVERNMENT OF GUJARAT**



Capital Office-Gandhinagar

**WATER SUPPLY DEPARTMENT
GOVERNMENT OF GUJARAT**





Khambhat Reuse of Treated Waste Water Project

Stake Holders: GWSSB, Municipality & Concessionaire

STP and User Demand:

| STP with capacity (MLD) | User | Demand (MLD) |
|-----------------------------------|--------------------------------|--------------|
| Khambhat STP 6.8 + 4.5 = 11.3 MLD | Dhuvaran Thermal Power Station | 11.3 |

Broad Components of the Work:

Construction of 6.8 MLD at Machhipura & 4.5 MLD STP at Nayda, construction of storage sump and pumping station near proposed 6.8 MLD STP, laying of 06 km 400 mm dia. rising main to convey 6.8 MLD TWW from STP to proposed storage sump at STP-2; construction of storage sump and pumping station near proposed 4.5 MLD STP, laying of 24 km 500 mm dia. rising main to convey 11.3 MLD TWW from STP to door step of user and comprehensive O&M of complete project for 15 years.

Estimated Cost of the Project:

- Rs. 41.46 Cr
- The project has been approved by STC

Financial Model of the Project:

The possibility of projects being implemented with private capital by using various procurement models based on Public-Private-Partnership (PPP) will be explored. The models may be any one or a combination of: DBO, DBFOT/BOT-Annuity, BOT-User Charges, BOT-End User or Hybrid Annuity Model (HAM).

Reuse of Treated Waste Water in Gandhidham and Anjar

Stake Holders: Gandhidham Municipality, Anjar Municipality & Concessionaire

STP and User Demand:

| STP with capacity (MLD) | User | Demand (MLD) |
|---------------------------|-----------------------|--------------|
| Gandhidham & Anjar 30 MLD | M/s. Wellspun Company | 30 |

Broad Components of the Work:

Arrangement for lifting waste water from pumping station of Gandhidham municipality, lifting from oxidation pond of Anjar municipality and construction & commissioning of 30 MLD at Varshamedi (about 7 km from Anjar) is done by private industry M/s. Wellspun Company in 2016. The entire O&M cost and pumping cost is borne by M/s Wellspun Company.

Financial Model of the Project:

Public Private Partnership (PPP)

POLICY FOR REUSE OF TREATED WASTE WATER (Launched on 28th May, 2018 by Government of Gujarat)

Water is a critical resource for social and economic development of any region besides being elixir of life. Water resources are getting depleted due to adverse changes in climatic conditions, scanty and erratic rainfall, increasing industrialization, population growth, exploitation of ground water, increasing demand for domestic purposes etc. This problem is getting amplified due to uneven natural distribution (availability) of water resources in different regions of the state mainly due to diverse topography.

Presently fresh water use in Municipal Corporation, Municipality and Panchayat rurban area is 5244 MLD. Presently, Underground drainage system is available in all 8 municipal corporations, 154 out of 162 municipalities and 85 rurban areas. These systems collect sewerage which is treated through STPs established for the purpose. Presently about 2600 MLD sewerage is being treated through 52 STP. In addition to the above, 20 STP are under planning/execution in municipal corporations.

Underground drainage network projects are implemented in 154 municipalities under "Swarnim Jayanti Mukhya Mantri Shehri Vikas Yojana" (SJMMSVY). Presently STP is available in 18 municipalities and are in construction phase in 20 municipalities under AMRUT and SJMMSVY.

In addition to the above, 121 STP are under planning in municipalities, out of which 14 STP has been started, 37 STP tenders are in various stages of approval and 55 STP tenders are under invitation process.

Thus, 161 STPs are under planning or execution which will add to about 2800 MLD treatment capacity within a span of 2 years. With this the total TWW availability will rise to more than 5000 MLD in the state. This offers a tremendous opportunity to use TWW and augment water resources economically.

Apart from the need of reducing the pollution of surface and ground water, world over the municipal waste water is increasingly seen as a water resource for reuse of water that can ideally be utilized for non-potable purposes. The treated waste water (TWW) produced by treating municipal sewage can provide a reliable source of water. Hence, there is an ardent need to adopt new perspective towards municipal waste water and its reuse.

Use of treated waste water will generate a new revenue stream for local bodies which will ensure that operation of STP can be undertaken on financially sustainable basis.

The policy lays a time-bound and systematic plan with an ultimate goal of reusing Treated Waste Water fully by 2030.

VISION

“The policy envisions maximising the collection and treatment of sewage generated, and reusing the treated waste water on a sustainable basis, thereby reducing dependency on fresh water resources; and to promote treated waste water as an economic resource”

OBJECTIVES

The policy lays down following objectives:

- To reach minimum 80% coverage and collection of sewage in all municipal towns.
- To reach a level of 100% treatment of collected sewage as per the prescribed standards.
- To reuse at least 25% of total fresh water consumption from TWW within the time limit set under policy by every municipal body.
- To reuse 70% of TWW by 2025.
- To reuse 100% of TWW by 2030.

Songadh Reuse of Treated Waste Water Project

Stake Holders: GWSSB, Municipality & Concessionaire

STP and User Demand:

| STP with capacity (MLD) | User | Demand (MLD) |
|-------------------------|------------------------------------|--------------|
| Songadh STP 4.5 MLD | J. K. Paper Mill or any other user | 4.5 |

Broad Components of the Work:

Construction of 4.5 MLD STP, construction of storage sump and pumping station near proposed STP, laying of 10 km 350 mm dia. rising main to convey TWW from STP to door step of users, comprehensive O&M of complete project for 15 years.

Estimated Cost of the Project:

- Rs. 13.85 Cr
- The project has been approved by STC

Financial Model of the Project:

The possibility of projects being implemented with private capital by using various procurement models based on Public-Private-Partnership (PPP) will be explored. The models may be any one or a combination of: DBO, DBFOT/BOT-Annuity, BOT-User Charges, BOT-End User or Hybrid Annuity Model (HAM).

Pethapur Reuse of Treated Waste Water Project

Stake Holders: GWSSB, Municipality & Concessionaire

STP and User Demand:

| STP with capacity (MLD) | User | Demand (MLD) |
|-------------------------|-----------------------------------|--------------|
| Pethapur STP 3.8 MLD | Gandhinagar Thermal Power Station | 3.8 |

Broad Components of the Work:

Construction of 3.8 MLD STP, construction of storage sump and pumping station near proposed STP, laying of 3 km 300 mm dia. rising main to convey TWW from STP to door step of users, comprehensive O&M of complete project for 15 years.

Estimated Cost of the Project:

- Rs. 7.72 Cr
- The project has been approved by STC

Financial Model of the Project:

The possibility of projects being implemented with private capital by using various procurement models based on Public-Private-Partnership (PPP) will be explored. The models may be any one or a combination of: DBO, DBFOT/BOT-Annuity, BOT-User Charges, BOT-End User or Hybrid Annuity Model (HAM).

Schematic diagram of the project:



Estimated Cost of the Project: Rs. 26 Cr

Financial Model of the Project: EPC mode

Projects under Reuse of Treated Waste Water in Municipalities

Balasinor Reuse of Treated Waste Water Project

Stake Holders: GWSSB, Municipality & Concessionaire

STP and User Demand:

| STP with capacity (MLD) | Sr. No | User | Demand (MLD) |
|--------------------------|---------------------|---------------------------------|--------------|
| Balasinor STP 6.5 MLD | 1 | Wanakbori Thermal Power Station | 6.5 |
| | Total demand | | 6.5 |

Broad Components of the Work:

Construction of 6.5 MLD STP, construction of storage sump and pumping station near proposed STP, laying of 10.5 km 400 mm dia. rising main to convey TWW from STP to door step of users, comprehensive O&M of complete project for 15 years.

Estimate Cost of the Project:

- Rs. 22.74 Cr
- The project has been approved by State Level Technical Committee (STC)

Financial Model of the Project:

The possibility of projects being implemented with private capital by using various procurement models based on Public-Private-Partnership (PPP) will be explored. The models may be any one or a combination of: DBO, DBFOT/BOT-Annuity, BOT-User Charges, BOT-End User or Hybrid Annuity Model (HAM).

USERS

● Thermal Power Plant

- It shall be mandatory for all the Thermal Power Plants within a distance of 50 km from the STP or city limits to use TWW.

● Industrial Units

- It shall be mandatory, for all Gujarat Industrial Development Corporation (GIDC) estates, all industrial units in Special Investment Region (SIR), Industrial parks and large industrial units which are consuming minimum one lakh litre of fresh water per day for non-potable purpose, and which are situated within 50 km distance from STP or city limits to use TWW.
- However, it shall not be mandatory to use TWW wherever it comes in direct contact with human beings or is used in processes resulting in products for human consumption.

● Construction activities

- Provide facility for filling tanker with TWW to construction sites on payment.
- Lay special supply lines for TWW in developing areas, if found feasible.

● Large Commercial or Institutional users

- Lay TWW pipeline to business district having large number of such users.
- It shall be mandatory for such users to use TWW for the purpose of flushing, watering green areas, water for fire hydrants etc. on availability of TWW.

● Municipal uses

- Maintenance of parks and gardens and developing urban landscaping.
- Rejuvenation of ponds, lakes and rivers.
- Supplying water for emergency purposes like fire brigade etc.

● Other non-potable use

- Any other user for non-potable use found in local context

- **Agriculture/Irrigation**

- TWW can be used for agriculture/Irrigation purposes provided surplus water is available after above mentioned uses

- **Potable use**

- Considering social sensitivities and the public perception towards treated waste water, presently it shall not be used for potable purposes and uses which involve direct human contact. However, in future with the increase in water demand, advancement in treatment technology, competitive rates and change in public perception, TWW may be used for potable purposes.

- **Allocation of TWW**

- On availability of TWW, fresh water supply shall be discontinued for users.

- **Project**

- Projects for Reuse of TWW shall be made based on profile of user and local body. SHPC will give in principal approval to projects.

- **Governance arrangement**

- **State level High Power Committee (SHPC)**

- Apex body to take decision regarding implementation of the policy and project approval, TWW price determination, Allocation of water, Financial and management structure of the project, etc.

- **State level Technical Committee (STC)**

- Shall provide technical approval of projects, finalize formats of project agreements, monitor projects execution, lay guidelines for O&M etc.

- **TWW Cell**

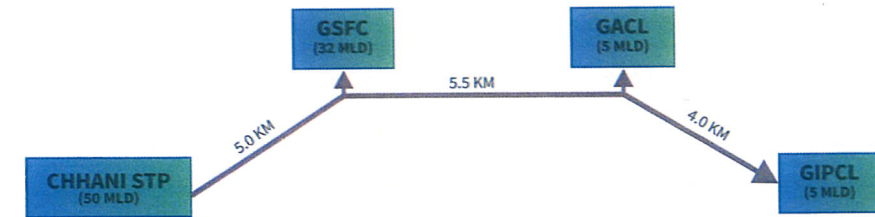
- Headed by officer of Chief Engineer level.
- Preparation of DPR, Providing secretarial assistance to STC/SHPC and project co-ordination and execution.
- MIS, Capacity Building, Research&Development, IEC activities&Public awareness.

Project 2: Reuse of Treated Waste Water from Chhani STP

Broad Components of work:

Construction of Storage sump and Pumping station near STP, chlorination system, rising main from Chhani STP to GSFC, rising main from GSFC premises to GACL premises, rising main from GACL premises to GIPCL premises and comprehensive O&M of complete project for 15 years.

Schematic diagram of the project:



Estimated Cost of the Project: Two options are under consideration for this project, for which following are the cost estimates:

- TWW supply without tertiary treatment: Rs. 37.20 Crores
- TWW supply with tertiary treatment: Rs. 126.54 Crores

Appropriate option will be selected after assessment.

Financial Model of the Project: Hybrid Annuity or Fully PPP Model or any other suitable model

Bhavnagar Reuse of Treated Waste Water Project

Stake Holders: Bhavnagar Municipal Corporation (BMC)

STP and User Demand:

| STP with capacity (MLD) | User | Demand (MLD) |
|-------------------------|---|--------------|
| Bhavnagar STP 45 MLD | Bhavnagar Energy Company Ltd. (Now - Gujarat State Electricity Corporation Ltd.) | 40 |

Broad Components of the Work:

Bhavnagar Municipal Corporation (BMC) has already laid 13.5 km, 800 mm dia. rising main pipeline up to sump near Budhel. There are two stages of pumping. One at 45 MLD STP Plant & another at – sump at Budhel. BMC has laid pipeline at the cost of BECL, of cost RS. 26 Cr and also established pumping station at 45 MLD STP site where as other pumping near Budhel is about to be completed under the supervision of BECL. The commissioning of the conveyance main is in final stage; Hydro test is already performed. Pumping machinery trial is also performed.

Reuse of Treated Waste Water in Vadodara City

Stake Holders: Vadodara Municipal Corporation (VMC), GWSSB & Concessionaire

Project brief:

The main industrial users around Vadodara city i.e Indian Oil Corporation Ltd, (IOCL), Reliance Industries Limited (RIL), Gujarat State Fertilizer and Chemical Ltd (GSFC), Gujarat Alkalies and Chemicals Ltd (GACL) & Gujarat Industries Power Company Ltd. (GIPCL) have come forward to use the Treated Waste Water. It is proposed to supply Treated Waste Water from 78 MLD STP at Rajivnagar to IOCL and RIL. And, it is proposed to supply Treated Waste Water from 50 MLD STP at Chhani to GSFC, GACL and GIPCL.

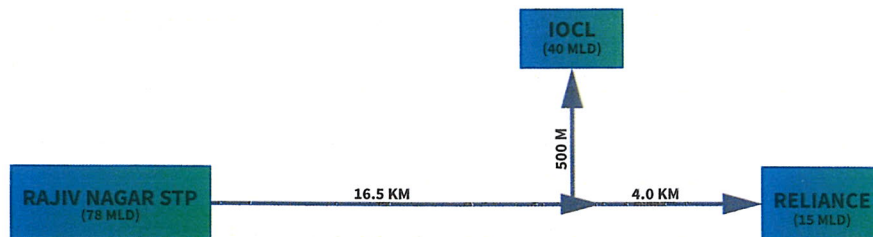
STP and User Demand:

| STP with capacity (MLD) | Sr. No | User | Demand (MLD) |
|-------------------------|---------------------|--------------------------|--------------|
| Rajivnagar STP (78 MLD) | 1 | IOCL | 40 |
| | 2 | Reliance Industries Ltd. | 15 |
| | Total demand | | 55 |
| Chhani STP (50 MLD) | 1 | GSFC | 32 |
| | 2 | GACL | 5 |
| | 3 | GIPCL | 5 |
| | Total demand | | 42 |

Project 1: Reuse of Treated Waste Water from Rajivnagar STP

Broad Components of work: Construction of storage sump and pumping station near existing STP, chlorination system, rising main from Rajivnagar STP to IOCL junction, rising main and comprehensive O&M of complete project for 15 years.

Schematic diagram of the project:



Estimated Cost of the Project: Rs. 70.69 Crores

Financial Model of the Project: Hybrid Annuity Model or Fully PPP Model

Projects under Reuse of Treated Waste Water in Municipal Corporations

Jamnagar Reuse of Treated Waste Water Project

Stake Holders: Jamnagar Municipal Corporation (JMC), GWSSB & Concessionaire

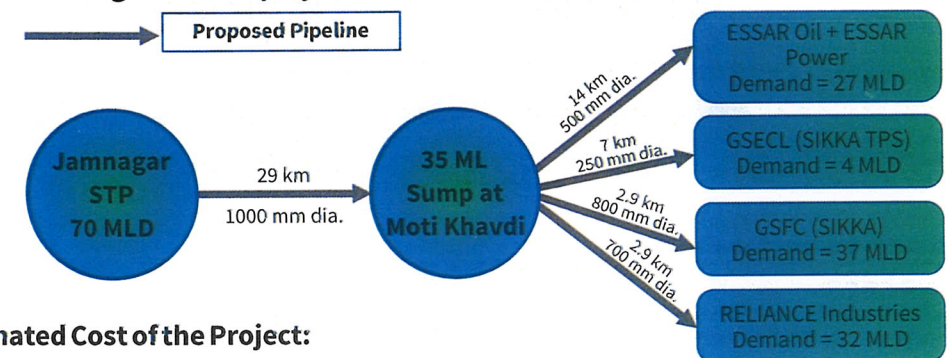
STP and User Demand:

| STP with capacity (MLD) | Sr. No | User | Demand (MLD) |
|-------------------------|--------|------------------------------|--------------|
| Jamnagar STP (70 MLD) | 1 | Essar Oil + Essar Power | 18 + 09 = 27 |
| | 2 | Thermal Power Station, Sikka | 04 |
| | 3 | GSFC (Sikka) | 37 |
| | 4 | Reliance Industries Ltd. | 32 |
| Total demand | | | 100 |

Broad Components of work:

Rectification/modification of existing STP, construction of storage sump and pumping station near existing STP, laying of 29 km rising main to convey TWW from existing Jamnagar STP to sump at Moti Khavdi (near GWIL Head work), transmission and distribution network up to door step of users and comprehensive O&M of complete project for 15 years.

Schematic diagram of the project:



Estimated Cost of the Project:

- Rs. 129 Cr
- The project has been approved by SHPC and STC; and presently is in tendering stage

Financial Model of Project:

Proposed mode of implementation of this project is Hybrid Annuity Mode. GWSSB shall pay INR 70 Cr to Concessionaire as per various pre decided milestones. Rest of the capital shall be contributed by Concessionaire. The concessionaire shall operate and maintain project for 15 years. The payment shall be done on per KL of water supplied at user's end as decided by State Level High Power Committee (SHPC).

Gandhinagar Reuse of Treated Waste Water Project

Stake Holders: Gandhinagar Municipal Corporation (GMC), R & B, GWSSB & Concessionaire

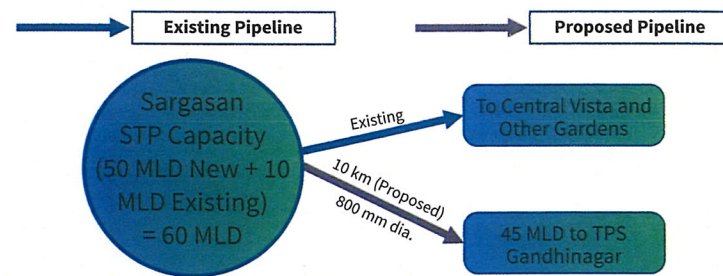
STP and User Demand:

| STP with capacity (MLD) | Sr. No | User | Demand (MLD) |
|--|---------------------|---------------------------------|--------------|
| Gandhinagar STP (Existing 10 MLD + Proposed 50 MLD) | 1 | Gandhinagar Thermal Power Plant | 45 |
| | 2 | Green Space, Sachivalaya etc. | 10 |
| | Total demand | | 55 |

Broad Component of the Work:

Construction of new 50 MLD STP and refurbishment of existing 10 MLD STP, construction of storage sump and pumping station near STP, laying of 10 km rising main to convey Treated Waste Water (TWW) from STP to Thermal Power Plant and comprehensive O&M of complete project for 15 years.

Schematic diagram of the project:



Estimated Cost of the Project:

- Rs. 62 Cr
- The project has been approved by SHPC and STC; and is in tendering stage

Financial Model of Project:

Proposed mode of implementation of this project is Hybrid Annuity Model. The concessionaire shall operate and maintain the complete plant for 15 years. For the same payment shall be done on per KL of water supplied at user's end.

Reuse of Treated Waste Water in Surat City

Stake Holders: Surat Municipal Corporation (SMC), GWSSB & Concessionaire

Project brief:

Considering the magnitude of the sewage generated, a survey was conducted by Surat Municipal Corporation to identify the water intensive industries in the vicinity of the city area. Moreover, the industrial areas were zoned based on its proximity to the Sewage Treatment Plant locations. They have been classified into three clusters depending on the locations: Bhesan Cluster, Variav-Kosad Cluster and Bamroli Cluster.

STP and User Demand:

| STP with capacity (MLD) | Sr. No. | User | Approximate Demand (MLD) |
|--|---------|--|---|
| Bhesan (200), Asarma (37.5) & Variav Kosad (134) | 1. | ONGC Power Plant | 20 |
| | 2. | NTPC Power Plant | 10 |
| | 3. | Gujarat State Electricity Generation Ltd. (GSEG) Power Plant | 15 |
| | 4. | Reliance Industries Ltd. | 110 |
| | 5. | Rama News Print and Paper | 12 |
| | 6. | Essar | 95 |
| | 7. | GAIL | 0.1 |
| | 8. | Bhatpore GIDC | 0.5 |
| | 9. | Adani Hazira Port | 0.6 |
| | 10. | L&T | 0.1 |
| Variav Kosad (134) | 1. | Sugen Power Plant, Torrent | 9 |
| | 2. | Gujarat State Electricity Corporation Ltd (GSECL), Utran | 8 |
| Bhatar (277) Bamroli (215) Dindoli (167) | 1. | Pandesara GIDC | 80 (112 Secondary treated) |
| | 2. | Sachin GIDC | 35 (50 Secondary treated) |
| | 3. | Palsana GIDC | 150 (215 Secondary treated) |
| Availability: 1030.5 MLD | | Total Demand | 660 MLD (Secondary Treated) 265 MLD (Tertiary Grade) |

Estimated Cost of the Project: There are 3-4 projects under consideration for which DPR is under preparation

Financial Model of the Project: The possibility of projects being implemented with private capital by using various procurement models based on Public-Private-Partnership (PPP) will be explored. The models may be any one or a combination of: DBO, DBFOT/BOT-Annuity, BOT-User Charges, BOT-End User or Hybrid Annuity Model (HAM).