

Sector	Urban Development
Sub - sector	Water Supply and Sewerage
Profile No.	UD-05
Project Title	Improvement of Water Supply and Sewerage Systems at Anand town

Project Rationale

Anand town situated in Central Gujarat at a distance of 35 kilometres from Vadodara is the administrative centre of Anand District. Anand is known as the Milk capital of India – is famous for Amul dairy and its milk revolution. Anand houses various educational and research institutes – National Dairy Development Board (NDDB), Institute of Rural Management (IRMA), Gujarat Agriculture University.

Anand town has witnessed growth in the outer areas of Gamadi, Bakrol, Jitodia, and Mogori.

Key observations of the existing water supply and sewerage system of Anand town and out growth areas are:

- Sourcing of water – Non availability of chlorination plants at certain locations, possible deterioration of ground water quality
- Water Distribution – Intermittent water supply, in equitable distribution of water, ageing pumps which leads to high power cost, lack of preventive maintenance of assets, inadequate tariff setting mechanism
- Water consumption – Lack of metering system, unrestricted use of borewells
- Sewerage system – Poor coverage of sewerage network, inadequate disposal of sewerage and lack of sewage treatment, poor network mapping

Moreover, as per the demographic trends, the population in the town as well as out growth (OG) areas is anticipated to increase from 173,326 at present to 296,684 by 2031.

Projected water demand and sewage flows of Anand town and OG areas

(MLD)

Anand town (A)	2006	2011	2016	2021	2026	2031
Water Demand @ 140 Lpcd	20.44	22.90	25.52	28.53	31.96	35.92
OG area (B)						
Water Demand @ 140 Lpcd	3.82	4.13	4.46	4.79	5.20	5.61
Total Water Demand (A+B)	24.26	27.03	29.98	33.32	37.16	41.53
Total Sewage (80% of total water demand)	19.42	21.62	23.98	26.66	29.73	33.23

Looking to the dilapidated condition of existing infrastructure in the town, GIDB has initiated steps to improve the water supply and sewerage system of the town.

The project envisages improvement of water supply and sewerage system in Anand with private sector participation on Build – Operate – Transfer (BOT) basis.

Project Components

The project is designed for a period of 25 years from 2006 to 2031 and would be executed in two phases:

- Phase 1 – Period 2006 to 2021
- Phase 2 – Period 2021 to 2031

The project components include:

Water supply

- ↪ Renovation – includes establishment cost and cost of repairs of projected distribution network in Anand town and OG areas.
- ↪ Acquisition and replacement – This includes acquisition and replacement cost of assets, which primarily includes cost of pumps, chlorination plants, one time electrification cost, water meters (in Anand town and OG areas).
- ↪ Civil construction – includes cost of constructing pump house, Elevated Service Reservoir, storage booster and tube wells.
- ↪ Pipelines – includes the cost of laying the pipelines.

Sewerage system

Renovation – includes cost of repairs of pumping stations, pumps, etc.

Acquisition and replacement – this includes acquisition and replacement cost of assets (primarily pumps)

Civil construction – includes construction cost of pumping station and one time electrification cost.

Pipeline – includes cost of laying pipelines in existing as well as new areas.

Treatment plants – includes establishment cost of 1 treatment plant of 22.83 MLD capacity.

Two options have been identified to get ensured water supply for the city:

- Option I Hybrid system – where in 50% water supply would be from Mahi Canal and 50% from Tube wells. It primarily includes cost of land acquisition, intake wells, treatment plant, lake development, UG sumps, pumps, distribution network etc.
- Option II Water supply from Mahi canal – which includes the total cost of establishment of network of sourcing and supplying water only from Mahi canal. It primarily includes cost of lake development, land acquisition, intake well, water treatment plant, underground sump, pumps and pump house, distribution system, connecting pipeline, compound wall, electrification, etc.

Project Cost

The total estimated capital cost for improvement of water supply and sewerage system of Anand town and out growth areas is about INR 370 - 430 million (US \$ 8.2 – 9.55 million). The total project cost in each block of 5 years, for the next 25 years is as given below:

Function	Project cost (INR million)					
	Total cost	0-5 Years	5-10 Years	10-15 Years	15-20 Years	20-25 Years
Water Supply						
Renovation	7.76	7.76	0	0	0	0
Acquisition and replacement	64.22	54.98	0	1.39	7.84	0
Civil construction	27.15	27.15	0	0	0	0
Pipelines	24.04	24.04	0	0	0	0
Total (water supply) (A)	123.12	113.93	0	1.39	7.84	0
Sewerage system						
Renovation	10	10	0	0	0	0
Acquisition and replacement	19.7	11.48	0.45	0.45	6.75	0.57
Civil construction	4.0	4.0	0	0	0	0
Pipeline	82.11	82.11	0	0	0	0
Treatment plant (22.83 MLD)	27.28	27.28	0	0	0	0
Total (sewerage) (B)	133.09	124.87	0.45	0.45	6.75	0.57
		Phase I			Phase II	
Total cost (Water supply & sewerage) (A + B)	256.26	242.12			15.16	
Hybrid system – (50% water from Mahi and 50% from	116.78				116.78	

Function	Project cost (INR million)					
	Total cost	0-5 Years	5-10 Years	10-15 Years	15-20 Years	20-25 Years
tube wells) (C)						
Cost of supplying water only from Mahi (D)	171.25					171.25
Total project cost of hybrid system (A+B+C)	372.98		242.12			131.95
Total Project cost with water supply only from Mahi (A+B+D)	427.51		242.12			186.42

Source: PWC report

The total capital cost of improvement of water supply and sewerage systems in Anand town and OG areas excludes inflation during construction, interest during construction and any other pre-operative expenses.

The total cost of hybrid system is estimated at INR 374.07 million, while the project cost considering water supply from Mahi is estimated at INR 428.54 million.

The project is proposed to be implemented with Public Private Participation.

Agencies to be contacted

Gujarat Infrastructure Development Board (GIDB)

Industrial Extension Bureau

Mott MacDonald India