Chapter – IV

Performance Audit

4 Performance Audit on Water supply in Urban Local Bodies

4.1 Introduction

Water is a natural resource essential for human existence. Lack of safe drinking water affects the health and wellbeing of the public. The provision of safe and adequate drinking water to the increasing urban population continues to be one of the major challenges. The objective of water supply system is to ensure supply of safe and adequate quantity of water at reasonable cost to the user. In order to encourage personal and household hygiene, proper planning is necessary in the formulation and implementation of water supply projects. Emphasis has to be laid on both the aspects of systems namely planning and management (technical and financial). The responsibility for supply of potable water to urban population rests with the Urban Local bodies (ULBs).

4.2 Funding pattern

Urban Local Bodies (ULBs) meet the expenditure towards provision of water supply through grants received from GoI and State Government, loans from World Bank and other financial institutions besides their own resources. Releases and expenditure during the period 2011-16 in the State towards water supply schemes were as under:

Table 4.1

(₹ in crore)

Year	UIDSSMT[1]			State Government (Plan grant)		World Bank		HUDCO[2]	
	Releases by SLNA[3]		Expenditure	Release	Expenditure	Release	Expenditure	Release	Expenditure
	GoI Share*	State/ULB Share							
2011-12	17.89	25.05	57.71	7.87	9.70	0	0	11.62	10.29
2012-13	13.82	6.07	16.50	9.56	7.69	0	0	9.80	11.66
2013-14	12.96	15.25	26.40	4.96	4.88	43.08	3.69	4.79	2.72
2014-15	6.96	13.24	24.94	1.49	1.49	52.65	71.78	1.11	1.12
2015-16	1.14	1.31	2.24	1.06	1.03	159.44	83.44	1.18	1.22
Total	**52.77**	**60.92**	**127.79**	**24.94**	**24.79**	**255.17#**	**158.91**	**28.50#**	**27.01**

Source: Information furnished by ENC, PH and TUFIDC

**Releases from GoI to SLNA were up to 2011-12*

#Releases include ULB share of ₹ 14.50 crore (World Bank ₹ 14.05 crore, HUDCO ₹ 0.45 crore)

4.3 Organisational set-up

The ULBs function under the administrative control of the Principal Secretary, Municipal Administration and Urban Development (MA&UD). The Commissioner

[1] Urban Infrastructure Development Scheme for Small & Medium Towns, a component of *Jawaharlal Nehru National Urban Renewal Mission (*Jnnurm)

[2] Housing and Urban Development Corporation

[3] State Level Nodal Agency

and Director of Municipal Administration is head of the Department and assisted by Regional Deputy Directors of Municipal Administration at regional level. The Chairperson is being nominated among the elected members of ULBs. Municipal Commissioners are the executive heads. The ULBs (Municipalities) transact their business as per the provisions of the Andhra Pradesh Municipalities Act, 1965. The Public Health Municipal Engineering Division is responsible for undertaking all capital works whereas, the maintenance works are being looked after by the Engineering wing of ULB.

4.4 Audit framework

4.4.1 Audit objectives

Performance Audit of Water Supply in seven[4] Urban Local Bodies was carried out with the objective of assessing whether

i. the planning process for provision of infrastructure and maintenance of water supply in ULBs was adequate and effective;
ii. sound financial management principles were adhered to in respect of project execution, realisation of revenue and operation & maintenance; and
iii. the optimum quantity and quality of water was supplied as envisaged.

4.4.2 Audit criteria

Audit findings were benchmarked against criteria sourced from the following:

i. Bye-laws and council resolutions adopted in the respective ULBs for supply of water;
ii. Manuals on (i) Water Supply and Treatment, (ii) Operations and Maintenance issued by Central Public Health and Environmental Engineering Organisation (CPHEEO) under Ministry of Urban Development, Government of India (GoI);
iii. National Water Policy, 2012 issued by Ministry of Water Resources, GoI;
iv. Financial Code, Public Works 'D' Code, Municipalities Act, 1965 of composite State of Andhra Pradesh[5];
v. Government Orders issued by State Government from time to time on water supply; and
vi. Service Level Benchmarks (SLB) prescribed in Thirteenth Finance Commission guidelines

[4] Bodhan, Gadwal, Kodad, Mandamarri, Manuguru, Metpally and Vikarabad
[5] Applicable in relation to the State of Telangana also as per Andhra Pradesh Reorganisation Act, 2014

4.4.3 Audit sample

Audit sample included seven[6] out of 53[7] Urban Local bodies in Telangana. The sample was selected through stratified sampling method based on lowest lpcd (litres per capita per day) in each stratum[8].

4.4.4 Audit scope and methodology

The Performance Audit on Water Supply in seven[9] ULBs covering the period 2011-12 to 2015-16 was conducted between March and June 2016. Audit methodology involved scrutiny of relevant records/documents in the Office of Engineer-in-Chief (ENC), Public Health & Municipal Engineering Division, Commissioner and Director of Municipal Administration, Telangana Urban Finance Infrastructure Development Corporation (TUFIDC) and selected ULBs. Apart from scrutiny of records, physical verification of site, wherever required, was conducted with departmental officials. Beneficiary survey covering 50 consumers in each ULB was also done to assess the response of the consumers.

An Entry conference was held (March 2016) with the officials of the department wherein audit objectives, scope, criteria and methodology were explained. Exit Conference was held with the Government representatives in November 2016 to discuss audit findings. Replies (October 2016) of the Government have been suitably incorporated at appropriate places in the report.

4.4.5 Acknowledgements

Audit wishes to acknowledge the cooperation and assistance extended by the State Government and its officials during the conduct of this audit.

Audit findings

4.5 Planning

Water is a prime natural resource, a basic human need and a precious asset for the State. Planning and development of water resources need to be governed by the existing conditions and needs in the State.

4.5.1 State water policy

State Government had formulated water policy in 2008 based on National Water Policy of 2002. State Government had yet to frame policy/guidelines based on National Water Policy 2012 as per local requirement. Provisions of CPHEEO manuals were being followed by the State Government in respect of Water supply and treatment and Operations / maintenance.

---

6 Bodhan (Nizamabad district), Gadwal (Mahabubnagar), Kodad (Nalgonda), Mandamarri (Adilabad), Manuguru (Khammam), Metpally (Karimnagar) and Vikarabad (Rangareddy)

7 14 Nagar Panchayats formed on or after 2012 were not considered for sampling

8 Stratum I (<= 70 lpcd), Stratum II (>70 and <=135) and Stratum III (>135)

9 Bodhan, Gadwal, Kodad, Mandamarri, Manuguru, Metpally and Vikarabad

4.5.2 Water Regulatory Authority

As per National Water Policy 2012, an independent Water Regulatory Authority was to be formed to ensure equitable access to water for all and its fair pricing for drinking and other uses. The Water Regulatory Authority was not yet established (June 2016) which meant that the objective of securing uniformity in operations of water supply and pricing for supply of water in ULBs was not achieved.

Government stated (October 2016) that with a view to providing piped water supply connection to every house hold, a Drinking Water Supply Grid was being implemented by them to supply bulk water to Gram panchayats, Municipalities, Municipal Corporations etc., under Mission Bhageeratha. It was also stated that establishment of Water Regulatory Authority would be considered at an appropriate time. Thus, the fact remained that the Water Regulatory Authority was not established as envisaged in National water policy 2012.

4.6 Water source

Sustainability of surface water or ground water is necessary for effective supply of qualitative and quantitative water to the public.

4.6.1 Identification of water source

As per National Water Policy, urban and rural domestic water supply should preferably be sourced from surface water[10] in conjunction with ground water[11] and rain water. The exploitation of ground water resources should be so regulated that the recharging possibilities are not exceeded.

In the State, 27 out of 67[12] ULBs were completely dependent upon the sub-surface water, whereas 40 ULBs were wholly dependent upon surface sources. Of the seven test-checked ULBs, three[13] ULBs were observed to be completely dependent upon sub-surface source, one ULB (Manuguru) on both the sources and the remaining three[14] ULBs were dependent on surface source.

Kodad ULB was completely dependent upon sub-surface water[15] as surface water source (Cheruvu[16]) was contaminated by the sewerage and industrial waste. The ULB had failed in discharging its responsibility to protect the surface water source (Cheruvu) and had utilised the sub-surface water.

Government accepted (October 2016) the contamination of surface water source at Kodad. However, specific measures taken to prevent the contamination were not intimated.

---

10 Rivers, lakes and reservoirs
11 Dug up wells, bore wells, tube wells and infiltration galleries
12 Excluding Greater Hyderabad Municipal Corporation
13 Kodad, Mandamarri and Metpally
14 Bodhan, Gadwal and Vikarabad
15 10 Open wells and 21 Bore wells
16 Big lake

4.6.2 Sustainability of water source

The continuous supply of drinking water depends upon existing capacity of the available source. Sustainability of water source is essential to ensure adequate water supply throughout the year. Out of 67[17] ULBs, seven ULBs have the sustainable water source as of March 2016. In the test-checked ULBs water supply was inadequate, as commented upon in Paragraph-4.9 on 'Water demand/supply management'. The sustainability of water source was not ensured by ULBs for adequate water supply.

Government stated (October 2016) that utmost care was taken in selection of drinking water sources with regard to dependability and sustainability. In case of failure of source due to continuous dry spells over consecutive years, arrangements were made for supply of water through tankers.

4.6.3 Replenishment of ground water table

Ground water needs to be conserved[18] by reuse of recycled water. Artificial recharge[19] of ground water can be achieved by direct recharge[20] and surface flow harvesting.

With a view to conserve ground water, State Government made harvesting[21] of rain water in all group housing and commercial mandatory[22] in 1998. Later, in June 2000[23], it was made mandatory for buildings constructed on plots measuring 300 sq mts and above. Audit observed that

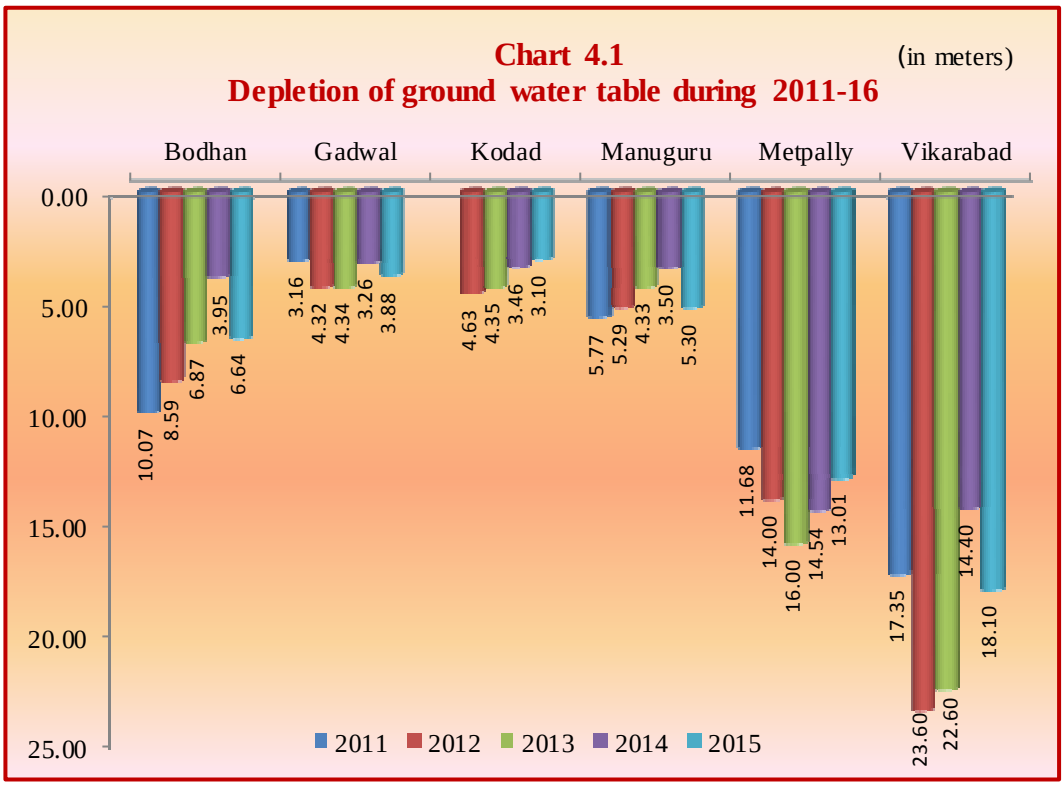
i. During 2011-16, five[24] test-checked ULBs had accorded 3,166 building permissions. Of these, only 31[25] Rain Water Harvesting Structures (RWHS) were constructed. Penal action[26] taken if any, against non-adherence to Government rules against building owners (for not constructing RWHS) was not forthcoming from the records of ULBs. The ULBs had not accorded much importance to construction of RWHS nor initiated any penal action against the building owners.
ii. In Manuguru and Mandamarri ULBs, building permissions were not accorded as these ULBs were in scheduled areas[27]. For replenishment of ground water,

---

17 Excluding Greater Hyderabad Municipal Corporation
18 Para 3.8.2 of manual on O&M
19 Para 3.10 of manual on O&M
20 Recharge of wells, injected wells and Rain Water Harvesting Structures
21 Tanks and ponds
22 G.O. Ms No. 422 MA dated 31 July 1998
23 G.O. Ms No. 350 dated 09 June 2000
24 Bodhan (811 permissions accorded), Gadwal (details of permissions accorded were not furnished), Kodad (697), Metpally (833) and Vikarabad (825)
25 Bodhan 11 RWHS and Vikarabad 20 RWHS
26 As per Section 340 of Andhra Pradesh Municipalities Act, 1965, a fine which may extend to five hundred rupees subject to a minimum of fifty rupees and to a further fine which may extend to one hundred rupees subject to a minimum of ten rupees for each day during which offence is proved to have continued after the first day
27 Areas as defined in the fifth schedule of Constitution of India, where as per Andhra Pradesh Schedule Areas Land Transfer Regulation Act, 1970 transfer of immovable property is made in favour of a person who is the member of a schedule tribe or a society registered or deemed to be registered under the Andhra Pradesh Co-Operative Societies Act, 1964 which is composed solely of members of the scheduled tribes

construction of RWHS could have been taken up in public places such as municipal land, parks etc. However, no efforts were made by the ULBs towards construction of RWHS and conservation/recharge of ground water had not been ensured.

iii. The pre-monsoon (month of May) ground water levels of test-checked ULBs during the period 2011-16 is given in the Chart below. As piezometer[28] was not available in Mandamarri ULB, their data was not incorporated in the Chart.



Source: Information furnished by Ground water department

In three ULBs[29] , there was depletion in ground water table during May 2015 as compared to May 2011. The depletion of ground water was acute in Metpally and Vikarabad ULBs. No action was initiated by ULBs for rejuvenation or recharging of sub-surface water.

4.7 Infrastructure for water supply

4.7.1 Water Treatment Plant

To ensure safe and potable drinking water, it is to be treated under various processes depending on the quality of raw water. Water Treatment Plants (WTP) should, therefore, be planned to supply water that is hygienically safe, aesthetically attractive and palatable. Audit observed that-

i. Water treatment plants were available and functioning in all the three[30]

[28] Instrument placed in boreholes to monitor the pressure or depth of groundwater
[29] Gadwal, Metpally and Vikarabad
[30] Bodhan, Gadwal and Vikarabad

test-checked ULBs where surface water was the source.

ii. Water treatment plants were not available in the other four[31] test-checked ULBs where sub-surface water was the source. Due to non-existence of water treatment plants the raw water could not be treated in these ULBs. Thus the ULBs had not ensured the supply of safe and potable drinking water to the consumers.

iii. Based on the results of water sample tests in Kodad ULB where sub-surface was the source the presence of excessive fluoride was observed (August – December 2015). Thus absence of water treatment plant adversely affected quality of water supplied.

Some water sources in Kodad ULB

Government stated (October 2016) that water supplied to Mandamarri and Manuguru ULBs from the infiltration galleries in river Godavari required no treatment. It was further stated that water supply improvement schemes would be taken up under Mission Bhageeratha. The reply was not acceptable, as the water supply and treatment manual[32] recommended treatments,[33] depending on the quality of ground water. Incidentally, medical centre of Manuguru ULB had reported 932 cases of water borne diseases during 2011-16.

With regard to Kodad ULB, Government stated (October 2016) that drinking water was supplied by RWS&S department and ground water was used for other purposes. However, the water was supplied through open/bore wells for drinking purposes which confirmed presence of excess fluoride.

4.7.2 Service reservoirs

The service reservoirs[34] provide a suitable reserve of treated water with minimum interruptions of supply due to failure of mains, pumps etc. The minimum storage capacity of service reservoirs depends on factors such as design population, per capita water supply, peak factor and continuous water supply. In Kodad ULB, it was observed that seven out of 30 wards were supplied water through tankers, as these wards were not covered through Service Reservoirs.

---

31 Kodad, Mandamarri, Manuguru and Metpally
32 Para 7.1 of manual of Water Supply and treatment
33 Flocculation, sedimentation, rapid gravity or pressure filtration, disinfection by chlorination etc.
34 Para 10.4.1 of manual on Water supply and treatment

Government accepted (October 2016) that there was shortfall in storage capacity of service reservoir in Kodad ULB and stated that adequate provision would be made under Mission Bhageeratha.

4.7.3 Inadequate distribution network

The objective of distribution system is to convey wholesome water to the consumers at adequate residual pressure in sufficient quantity at convenient points so as to achieve continuity and maximum coverage at affordable cost. In the four[35] test-checked ULBs, there was shortfall in coverage of pipeline network when compared with internal road length. The shortfall ranged from 23 *per cent* to 67 *per cent*. Water was supplied through water tankers in the uncovered areas which had resulted in inequitable distribution of water supply to the households.

Government accepted (October 2016) the audit observation and stated that shortfall in coverage of pipe line network would be taken care of under Mission Bhageeratha.

4.7.4 Non-installation of flow meters

The measurement of flow in water supply systems is an indispensable requirement for the purpose of assessment of source and its development, transmission, treatment, distribution, control of wastage etc. However, flow meters were not installed at source/treatment plant/distribution zones in the test-checked ULBs. The quantity of water supplied was assessed on the basis of the capacity of the reservoir and the duration of pumping to Elevated Level Service Reservoirs (ELSR). In the absence of flow meters, actual quantity of water supplied by the ULBs could not be ascertained.

Government accepted (October 2016) the audit observation and stated that flow meters were being provided in water supply schemes of Vikarabad and Manuguru ULBs. Installation of flow meters in the remaining ULBs would be considered under Mission Bhageeratha.

4.8 Execution of projects

4.8.1 Project proposals during transition phase

As per JNNURM guidelines[36], funds were to be provided to only those towns and cities where elected bodies were in position. State Government submitted (April 2013 – September 2013) project proposals in respect of six[37] ULBs for approval during the transition phase[38], which were not covered under JNNURM phase-I. However, GoI did not consider (December 2013) the proposals, since elected bodies were not functioning in the ULBs and transition period for sanctioning of projects under JNNURM was coming to a close. As a result, ULBs were deprived of protected water supply to their citizens.

---

[35] Kodad (61 *per cent*), Gadwal (67 *per cent*), Manuguru (23 *per cent*) and Mandamarri (28 *per cent*)
[36] Para 4.3 of UIDSSMT guidelines of JNNURM
[37] Husnabad, Huzurnagar, Kothagudem, Sadasivpet, Suryapet and Tandur
[38] Transition period of two years beginning from 2012-13 to complete the approved projects under Jnnurm-I and to implement the pending reforms at the State and ULB level

Government agreed (October 2016) that the projects were not considered by GoI as elected bodies were not functioning in the ULBs and stated that water supply schemes in these ULBs would be taken up under Mission Bhageeratha.

4.8.2 Status of projects

In the State, 36 projects[39] with administrative cost of ₹1,653.15 crore were executed during the period 2011-16. These projects were funded by GoI, State Government/ ULB, World Bank and HUDCO. Of these 23 projects were completed and commissioned. Two[40] projects, though completed at a cost of ₹16.31 crore, were not commissioned as of May 2016 due to non-construction of summer storage (SS) tank. In eleven[41] ULBs, projects were in progress. Three[42] water supply projects were executed/under execution in test-checked ULBs. Audit observed the following:

4.8.2.1 Water Supply Improvement Scheme in Manuguru

In the test-checked Manuguru ULB, 0.18 MLD of untreated water was being supplied by ULB from its own source (sub-surface) and 0.96 MLD were being supplied from Singareni Collieries Company Limited (SCCL) through public stand posts. It was observed that there was no household connectivity in the ULB.

Water Supply Improvement Scheme (WSIS) was sanctioned (February 2013) by State Government at a cost of ₹25.56 crore, to supply 5 MLD of water. The work was entrusted (September 2014) to a contractor at a value of ₹21.89 crore with a stipulation for completion by March 2016. However, as of March 2016 the work was still under progress (60 *per cent* was executed with an expenditure of ₹11.72 crore). As a result, the ULB could not achieve the intended objective of providing household connectivity as envisaged under the scheme.

Government stated (October 2016) that the delay was on account of heavy floods and assured that the scheme would be completed in all aspects by December 2016 duly providing household connections.

4.8.2.2 Water Supply Improvement Scheme in Vikarabad

i. Unjustified selection of Project:

With the objective of reducing burden on an already overstrained Mega/Million plus cities, JNNURM guidelines provided for urban infrastructure development in Satellite Towns/Counter Magnets of Million plus cities under Urban Infrastructure Development in Satellite Towns scheme (UIDST). Satellite towns are to be developed in the future development area of the million plus urban agglomerations covered under JNNURM. The towns may be planned for a population of 5 lakh - 10 lakh in case of mega cities.

---

[39] GoI (13 projects), State Government (9), HUDCO (6) and World bank (8)
[40] Jagityal and Korutla
[41] Bellampally, Satupally, Vikarabad, Malkajgiri, Armoor, Manuguru, Medak, Kollapur, Jammikunta, Huzurabad and Kothagudem
[42] Water supply improvement schemes in Gadwal, Manuguru and Vikarabad ULBs

The population of Vikarabad town was 53,185 as per 2011 census and projected population would be two lakh up to the horizon year 2041. The town is situated at a distance of 68 km from the mega city (Hyderabad). Hence, proposal to take up the water supply project to Vikarabad town (sanctioned in 2011) under JNNURM as a satellite town was not justified, based on population and urban agglomeration.

Government stated (October 2016) that expecting future growth, Vikarabad town was selected after thorough examination of existing infrastructure and proximity to the Mega City, Hyderabad. The reply was not acceptable since the town did not meet the criterion of population size for selection under UIDST.

ii. Failure in utilisation of infrastructure created:

A Water Supply Improvement Scheme was sanctioned in March 2007 by State Government to supply 8.586 MLD from Singapur Reservoir of Hyderabad Metropolitan Water Supply & Sewerage Board (HMWS&SB) at a cost of ₹ 32.31 crore under Plan grant. The project was commissioned in May 2012 after incurring an expenditure of ₹ 23.81 crore. Due to non-payment of water bills amounting to ₹ 14.64 crore by ULB, HMWS&SB stopped supply of water from August 2012. The matter was subsequently resolved (January 2015) and supply was resumed from February 2015 onwards. HMWS&SB limited its supply to only 1.50 MLD of water as of May 2016.

However, in the meantime another Water Supply Improvement Scheme under UIDST scheme (JNNURM) was sanctioned (June 2011) for ₹ 104.13 crore for supply of additional quantity of 8.0 MLD of treated water from the same source namely Singapur reservoir of HMWS&SB to meet the requirement of growing population. As of March 2016, 99 *per cent* of the work was completed by incurring expenditure of ₹ 63.94 crore and work relating to additional lines was in progress. All the existing House Service Connections (HSCs) were transferred to the new pipelines under scheme sanctioned in 2011.

It was observed in audit that the supply of water was made through the infrastructure created under scheme sanctioned in 2011. The infrastructure created at the cost of ₹ 23.81 crore under the scheme sanctioned in 2007 was lying idle. There was no improvement in the quantity of water *i.e.*, 1.5 MLD supplied from HMWS&SB and duration of supplying water was only one hour once in three days in the ULB against round the clock supply contemplated in the scheme sanctioned in year 2011. Thus, this scheme was improperly planned and infrastructure created under the scheme sanctioned in 2007 at the cost of ₹ 23.81 crore remained unutilised.

Government accepted (October 2016) the audit observation and stated that infrastructure created under scheme sanctioned in 2011 was presently being utilised and the infrastructure created under previous scheme sanctioned in 2007 would be utilised as and when additional water is drawn.

4.8.2.3 Water Supply Improvement Scheme in Gadwal

State Government had sanctioned (January 2008) Water supply Improvement Scheme for Gadwal ULB at a cost of ₹34.40 crore. The work was entrusted (June 2009) to a contractor at a value of ₹32.59 crore with a stipulation for completion by December 2010.

After executing 15 *per cent* of the work for ₹5.57 crore, the contractor stopped (June 2012) the work. Since there was no response from the contractor, Engineer-in-Chief had requested (June 2013) the Government to accord permission for terminating the contract and have the balance work completed by calling fresh tenders. As of March 2016, permission from Government was awaited. As a result, infrastructure created *i.e.*, three[43] Elevated Level Service Reservoirs (ELSRs) and distribution network for 30.84 km for ₹5.57 crore were lying idle and the objective of improvement in water supply remained unachieved as of October 2016.

Unutilised ELSR

Government accepted (October 2016) the audit observation and stated that balance work would be taken up under Mission Bhageeratha duly integrating the infrastructure created.

4.9 Water demand/supply management

Water demand management involves measures which aim at reducing water demand by optimal utilisation of water supplies for all essential and desirable needs. Water supply management aims at improving the supply by minimizing losses and wastage and unaccounted for water in the transmission mains and distribution system.

4.9.1 Gap between demand and supply

Thirteenth Finance Commission had fixed Service Level Benchmark (SLB) as 135 lpcd for per capita supply of water. Where Underground Drainage was not there the bench mark was fixed as 70 lpcd[44]. As of March 2016, in all the seven[45] test-checked ULBs (with the target of 135 lpcd) there was a gap between demand and supply ranging from 19 *per cent* to 71 *per cent* as detailed in ***Appendix-4.1***.

In test-checked Manuguru and Gadwal ULBs, water supply improvement schemes were not completed as of March 2016. Gap in supply is expected to persist till

[43] at PJP camp, Raghavendra colony and BC colony
[44] Para 2.2.8.3 of manual on Water supply and treatment
[45] Bodhan (19 *per cent*), Gadwal (41 *per cent*), Kodad (71 *per cent*), Mandamarri (44 *per cent*), Manuguru (56 *per cent*), Metpally (71 *per cent*) and Vikarabad (62 *per cent*)

sustainability of water sources is ensured and all the water supply improvement schemes are to be completed to achieve the objectives as envisaged.

Government accepted (October 2016) the audit observation and stated that all ULBs would be provided with piped water supply at 135 lpcd on completion of ***'Inti Intiki Nalla'*** (State sponsored programme) under Mission Bhageeratha.

4.9.2 Duration of water supply

Service level benchmark (SLB) of 24 hours water supply was prescribed by the Thirteenth Finance Commission, which had not been achieved in any of the test-checked ULBs. Duration of water supply by the ULBs ranged from one hour once in four days to one hour per day. In Mandamarri ULB, water was supplied once in four days for only one hour.

Government stated (October 2016) that every scheme was designed to supply water for 24 hours and also stated that this would be achieved in a phased manner. However, not even a single ULB has achieved the target till date.

4.9.3 House service connections (HSCs)

Thirteenth Finance Commission had prescribed a Service Level Benchmark of 100 *per cent* coverage of water supply connections to the households in the ULBs. In the six[46] test-checked ULBs, there was shortfall in HSCs ranging from 48 *per cent* to 78 *per cent.* Water was supplied through public stand posts/water tankers in the uncovered areas. In Manuguru ULB, no HSCs were provided and water was being supplied through public stand posts only.

Thus, the objective of providing safe and clean drinking water to all the households in the test-checked ULBs remained unachieved. Further, household connections were not provided in Manuguru ULB due to non-completion of water supply improvement schemes.

Government accepted (October 2016) the audit observation and stated that water connections are proposed to each and every household on completion of 'Inti Intiki Nalla' (State sponsored programme) under Mission Bhageeratha.

4.9.4 Metering of water connections

Water meter is a scientific instrument for accurate measurement of quantity of water distributed to the consumers and fulfills the need to know the quantity of water produced and distributed. As per O&M manual[47], metering of water supply is desirable to minimise the wastage and to maintain the economic pricing of water. The benchmark for metering water supply connections prescribed by the Thirteenth Finance Commission was 100 *per cent;* however, water meters were not installed in any of test-checked ULBs. In Vikarabad ULB, installation of water meters has been

[46] Bodhan 51 *per cent,* Gadwal 53 *per cent,* Kodad 48 *per cent,* Mandamarri 78 *per cent,* Metpally 62 *per cent* and Vikarabad 58 *per cent*

[47] Para 1.2.2 of Manual on O&M

taken up. Further Metering of water connections were not made mandatory by ULBs. As such, the objective of minimising wastage, ascertaining quantity and economic pricing of water could not be achieved. The ULBs continued to levy water charges at fixed rate, irrespective of actual consumption, due to non-installation of water meters causing possible loss of revenue to ULBs.

Government accepted (October 2016) the audit observation and stated that metering of individual house service connections would be taken up in a phased manner.

4.9.5 Unaccounted for water

Unaccounted for water (UFW) is leakage of water which mostly occurs in the distribution system and house service connections. A systemic approach towards wastage was required to save considerable quantity of water and prevent possible contamination. As per the manual on Water Supply and Treatment upto 15 *per cent*[48] of water wastage *i.e.*, UFW is allowed. In three[49] test-checked ULBs, UFW was within the limit. In two[50] test-checked ULBs the percentage of UFW was more than the benchmark. Kodad and Manuguru ULBs had not furnished the details of UFW. In the absence of flow meters and water meters, the correctness of UFW reported could not be ascertained.

Bodhan ULB
(Leakage from pipeline)

Manuguru ULB
(Non-fixing of taps to the stand posts)

Government accepted (October 2016) the audit observation and stated that UFW levels would be drastically brought down while implementing Mission Bhageeratha.

4.10 Water quality management

Safe water is essential for good health of the community[51]. Improvement in drinking water quality directly had its impact on improvement in the health of the consumers. Water supply agencies are responsible for supply of safe water to consumers and to monitor its quality.

---

48 Para 2.2.8.3 of manual on Water supply and treatment
49 Mandamarri, Metpally and Vikarabad
50 Bodhan (18 *per cent* UFW) and Gadwal (30 *per cent* UFW)
51 Para 9.2 and 9.4 of manual on O&M

4.10.1 Water sample tests

Water supply and treatment laboratories with adequate facilities and manned by qualified personnel are essential for inspection and evaluation of the suitability of water supplied for public use. Water supply and treatment manual[52] prescribes laboratory examination of physical, chemical, bacteriological and biological analysis of water samples to confirm the quality of water.

Audit observed that

i. In the six[53] test checked ULBs, laboratory facilities were not put in place as part of the water supply system. Only chloroscopic tests were conducted in the ULBs. In the absence of laboratories, water samples for physical, chemical, bacteriological and biological analysis were tested in Institute of Preventive Medicine/Rural Water Supply Laboratories concerned.
ii. In Bodhan ULB, all other tests except chloroscopic test were conducted in laboratories (Rural Water Supply Laboratories) other than their own due to lack of equipment, insufficient stock of chemicals for treatment and inadequate staff.

Thus, due to lack of laboratory facilities in ULBs, only chloroscopic tests were conducted; however, there was a shortfall in coverage of tests during audit period as detailed in ***Appendix-4.2.***

Government accepted (October 2016) the audit observation and stated that instructions were being issued to all the ULBs to establish laboratory facilities in the Water treatment plants to ensure testing of water samples as per manual.

4.10.2 Action taken on Unsatisfactory Reports

In the three test-checked ULBs, during the period 2011-16 laboratories had reported 115[54] water samples as 'unsatisfactory,' as detailed below.

Table 4.2

Name of the ULB	No. of samples tested	No. of samples reported as unsatisfactory
Bodhan	10	5
Gadwal	276	21
Kodad	584	89
Total	**870**	**115**

Source: Information furnished by ULBs and laboratories

However, no action was taken on the unsatisfactory reports on water samples by the concerned ULBs. Thus, ensuring safe, clean and potable drinking water to the households by ULBs could not be assessed in Audit.

[52] Chapter-15 of manual on Water supply and Treatment
[53] Gadwal, Kodad, Mandamarri, Manuguru, Metpally and Vikarabad
[54] Bodhan 5 samples, Gadwal 21 samples and Kodad 89 samples

The information relating to water borne diseases was obtained from the medical officers concerned in the test-checked ULBs. Medical centers[55] of four test-checked ULBs reported (2011-16) 31,206[56] cases of water borne diseases such as vomiting, acute diarrhea, jaundice, enteric fever etc. In two ULBs[57], cases of water borne diseases showed an increasing trend during 2011-15.

Government accepted (October 2016) the audit observation and stated that instructions were being issued to all the ULBs to take corrective action wherever unsatisfactory water samples were reported.

4.10.3 Survey and Surveillance

Water quality monitoring and surveillance is a continuous process, along with vigilant assessment and control of safe potable water supply, to be undertaken by the ULB. Surveillance is an investigative activity which was to be undertaken by an agency consisting of the members from State Public Health and Engineering Department, Local Health Authority, Chief Medical Officer / Health Officer and Pollution Control Board, to identify and evaluate factors posing health risk related to drinking water supplied. The surveillance agency had to communicate to the water supply agency and pinpoint the risk areas and give advice for remedial action.

However, no such surveillance agencies were formed in any of the test checked ULBs. Thus, in the absence of surveillance agencies, safe water supply to consumers could not be ensured.

Government accepted (October 2016) the audit observation and assured that necessary surveillance mechanism would be placed at the State level consisting of members from the stake holder departments.

4.10.4 State Pollution Control Board

The Telangana Pollution Control Board (TPCB) monitors the water pollution generated by the industries/urban local bodies by stipulating standards for discharge of effluents by the industries/urban local bodies. Gadwal ULB had been discharging untreated sewage and TPCB instructed (March 2016) to take control measures and ensure that no untreated sewage flow in water bodies. It was observed that construction of 'Super Passage' for discharge of stagnated water, proposed (April 2016) under Fourteenth Finance Commission grants, was not taken up as of October 2016.

During Exit Conference (November 2016), Government stated that approval for construction of 'Super Passage'[58] was being pursued with Superintending Engineer (I&CAD[59]).

---

[55] Area Hospital Gadwal, Public Health Center Manuguru, Urban Health Center Metpally, Community Medical Center Vikarabad

[56] Gadwal 15,375 cases, Manuguru 932 cases, Metpally 6,050 cases and Vikarabad 8,849 cases

[57] Gadwal and Vikarabad

[58] For discharge of stagnated sullage water

[59] Irrigation and Command Area Development Department

4.11 Operation and Maintenance

Operation[60] refers to hourly and daily operations of the components of a system such as plant, machinery and equipment. Maintenance involves keeping the plant, equipment, structures and other related facilities in optimum working condition for supply of quality water to the consumers.

4.11.1 Improper planning

i. For planning future augmentation and improvement of water works in operation, certain key records[61] relating to supply of water are required to be maintained. However, history sheets of pumps and motors, preparation of maps showing the entire network etc., were not being maintained by any of the test-checked ULBs.

ii. Preventive maintenance[62] had to be planned for maintenance of the pipelines, servicing of valves, expansion joints etc., to act against possible contamination and improve pressure in the distribution system. In none of the test-checked ULBs, preventive maintenance was being carried out.

iii. Maintenance schedule is required to be prepared to improve the level of maintenance of water transmission system through improved coordination and planning of administrative and field work and through the use of adequate techniques, equipment and materials. An action plan was to be prepared for Operation and Maintenance. None of the test-checked ULBs had prepared any maintenance schedule for O&M activities.

Thus, due to failure in preparation of maintenance schedule and planning for preventive maintenance, repairs to water transmission system were attended as and when complaints were received. Non-maintenance of basic records resulted in operating problems not being brought on record.

During Exit Conference (November 2016) Government stated that instructions were issued to all the ULBs on preventive maintenance and to maintain necessary records properly.

4.11.2 Inadequate tools/spares and staff for O&M activities

i. Different types[63] of O&M tools are required to be maintained[64] as a measure of preparedness to ensure effective maintenance of water network system. Similarly,

---

60 Para 2.2 of manual on O&M

61 Para 2.3.11, 3.6.1.8, 4.3.8.1 of manual on O&M – List of tools and plants, history sheets of works/equipment, updated transmission system map, flow meter readings at upstream and downstream, man-hours spent on routine operations, age of pipes, quality of pipes etc.; and Para 13.3.6 of manual on Water supply and treatment – daily and cumulative supply over the years, number of connections of various sizes given and cumulative number of connections each month, water treated and the supply billed

62 Para 4.3.3.2 of manual on O&M

63 Hooks, pipe wrench, double ended spanner, screw drivers, pilers etc.,

64 Para 7.5.2, 8.7.2.4, 10.3.2.1, 11.6.3 and 15.11 of manual on O&M

spares[65] required for one-two year's maintenance are to be kept in stock to avoid downtime. In the test-checked ULBs (except Manuguru) it was stated that the tools/spares for regular maintenance were not available.

ii. The water supply and treatment manual[66] prescribed staffing pattern for O&M of water works based on capacity/quantum of water supply. Every supervisory and operating staff engaged for water works should be subjected to appropriate training course[67] at least once in every three/five years during his service. There was shortfall in staffing pattern in the test-checked ULBs. Shortfall was acute in the Fitters/Helpers cadres. The sanctioned strength of Fitters/Helpers as of March 2016 was 15 against the requirement (as per manual[68]) of 112. Against these sanctioned posts, three were vacant. Further, no training as envisaged in manual was imparted to any of the existing staff in the test-checked ULBs.

Due to non-stocking of tools and spares, ULBs had to procure the same from local market whenever need arose, which delayed a timely maintenance. In the test-checked ULBs, average response time in respect of a complaint ranged between one and two days. The delay and wastage of potable water would have been reduced, if, tools/spares were available in stock and adequate staff were deployed.

Government stated (October 2016) that instructions were being issued to all the ULBs on maintenance of required tools/stocks of spares as prescribed in the manual and to deploy required personnel.

4.12 Revenue on water supply

It is essential to establish a sound financial management system to make the water supply system financially viable. This can be achieved by controlling expenditure and increasing the income. Thirteenth Finance Commission had stipulated service level bench mark of 100 *per cent* cost recovery in water supply services. The tariff structure was to be evolved to recover the O&M cost and had a surplus for debt servicing and depreciation. Control of O&M expenditure could have been achieved by preparing an annual budget of income and expenditure based on realistic estimates.

4.12.1 Gap in cost recovery

The major source of revenue under water supply was from collection of water charges from households, Government and commercial establishments besides water connection charges. Expenditure comprises salaries and wages, consumables, electricity charges, repairs and replacement charges. Water charges[69] are to be fixed by the utility, taking into account the expenditure on various heads, such as, operating cost, establishment cost, depreciation, debt services, asset replacement fund etc.

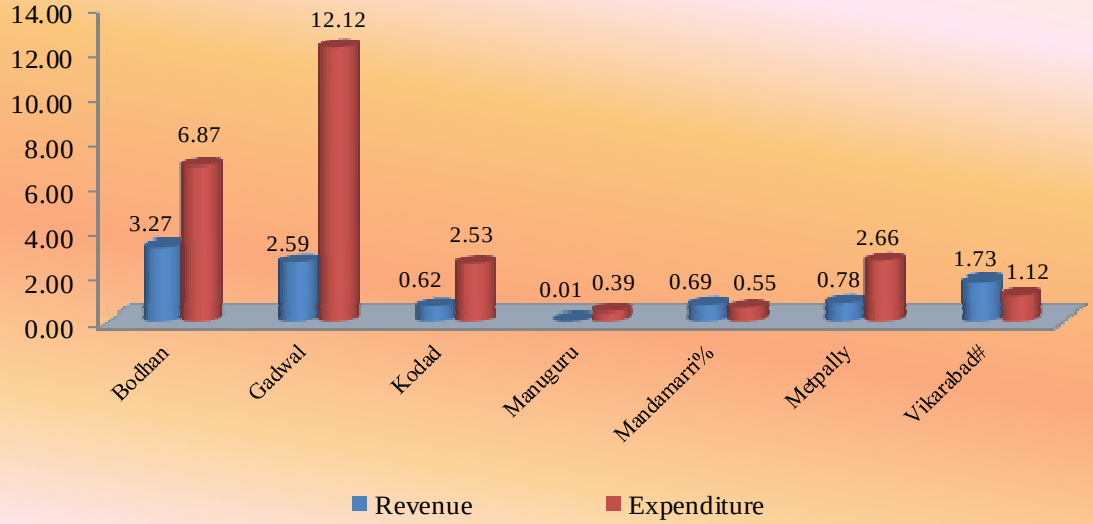
---

65 Set of wearing rings, shaft sleeves, bearings etc.,
66 Para 13.11 of manual on Water supply and treatment
67 Para 14.6 of manual on Water supply and treatment and Para 17.12 of manual on O&M
68 As per Para 13.11 of manual on Water supply and treatment, three fitters/helpers are required for every 10-15 km of distribution system
69 Para 13.2 of manual on O&M

ULBs have to generate revenue and incur expenditure for O&M activities as no funding was provided by the State Government. Revenue and expenditure on water supply in respect of test-checked ULBs during 2011-16 are given in the chart below.

Chart 4.2 (₹ in crore)

Excess expenditure on water supply over revenue during 2011-16



Source: Information furnished by ULBs

%Data for the year 2012-13 was not furnished

Data for the year 2015-16 was not furnished

It is evident from the chart that the expenditure was much higher than the revenue in the test-checked ULBs. Audit observed that

i. In four[70] test-checked ULBs, expenditure exceeded revenue ranging from 210 *per cent* to 468 *per cent*. In Manuguru ULB expenditure was ₹ 39 lakh against the revenue of ₹ one lakh that too by water tankers. No other revenue was generated as water was being supplied through public stand posts only. Revenue exceeded the expenditure in Vikarabad ULB; however, current consumption charges and wages were not being included in the expenditure. Further, it was observed that there was a shortfall in collection of tariff ranging from 67 *per cent* to 95 *per cent* in five[71] ULBs during 2015-16.

ii. For any financially self-sustained water utility, the tariff should be reasonably fixed[72]. In three[73] ULBs, tariff was revised during the period 2012. However, in Kodad and Bodhan ULBs, tariff fixed during 1996 and 2005, respectively, had not been revised till audit. In Mandamarri ULB, revision of tariff proposed in 2009 has not been implemented so far.

---

70 Bodhan 210 *per cent*, Gadwal 468 p*er cent*, Kodad 408 p*er cent* and Metpally 341 p*er cent*

71 Bodhan 81 *per cent*, Gadwal 69 *per cent*, Kodad 95 *per cent*, Metpally 80 *per cent* and Vikarabad 67 *per cent*

72 In Manuguru ULB, revision of tariff did not arise as water was supplied through public stand posts

73 Gadwal, Metpally and Vikarabad

iii. Government had issued orders (2004) to fix water charges for domestic consumers at ₹ 100 per month. In five[74] test-checked ULBs, tariff was ₹ 100 during the review period. In Kodad ULB, water charges were being levied at ₹ 30 per month for both residential and non-residential connections. Audit assessed loss of revenue as ₹ 47.26 lakh[75] per annum (2015-16) due to non-implementation of Government orders regarding water charges.

iv. In Demand, Collection and Balance (DCB) register of four ULBs, there were variations in carrying forward of closing balance of previous years during review period. This had resulted in understatement of water charges by ₹ 29.50 lakh in two ULBs[76] and overstatement of ₹ 5.47 lakh in two[77] ULBs.

Gap in cost recovery would persist until ULBs treat the water as an economic good and evolve a proper tariff structure with improved collection efficiency.

Government accepted (October 2016) the audit observation and stated that on completion of Mission Bhageeratha, ULBs would be advised to develop and put in place a proper cost recovery mechanism.

4.13 Other findings

4.13.1 Non-utilisation of SDRF funds

State Government had released (2011-16) funds amounting to ₹ 2.90 crore[78] under State Disaster Response Fund (SDRF) grant to four ULBs to mitigate adverse seasonal conditions during summer towards transportation of drinking water, repairs to bore wells and pipelines. However, as of March 2016, ₹ 1.46 crore[79] was expended and ₹ 1.44 crore[80] (50 *per cent*) was lying unspent in four ULBs. Thus, the objective of providing water supply during summer season was not achieved. During beneficiary survey, 50 *per cent* of the consumers stated that water was being supplied with a gap of more than two days in summer.

Government stated (October 2016) that all the ULBs were being instructed to submit the Utilisation Certificates for releases and remit the unspent balance, if any, to the Government, without furnishing the reasons for non-utilisation of funds.

4.13.2 Irregularities in payment of electricity charges

i. In respect of High Tension (HT) connections, for the purpose of levy and collection of electricity charges, the billing is to be on the maximum demand recorded during the month or 80 *per cent* of Contract Demand, whichever is higher. In Bodhan ULB, actual consumption of electricity was less than 80 *per cent* of Contract Demand, resulting in avoidable expenditure of ₹ 6.02 lakh

---

74 Bodhan, Gadwal, Mandamarri, Metpally and Vikarabad
75 5,626 House service connections multiplied by ₹ 70 (₹ 100-₹ 30)
76 Kodad ₹ 10.60 lakh and Metpally ₹ 18.90 lakh
77 Gadwal ₹ 0.11 lakh and Mandamarri ₹ 5.36 lakh
78 Bodhan ₹ 0.44 crore, Gadwal ₹ 0.37 crore, Manuguru ₹ 0.68 crore and Vikarabad ₹ 1.41 crore
79 Bodhan ₹ 0.15 crore, Gadwal ₹ 0.03 crore, Manuguru ₹ 0.65 crore and Vikarabad ₹ 0.63 crore
80 Bodhan ₹ 0.29 crore, Gadwal ₹ 0.34 crore, Manuguru ₹ 0.03 crore and Vikarabad ₹ 0.78 crore

during 2011-16. No action was proposed/taken by the ULB to review the Contract Demand.

Government accepted (October 2016) the audit observation and stated that all the ULBs were being instructed to review the electricity consumption and revise Contract Demand wherever required.

ii. In Vikarabad ULB, due to delay in payment of electricity bills amounting to ₹ 11.98 crore as of April 2013, power connection of Pumping station of 'Water Supply Scheme 2007' was disconnected (September 2013). Minimum charges of ₹ 5.20 lakh for the period May – September 2013 was paid on restoration in March 2015 without consuming electricity. This could have been avoided had ULB ensured timely payment of electricity bills.

4.13.3 Improper maintenance of cash book

In Manuguru ULB, seven cheques amounting to ₹ 14.16 lakh were debited in the cash book, but were not issued to the concerned parties for payment. This had resulted in understatement of cash balance of the ULB.

4.14 Monitoring

4.14.1 Conduct of inspections

Public Health & Municipal Engineering (PH&ME) department, a State Level Principal Agency, had to conduct periodical inspections of water supply schemes maintained by ULBs. Details of inspections carried out during 2011-16 were not furnished. In absence of the reports, the inspections carried out cannot be ensured in the Audit.

Government stated (October 2016) that instructions were being issued to all the Superintending Engineers (PH) to conduct periodical inspections and submit inspection reports.

4.14.2 Public awareness programmes

As per O&M manual[81], public awareness programmes are to be conducted regularly for the consumers to sensitise them about potable water not being a free commodity and that it is a value-added commodity with cost implications with the objective of achieving better customer relations, greater water conservation, and enhanced organisational credibility. Audit observed that

i. In two[82] test-checked ULBs, public awareness programmes were not conducted.

ii. Vigilance Committees and Consumer Service Committees to improve the public awareness were not formed.

iii. Consumer survey was not conducted to obtain feedback from the consumers about the services at regular intervals for refining the service standards.

[81] Chapter 18 of manual on O&M
[82] Kodad and Manuguru

iv. The authorities were to list out various aspects of public awareness programmes and work out cost implications for implementing the awareness programmes. Five[83] out of seven test-checked ULBs had not made budget provision for implementing awareness programmes.

Government accepted (October 2016) the audit observation and stated that all the ULBs were being instructed to conduct public awareness programmes regularly with the consumers and all other stake holders for effective management of water supply system.

4.14.3 Water and Energy audit

i. As per O&M manual[84], water audit of the water supply schemes was to be conducted to assess the capacity of total water produced by the water supply authority and the actual quantity of water distributed throughout the area of service and also to assess losses both physical[85] and non-physical[86] which needed immediate attention and control. However, water audit was not conducted in any of the test-checked ULBs. Thus the benefits of water audit, such as, containing loss of water by control of leakages and increase in revenues from under-billed consumers etc., had not been achieved.

ii. As per O&M manual[87], energy audit of a water supply scheme should be conducted to regulate the energy consumption and to identify the possible steps needed to conserve energy and to reduce the energy cost, so that water tariff is kept as low as possible. Further, large installations are to have energy audit every year, medium installations once in two years and small installations once in three years. Energy audit was not conducted in any of the test-checked ULBs.

Government accepted (October 2016) the audit observation and stated that guidelines and action plan were communicated to all the ULBs for implementation of water and energy audit of water supply systems.

4.14.4 Grievance redressal mechanism

As per O&M manual[88], information and facilitation services may be offered under public relations to address grievances of the public. However, in none of the test checked ULBs (except Bodhan) facilitation services / counters were established for customer assistance. In Bodhan ULB, a telephone-based redressal system namely 'Puravani' was established. Though two[89] out of the seven test-checked ULBs

[83] Bodhan, Gadwal, Kodad, Manuguru and Vikarabad
[84] Chapter 15 of manual on O&M
[85] leakage of water in the network from pipes, joints and fittings, reservoirs, overflows of reservoirs and sumps
[86] Theft of water through illegal connections, under-billing through defective meters, water wasted by consumer through open taps, public stand posts etc.
[87] Chapter 16 of manual on O&M
[88] Para 18.5 of manual on O&M
[89] Gadwal and Vikarabad

maintained complaint register, however, disposal of complaints, action taken etc., were not recorded.

During Exit Conference (November 2016) Government stated that an application for the purpose was proposed to be designed.

4.14.5 Supervisory Control and Data Acquisition (SCADA) and telemetry

As per O&M manual[90], the inspection, monitoring and control of O&M of water utility can be automated partially through telemetry[91]. Telemetry when extended to include actions based on the data for remote control of pumps and other equipment can be Supervisory Control and Data Acquisition (SCADA[92]). This would facilitate, minute real time information from remote terminal unit located at the water treatment plant, reservoir, flow meter, pumping stations etc., and transmitted to a central control station where the information is updated, displayed and stored manually or automatically. However, in none of the test-checked ULBs, SCADA or telemetry system was implemented. Due to the lack of these systems, the ULBs did not have the real time information on water networks to curb leakages, pilferages and unauthorised connections.

Government accepted (October 2016) the audit observation and stated that ULBs would adapt telemetry as it was compatible to lower technology and which was immediately accessible. After completion of water supply schemes under Mission Bhageeratha, major ULBs were to be provided with SCADA in a phased manner.

4.14.6 GIS mapping

Geographic Information System (GIS) is a computer program that combines mapping with detailed information on physical structures with geographic areas. The GIS creates a database within a mapped area, such as, streets, valve chambers/manholes, pipe networks and pumping stations. As per O&M manual[93], these maps can be used to inform the maintenance crew to locate the place of work. However, none of the test-checked ULBs have developed GIS mapping.

Government accepted (October 2016) the audit observation and stated that efforts were on to get the GIS developed for use of O&M of water supply systems in ULBs under e-governance project to be funded by World Bank.

---

90 Para 12.5 of manual on O&M

91 Telemetry enables regular monitoring of the data (hours of pumping, pressure and flow of water in distribution system etc.) on real time basis and the data is reviewed to take decision

92 SCADA a computer aided system which collects, stores and analyses the data on all aspects of O&M

93 Para 8.4.2.3 of manual on O&M

4.14.7 Improper monitoring of Water Supply Improvement Scheme (WSIS) in Bodhan

In Bodhan ULB, a Water Supply Improvement Scheme was completed/ commissioned (August 2011) after incurring expenditure of ₹17.32 crore. Quality control wing had made (November 2010) certain observations[94] on execution of the project. Engineer-in-Chief approved the completion report and the project was handed over (August 2011) to ULB.

During joint physical verification (May 2016) of the project it was observed that the lapses[95] noticed by the Quality control wing were unattended. Further, an amount of ₹1.84 lakh was borne (August 2012) by the ULB towards repairs to motors and rectification of leakages during the defect liability period,[96] without involving the contractor.

Non-provision of railings to stair case of 1st and 2nd flights of ELSR

4.15 Findings of beneficiary survey

Beneficiary survey covering 50 beneficiaries in each test-checked ULB (350 beneficiaries from seven test-checked ULBs) was conducted to assess the response of the consumers with regard to quantity and quality of water supplied. The results of survey are summarised below:

i. Water meters were not provided to 96 *per cent* of beneficiaries.
ii. Majority of the beneficiaries (60 *per cent*) stated that they were not receiving water supply daily. 76 *per cent* of the beneficiaries stated that water supply was not adequate.
iii. Regarding duration of water supply, 85 *per cent* of the beneficiaries stated that usually water was supplied for one hour or less. Water was generally supplied (80 *per cent*) at fixed time.
iv. Majority (51 *per cent*) of the beneficiaries were using bore well/well in addition to municipal water supply.
v. 70 *per cent* of the beneficiaries were not using water supplied by the ULBs for drinking or cooking purposes.

---

94 Non-raising of parapet wall fully, dampness in aerator, non-provision of covers to valve chambers, non-finishing of RCC ladder for clear water sump, non-painting of pipes, non-erection of shed to chlorination plant, non-provision of railings to stair case (1st and 2nd flights) to ELSR

95 Non-raising of parapet wall fully, dampness in aerator, non-finishing of RCC ladder for clear water sump, non-erection of shed to chlorination plant, non-provision of railings to stair case (1st and 2nd flights) to ELSR

96 Two years from the date of completion of project

vi. 45 *per cent* of beneficiaries felt that water charges levied by the ULBs were not reasonable.

vii. Majority of beneficiaries (89 *per cent*) stated that public awareness camps were not conducted.

4.16 Conclusion

Water Regulatory Authority was yet to be established for uniformity in operations and pricing for supply of water. Orders for conservation/recharge of ground water were not complied with by the ULBs. Water treatment plants were not available where sub-surface was the source. Water supply was inequitable since distribution network was inadequate. Flow meters were not installed at source/treatment plant/distribution zones. Delay in completion of projects affected intended provision of potable drinking water. There was no action plan for maintenance. There was inadequacy in staffing pattern for operation and maintenance of water works. Gap between demand and supply of water persisted. No water meters were installed for water connections. ULBs did not install their own laboratories and frequency of tests prescribed was not adhered to. Revenue did not match expenditure on water supply arrangements. Monitoring was inadequate. Facilitation services for grievance redressal were not established for customer assistance.

4.17 Recommendations

Audit recommends the following measures for consideration of the Government:

- ***Measures for replenishment of ground water should be strengthened to ensure sustainability of water sources.***
- ***Adequate steps should be taken to conduct all types of prescribed tests to ensure adherence to the standards for supply of safe drinking water.***
- ***The system of Operation and Maintenance should be strengthened to avoid wastage of drinking water and to provide better services.***
- ***Water should be treated as an economic good and steps should be taken to reduce gap in cost recovery.***

Government accepted the recommendations of audit.