



RCUES
Ministry of Housing & Urban Affairs,
Government of India



Urban Development
& Housing Department



SERVICE LEVEL IMPROVEMENT PLAN OF WATER SUPPLY

MUNICIPAL CORPORATION MUZAFFARPUR

PREPARED BY

Regional Centre for Urban and
Environmental Studies Lucknow

IN CONSULTATION WITH

Muzaffarpur Municipal Corporation
&

Bihar Urban Infrastructure
Development Corporation Limited

CITY NAME – MUZAFFARPUR MUNICIPAL CORPORATION

WATER SUPPLY

1. Assess the Service Level Gap

The first step is to assess the existing situation and service levels gaps for Water Supply (AMRUT Guidelines; para 3 & 6). This will also include existing institutional framework for the sector. AMRUT is focused on improvement in service levels. The zone wise data shall be used in identifying the gaps. These zone-wise gaps will be added to arrive at city level service gaps. While assessing service level gap reply following questions not more than word indicated against each question.

Question: What kind of baseline information is available for water supply system of the city? Detail out the data, information, plans, reports etc related to sector. Is zone wise information available? (75 words)

Baseline information available for water supply system of the city is taken from the DPR prepared by Muzaffarpur Municipal Corporation prior to implementation of Water Supply Scheme in the City. In this DPR, all the information related to water Supply Scheme was taken from secondary data, plans, reports and primary survey data collected by Municipal Corporation Muzaffarpur which is verified by other line agencies involved in the preparation of DPR and implementation of project from time to time. In this process Muzaffarpur Municipal Corporation identified gaps in demand and supply of water supply services owing to the lack of proper infrastructure leading to poor service delivery to its citizens. Lack of funds to meet out the requirement paved the way for initiating a dialogue with the Asian Development Bank by the Urban Development and Housing Department, Govt of Bihar.

Before ADB took over the project only 27 tube wells (only 20 functional) with a capacity of 30 MLD along with 101.29 Km distribution network and 11 reservoirs with a capacity of 5.22 ML were available out of which 7 are defunct. Under the project 16 new OHTs with a capacity of 27.4 ML are proposed.

Muzaffarpur Municipal Corporation after receiving and reviewing the DPR prepared by ADB has requested BUDICo to prepare an adhoc project to cater to the immediate need of the citizens. In this the MC will fund the rejuvenation of the existing assets. Hence the entire work of water supply will be done by the Municipal Corporation and the adhoc ADB DPR will be used for the same.

ADB DPR derived the demand forecast for the years 2021-2051 based in the census data from 1951-2011. The demand water production for 2021 is 82.5 MLD and 2036 is 106.4 MLD and 2051 is 141.8 MLD. It was also recorded in the DPR that out of 27 tube wells 7 were defunct and only 20 tube wells are functioning.

The need for refurbishment of 20 tube wells is felt as the pumps used are of higher capacity because of which the sand flows through the pipes and clogs the tube wells. This brings down the yield and also damages the pumps which have to then pump turbid water. Not only are the expenses higher due to repair work but citizens also suffer from consumption of turbid water.

During the survey conducted by ADB it was observed that the low yield of 30 MLD from 20 tube wells was also because the pumping was intermittent and all the reservoirs were not exhaustively used for string the water. Hence it is now proposed that after the refurbishment of 20 tube wells the pumping hours have to be maintained for a minimum of 20 hrs and optimum utilization of all the reservoirs have to be done to produce a water production level of 45.82 MLD.

Currently the city has 11 reservoirs (OHTs) out of which only 4 are functional, hence it has been proposed in the DPR that all the reservoirs have to be rejuvenated to store the water. As per the guidelines of the Ministry 24x7 water supply with universal coverage has to be achieved and in line with this the reservoirs have to be in functional condition so that even when the pumping cannot happen the city gets its water supply without fail.

17 new tube wells have been proposed to cater the needs of 2036 which will give 106.4 MLD (including the current supply). For 2051 requirement after 2036 another 10 tube wells will be drilled to get additional capacity of 35.4 MLD.

New pumping mains has been proposed under the project by ADB for around 13.64 Kms. For the purpose of efficient distribution system the entire town of Muzzaffarpur has been divided into 46 District Metered Area (DMA/Zones) and at the entry point of each DMA one monitoring station will be established to know the pressure and quantity of water being supplied to the particular DMA. Apart from this two Critical Stations (farthest point and the most elevated point) will be established in the distribution chain of each DMA to analyze the water supply service and to gauge the health of the entire system. In order to keep a check on the NRW, Electromagnetic flow Meters are proposed to be setup at the tube wells and reservoirs to know the exact quantity of water being produced and supplied.

As per the survey the pumping system/machinery/panel boards available to the city of Muzzaffarpur cannot be used for the refurbished capacity. Hence new pumping system/machinery/panel boards are proposed wherever required.

A distribution Network of 527 Km connecting 70000 households is being proposed under the ADB project. Smart Metering devices are also proposed to be installed along with the house service connection to record the meter reading without having to enter the house.

SCADA system is also proposed to monitor the entire pumping system and distribution at one place. In order to run the system efficiently by the MMC officials after the handing over, a capacity building exercise throughout the entire phase of construction and maintenance period will be organized. Also counselling sessions with civil society, elected representatives and citizens at large will also be organized throughout the entire project period to create awareness. Compensation will be given to people who are effected by the construction activity.

To create accountability of the entire system, the contractor will be bound by an agreement to access the capacity of the existing as well as the newly developed system and take over the system from the seventh month of commencement of the project and run it for the remaining project period and later on hand over to MMC. During the operation period all the MMC personnel involved in the O& M of the existing system will be working with the Contractor to learn on the job. A grievance redressal system will also be put in place by the contractor which will eventually be handed over to MMC.

Question: Have you collected census 2011 data? Are you aware of baseline survey data of MoUD? Have you correlated data from these and other sources? (75 words).

Yes, we have collected the Census 2011 data from Census of India website. Yes, we are aware of the baseline survey data of Ministry of Urban Development.

Yes, we had correlated the data from Census of India, MoUD Survey Data, DPRs, Primary and Secondary Data available in Municipal Corporation and other Parastatal Agencies that were involved in urban development schemes while preparing the Service Level Improvement Plan.

	Location of source of drinking water Population	Total number of house holds	Tap water from treated source
Total population (census 2011)	Total Population = 3,54,462	66,085	14,308
	Within the premises	53,489	12,500
	Near the premises	8,911	1,319
	Away	3,685	489
Departmental data 2015		67732 HH	11673 HH
Departmental data from ADB		67732 HH	11673 HH

What are existing service levels for water supply in the city? What is the coverage of water supply Connections? What is per capita supply of water? How much is the extent of metering? How much is non-revenue water? Provide information in table

TABLE: STATUS OF WATER SUPPLY SERVICE LEVELS

Sr. No.	Indicators	Present Status		MOUD Benchmark	Reliability	
		2015	2017		2015	2017
1	Coverage of water supply connections 11673 HH/67732 HH	17.23 %	17.23 %	100%	C	C
2	Per capita supply of water 45.8 MLD / 3,54,462 Population = 129.20 LPCD	129.20 LPCD	129.20 LPCD	135 LPCD	C	C
3	Extent of metering of water connections	0%	0%	100%	C	C
4	Extent of non-revenue water	100%	100%	20%	D	D
5	Quality of water supplied	70%	70%	100%	D	D
6	Cost recovery in water supply services	0%	0%	100%	D	D
7	Efficiency in collection of water supply related charges	0%	0%	90%	D	D
Note: Data not available regarding NRW, Cost recovery and efficiency in collection of water related charges.						

QUESTION: WHAT IS THE GAP IN THESE SERVICE LEVELS WITH REGARD TO BENCHMARKS PRESCRIBED BY MOUD? (75 WORDS).

S.No	GAP IN SERVICE LEVELS IS AS UNDER:	Year 2015	2017-Existing
1.	Gap in coverage of water supply	82.77%	82.77%

2.	Gap in Per capita water availability as per present population is about	5.8 LPCD	5.8 LPCD
3.	Gap in Metering is	100%	100%
4.	Gap in NRW include leakage and free water supply to social gathering festivals along with water supply through stand posts.	80%	80%
5.	Gap in Quality of supplied water as per PHE norms.	30%	30%
6.	Gap in Cost recovery with expenditure on electricity and power.	100%	100%
7.	Gap in efficiency of water charges	90%	90%

SOURCE OF WATER AND WATER TREATMENT SYSTEM.

Please provide information in 150 words on the above responding to (however not limited to) following questions.

Question: What is the existing source of water? Is it surface water source or underground water source? What is the capacity of these sources?

Existing source of water supply is underground water and capacity of the source (Total Nos of tube wells x Average discharge of each tube well) is $27 \times 1.69 \text{ MLD} = 45.8 \text{ MLD}$

Question: Is there any treatment provided to water from these sources? How much water is required to be treated daily? What is the treatment capacity installed in the city?

Yes, chlorination of underground water supply is done. Chlorinator Dozers are provided for this purpose 47.85 MLD as per census 2011 water is required to be treated daily. Total treatment Capacity installed in the city is 45.8 MLD.

Question: What per capita water supply in LPCD (liter per capita per day) comes out, if you divide total water supply by the total population?

Existing source of water is ground water and already treatment facility is available. Per capita water supply in LPCD is $= (\text{Total water supply} / \text{total Population})$ $45.8 \text{ MLD} / 3,54,462 \text{ Population} = 129.20 \text{ LPCD}$

DISTRIBUTION ZONES

Please provide information in 150 words on the above responding to (however not limited to) following questions.

Question: City is divided in how many zones for water supply?

The work of Water Supply in Rural and Urban areas of Bihar is done by the Public Health and Engineering Department of Bihar Government and same is maintained by Gram Panchayat and Urban Local Bodies for smooth

supply to the citizens but due to lack of proper infrastructure and shortage of funds it is impossible to achieve the desired results.

Ministry of Urban Development, Government of India introduced its flagship scheme AMRUT for enhancement of infrastructure related to water supply scheme and ensuring universal coverage. In line with the same Urban Development and Housing Department Government of Bihar took initiative and involved Bihar Raj Jal Parshad and BUDCIO as the Parastatal Agencies for preparation of Detailed Project Report and Implementation of the project under AMRUT.

In this above context, Bihar Raj Jal Parshad visited Municipal Corporation Muzaffarpur and conducted a survey to collect information based on which the city was divided into 46 DMA/zones.

TABLE: ZONE WISE COVERAGE OF HOUSEHOLDS

Question: Provide details of total no of Households (HH) in each zone, no of HH with and without water tap connections in the Table

Zone No/ DMA	Total No. of Households	Households with Water tap Connection			Households without water tap connections		
		2015	2017	Total	2015	2017	Remaining gap
1	1231 HH	208 HH	208 HH	208 HH	1023 HH	1023 HH	1023 HH
2	1786 HH	330 HH	330 HH	330 HH	1456 HH	1456 HH	1456 HH
3	1905 HH	264 HH	264 HH	264 HH	1641 HH	1641 HH	1641 HH
4	1345 HH	383 HH	383 HH	383 HH	962 HH	962 HH	962 HH
5	1316 HH	248 HH	248 HH	248 HH	1068 HH	1068 HH	1068 HH
6	1659 HH	615 HH	615 HH	615 HH	1044 HH	1044 HH	1044 HH
7	1814 HH	475 HH	475 HH	475 HH	1339 HH	1339 HH	1339 HH
8	1277 HH	429 HH	429 HH	429 HH	848 HH	848 HH	848 HH
9	594 HH	136 HH	136 HH	136 HH	458 HH	458 HH	458 HH
10	1448 HH	138 HH	138 HH	138 HH	1310 HH	1310 HH	1310 HH
11	1410 HH	620 HH	620 HH	620 HH	790 HH	790 HH	790 HH
12	1882 HH	801 HH	801 HH	801 HH	1081 HH	1081 HH	1081 HH
13	1891 HH	471 HH	471 HH	471 HH	1420 HH	1420 HH	1420 HH
14	1254 HH	223 HH	223 HH	223 HH	1031 HH	1031 HH	1031 HH
15	845 HH	154 HH	154 HH	154 HH	691 HH	691 HH	691 HH

16	1564 HH	393 HH	393 HH	393 HH	1171 HH	1171 HH	1171 HH
17	2191 HH	548 HH	548 HH	548 HH	1643 HH	1643 HH	1643 HH
18	1618 HH	442 HH	442 HH	442 HH	1176 HH	1176 HH	1176 HH
19	1152 HH	240 HH	240 HH	240 HH	912 HH	912 HH	912 HH
20	862 HH	202 HH	202 HH	202 HH	660 HH	660 HH	660 HH
21	1511 HH	624 HH	624 HH	624 HH	887 HH	887 HH	887 HH
22	1305 HH	217 HH	217 HH	217 HH	1088 HH	1088 HH	1088 HH
23	1040 HH	282 HH	282 HH	282 HH	758 HH	758 HH	758 HH
24	1444 HH	202 HH	202 HH	202 HH	1242 HH	1242 HH	1242 HH
25	1314 HH	166 HH	166 HH	166 HH	1148 HH	1148 HH	1148 HH
26	1795 HH	141 HH	141 HH	141 HH	1654 HH	1654 HH	1654 HH
27	2124 HH	141 HH	141 HH	141 HH	1983 HH	1983 HH	1983 HH
28	845 HH	154 HH	154 HH	154 HH	691 HH	691 HH	691 HH
29	1633 HH	14 HH	14 HH	14 HH	1619 HH	1619 HH	1619 HH
30	2095 HH	23 HH	23 HH	23 HH	2072 HH	2072 HH	2072 HH
31	1790 HH	76 HH	76 HH	76 HH	1714 HH	1714 HH	1714 HH
32	2411 HH	83 HH	83 HH	83 HH	2328 HH	2328 HH	2328 HH
33	1243 HH	43 HH	43 HH	43 HH	1200 HH	1200 HH	1200 HH
34	1473 HH	0 HH	0 HH	0 HH	1473 HH	1473 HH	1473 HH
35	1437 HH	1 HH	1 HH	1 HH	1436 HH	1436 HH	1436 HH
36	1653 HH	136 HH	136 HH	136 HH	1517 HH	1517 HH	1517 HH
37	1545 HH	140 HH	140 HH	140 HH	1405 HH	1405 HH	1405 HH
38	1404 HH	99 HH	99 HH	99 HH	1305 HH	1305 HH	1305 HH
39	1307 HH	69 HH	69 HH	69 HH	1238 HH	1238 HH	1238 HH
40	1183 HH	131 HH	131 HH	131 HH	1052 HH	1052 HH	1052 HH
41	1043 HH	99 HH	99 HH	99 HH	944 HH	944 HH	944 HH

42	1742 HH	499 HH	499 HH	499 HH	1243 HH	1243 HH	1243 HH
43	1281 HH	178 HH	178 HH	178 HH	1103 HH	1103 HH	1103 HH
44	1477 HH	478 HH	478 HH	478 HH	999 HH	999 HH	999 HH
45	1119 HH	354 HH	354 HH	354 HH	765 HH	765 HH	765 HH
46	1474 HH	3HH	3HH	3HH	1471 HH	1471 HH	1471 HH
Total	67732 HH	11673HH	11673HH	11673HH	56059 HH	56059 HH	56059 HH

STORAGE OF WATER

Please provide information in 150 words on the above responding to (however not limited to) following questions.

Question: What is the total water storage capacity in the city ? What is capacity of elevated and ground water reservoirs?

Storage capacity of in the city is as follows:-

11 Total Elevated reservoir Storage Capacity Existing – 4.76 ML 7 reservoir is defanged out off 11 and capacity of reservoir is 1.8 ML

16 Ongoing Elevated reservoir Capacity -

Proposed capacity : 27.3 ML

Question: In case of surface water, does city need to have ground level reservoirs to store raw treated water?

As per the existing situation, the city is using only ground water and there is no need of reservoirs for storage of treated raw water.

Question: Is water being supplied to consumers through direct pumping or through elevated reservoirs?

Water is being supplied to consumers through direct pumping as well as through elevated reservoir.

Question: Is storage capacity sufficient to meet the cities demand?

No, storage capacity is not sufficient to meet the city demand.

DISTRIBUTION NETWORK

Please provide information in 150 words on the above responding to (however not limited to) following questions.

Question: What is the total length of water supply distribution pipe line laid in the city?

The total length of water supply distribution pipeline laid in the city 101 KM in 43 zones however the city is divided into 46 zones.

Question: What is the total road length in the city? Is the pipe lines are laid in all streets? Is the objective of universal coverage of water supply pipe line is achieved?

The total road length in the city is 609 KM. Pipe lines are not laid in all the streets. The objective of universal coverage of water supply is not achieved as pipe line is not laid in all streets.

Question: What are the kind of pipe materials used in distribution lines?

D.I., C.I. pipe materials are used in distribution lines.

Question: Provide zone wise details of street length with and without water distribution lines in the Table?

Table: Zone Wise length of distribution network

Zone No./DMA	Total Street Length In KM	Street Length With Water Distribution Pipe Line In Km			Street Length Without Water Distribution Pipe Line(In Kms)		
		2015	2017	Total	2015	2017	Remaining Gap
1	20.7 KM	8.19 KM	0 KM	8.19 KM	12.51 KM	12.51 KM	12.51 KM
2	21.19 KM	4.94 KM	0 KM	4.94 KM	16.25 KM	16.25 KM	16.25 KM
3	21.2 KM	3.65 KM	0 KM	3.65 KM	17.55 KM	17.55 KM	17.55 KM
4	7.29 KM	2.69 KM	0 KM	2.69 KM	4.6 KM	4.6 KM	4.6 KM
5	11.78 KM	4.62 KM	0 KM	4.62 KM	7.16 KM	7.16 KM	7.16 KM
6	15.42 KM	5.95 KM	0 KM	5.95 KM	9.47KM	9.47KM	9.47KM
7	17.85 KM	6.35 KM	0 KM	6.35 KM	11.5 KM	11.5 KM	11.5 KM
8	9.95 KM	2.95 KM	0 KM	2.95 KM	7 KM	7 KM	7 KM
9	12.89 KM	2.54 KM	0 KM	2.54 KM	10.35 KM	10.35 KM	10.35 KM

10	6.2 KM	1.26 KM	0 KM	1.26 KM	4.94 KM	4.94 KM	4.94 KM
11	9.74 KM	2.48 KM	0 KM	2.48 KM	7.26 KM	7.26 KM	7.26 KM
12	10.74 KM	3.65 KM	0 KM	3.65 KM	7.09 KM	7.09 KM	7.09 KM
13	12.45 KM	0,55 KM	0 KM	0,55 KM	11.9 KM	11.9 KM	11.9 KM
14	6.5 KM	0.11 KM	0 KM	0.11 KM	6.39 KM	6.39 KM	6.39 KM
15	5.389 KM	0.079 KM	0 KM	0.079 KM	5.31 KM	5.31 KM	5.31 KM
16	10.69 KM	3.74 KM	0 KM	3.74 KM	6.95 KM	6.95 KM	6.95 KM
17	12.22 KM	1.97 KM	0 KM	1.97 KM	10.25 KM	10.25 KM	10.25 KM
18	11.23 KM	0 KM	0 KM	0 KM	11.23 KM	11.23 KM	11.23 KM
19	7.04 KM	0.7 KM	0 KM	0.7 KM	6.34 KM	6.34 KM	6.34 KM
20	7.36 KM	0 KM	0 KM	0 KM	7.36 KM	7.36 KM	7.36 KM
21	7.88 KM	2.24 KM	0 KM	2.24 KM	5.64 KM	5.64 KM	5.64 KM
22	6.3 KM	0.24 KM	0 KM	0.24 KM	6.06 KM	6.06 KM	6.06 KM
23	8.19 KM	0.56 KM	0 KM	0.56 KM	7.63 KM	7.63 KM	7.63 KM
24	9.37 KM	2.04 KM	0 KM	2.04 KM	7.33 KM	7.33 KM	7.33 KM
25	8.23 KM	0.97 KM	0 KM	0.97 KM	7.26 KM	7.26 KM	7.26 KM
26	18.93 KM	1.2 KM	0 KM	1.2 KM	17.73 KM	17.73 KM	17.73 KM
27	16.9 KM	0 KM	0 KM	0 KM	16.9 KM	16.9 KM	16.9 KM
28	14.34 KM	1.4 KM	0 KM	1.4 KM	12.94 KM	12.94 KM	12.94 KM
29	15.6 KM	1.64 KM	0 KM	1.64 KM	13.96 KM	13.96 KM	13.96 KM
30	25.34 KM	2.57 KM	0 KM	2.57 KM	22.77 KM	22.77 KM	22.77 KM
31	22.06 KM	2.18 KM	0 KM	2.18 KM	19.88 KM	19.88 KM	19.88 KM
32	41.45 KM	1.17 KM	0 KM	1.17 KM	40.28 KM	40.28 KM	40.28 KM
33	11.35 KM	0.1KM	0 KM	0.1KM	11.25 KM	11.25 KM	11.25 KM
34	16.3 KM	0 KM	0 KM	0 KM	16.3 KM	16.3 KM	16.3 KM
35	20.3 KM	0.23 KM	0 KM	0.23 KM	20.07 KM	20.07 KM	20.07 KM

36	7.25 KM	0.56 KM	0 KM	0.56 KM	6.69 KM	6.69 KM	6.69 KM
37	12.69 KM	2.41 KM	0 KM	2.41 KM	10.28 KM	10.28 KM	10.28 KM
38	13.77 KM	2.88 KM	0 KM	2.88 KM	10.89 KM	10.89 KM	10.89 KM
39	11.23 KM	0.70 KM	0 KM	0.70 KM	10.53 KM	10.53 KM	10.53 KM
40	8.44 KM	1.78 KM	0 KM	1.78 KM	6.66 KM	6.66 KM	6.66 KM
41	11.43 KM	1.81 KM	0 KM	1.81 KM	9.62 KM	9.62 KM	9.62 KM
42	14.67 KM	3.56 KM	0 KM	3.56 KM	11.11 KM	11.11 KM	11.11 KM
43	10.43 KM	1.08 KM	0 KM	1.08 KM	9.35 KM	9.35 KM	9.35 KM
44	8.19 KM	4.04 KM	0 KM	4.04 KM	4.15 KM	4.15 KM	4.15 KM
45	13.42 KM	6.06 KM	0 KM	6.06 KM	7.36 KM	7.36 KM	7.36 KM
46	17.57 KM	3.45 KM	0 KM	3.45 KM	14.12 KM	14.12 KM	14.12 KM
Total	609.459 KM	101.289 KM	0 KM	101.289 KM	508.17 KM	508.17 KM	508.17 KM

Note: - 6.65 km replacement of line proposed in existing line laid in the city 101.289 km along with Distribution main 12.05 km and raising main is 17.4 KM.

INSTITUTIONAL FRAMEWORK

Please provide information in 150 words on the above responding to (however not limited to) following questions.

Question: Define role and responsibilities in terms of O&M, policy planning, funding, service provision in table

Table: Functions, roles, and responsibilities

Planning and Design	Construction/ Implementation	O&M
Bihar Raj Jal Parshad	Bihar Raj Jal Parshad	Municipal Corporation Muzaffarpur

Question: How city is planning to execute projects?

As per AMRUT Mission guidelines city is planning to achieve universal coverage by undertaking projects of water supply scheme to focus the activities under regularization of unauthorized water connection, branch distribution pipelines, gaps between pipelines, replacement of old pipeline, storage facility, metering and 24x7 water supply, SCADA etc..

Question: Shall the implementation of project be done by Municipal Corporation or any parastatal body? Please refer para 8.1 of AMRUT guidelines.

Yes, implementation of the project will be done by parastatal Agencies in consultation with Urban Local Bodies

2. Bridge the Gap

Once the gap between the existing Service Levels is computed, based on initiatives undertaken in different ongoing programs and projects, objectives will be developed to bridge the gaps to achieve universal coverage. (AMRUT Guidelines; para 6.2 & 6.3, Annexure-2; Table 2.1). Each of the identified objectives will be evolved from the outcome of assessment and meeting the opportunity to bridge the gap.

Question: List out initiatives undertaken in different ongoing programs and projects to address these gaps. For this provide details of ongoing projects being carried out for sector under different schemes with status and when the existing projects are scheduled to be completed? Provide information in Table

TABLE: STATUS OF ONGOING/ SANCTIONED PROJECTS

2015-16 & 2016-2017

S.No.	Name of Project	Scheme Name	Cost	Month of Completion	Status (as on dd /2017)
1	Water Supply Improvement Project Package -1 Distribution Network – 508 KM, 16 Over Head tank-27.3 ML , Household Connection with meter –70,000 , Raising Main- 17.4 KM, Distribution main -12.05 Km , Replacement of old line 6.65 KM, Tube Well 28 for year 2048 -100.8 MLD	ADB	380.20 Cr	DPR is Submitted to BUIDCO for further necessary action.	0%

Question: How much the existing system will able to address the existing gap in water supply system? Will completion of above will improve the coverage of network and collection efficiency? If yes, how much. (100 words).

The existing system is unable to address the existing gap in water supply system. After the completion of ADB Water Supply Package-1, there will be improved coverage of network in 508 KM along with Per-Capita of Water Supply and Storage Capacity along with household connection hence there will be much improvement of Collection Efficiency.

Question: Does the city require additional infrastructure to improve the services? What kind of services will be required to fulfill the gap?

Yes, the city requires additional infrastructure to improve the services. The following kind of services will be required to fulfil the gap:

1. Better coverage of water supply system by increasing length of pipelines and creating awareness among people towards proper usage of municipal water.
2. Regularization of unauthorized water connections.
3. Reduction in NRW water by replacement of old & damaged pipelines.
4. Automation of tube wells
5. Metering of water supply.

Question: How does the city visualize taking the challenge to rejuvenate the projects by changing their orientation, away from expensive asset replacement programs, to focusing on optimum use of existing assets?

Vision of the City is to optimize the current infrastructure and identify the grey areas by reducing the NRW and mainstreaming the illegal connections. City is bound to provide universal coverage by including the unserved areas in the second phase of development through parastatal agencies.

Question: Has city conducted assessment of Non-Revenue Water? If yes, what is the NRW level? Is city planning to reduce NRW?

No, City has not conducted any assessment related to Non-Revenue Water but is planning to conduct a study on NRW for the purpose of reducing it.

Question: Based on assessment of existing infrastructure and ongoing / sanctioned projects, calculate existing gaps and estimated demand by 2021 for water supply pipe network, number of household to be provided with tap connections, and required enhancement in capacity of water source/ treatment plant (MLD). Gaps in water supply service levels be provided as per Table.

Component	2015	2017	Total		2021	
	Present	Ongoing	2015	2017	Demand	Gap
Source	45.8 MLD	-	45.8 MLD	45.8 MLD	110.6 MLD	64.8 MLD for Year 2036
Treatment capacity	45.8 MLD	-	45.8 MLD	45.8 MLD	110.6 MLD	64.8 MLD for Year

Component	2015	2017	Total		2021	
	Present	Ongoing	2015	2017	Demand	Gap
Elevated Storage capacity	1.8 ML	-	1.8 ML	1.8 ML	29.1 ML	27.3 ML
Distribution network coverage	101.29 KM	-	101.29 KM	101.29 KM	609.46 KM	508.17 KM

OBJECTIVES

Based on above, objectives will be developed to bridge the gaps to achieve universal coverage. While developing objectives following question shall be responded so as to arrive at appropriate objective.

Please provide List out objectives to meet the gap in not more than 100 words.

Question: Does each identified objectives will be evolved from the outcome of assessment?

Yes. The objective is to increase the coverage to un-served areas and to reduce NRW and enhance storage capacity.

1. Universal coverage of water connections by laying of water supply pipe lines in shortfall areas and legalization of unauthorized water connections.
2. To reduce NRW, provision of replacement of old pipe lines, leakage detection machines and automation of tube wells will be made.

Question: Does each objective meet the opportunity to bridge the gap?

Yes, each objective meets the opportunity to bridge the gap.

3. Examine Alternatives and Estimate Cost

The objective will lead to explore and examine viable alternatives options available to address these gaps.. These will include out of box approaches. (AMRUT Guidelines; Para 6.4 & 6.8 & 6.9). This will also include review of smart solutions. The cost estimate with broad source of funding will be explored for each. While identifying the possible activities, also examine the ongoing scheme and its solutions including status of completion, coverage and improvement in O&M. Please provide information on the above responding to (however not limited to) following questions.

Question: What are the possible activities and source of funding for meeting out the objectives? (75 words)

The source of funding of activities shall be:

1. AMRUT,
2. 14th Finance Commission
3. State Government Funds

The funding for meeting out each objective will 50% from GOI and remaining 30% from state government and 20% from ULB.

Question: How can the activities be converged with other programme like JICA/ ADB funded projects in the city etc? (100 words)

There are no ongoing projects funded by JICA/ADB running in the city.

Question: What are the options of completing the ongoing activities? (75 words)

There are no ongoing projects.

Question: How to address the bottlenecks in the existing project and lessons learnt during implementation of these projects? (75 words)

Muzaffarpur Municipal Corporation had to face many a bottlenecks while executing the existing projects, primary being the lack of skilled workers, technically trained staff, lack of innovative technology, etc. Under the capacity building component of the AMRUT scheme the corporation is making headway into creating a skilled and technically sound human resource for upcoming projects. The corporation has also felt the need to speed up their work by automation of Tube Wells.

Question: What measures may be adopted to recover the O&M costs? (100 words)

The O&M cost shall be recovered by:

1. Increasing the coverage of water supply to un-served areas,
2. Regularization of unauthorized water connections.
3. By increasing user charges
4. By reducing NRW
5. Metering of Water Supply Connection

Question: Will metering system for billing introduced?

Yes, Metering System will be introduced.

Question: Whether reduction in O&M cost by addressing NRW levels be applied? (75 words)

Yes, Muzaffarpur Municipal Corporation will minimize NRW level to enhance O&M Cost by regularizing of unauthorized connections and replacement of old pipe lines with new ones. To enhance Efficiency of water charges collection metering system in water supply system and online billing, tracking system and spot billing machine will be introduced.

Question: Does each objective meet the opportunity to bridge the gap?

Yes, each objective meet the opportunity to bridge the gap.

THE ALTERNATIVE ACTIVITIES TO MEET THESE ACTIVITIES BE DEFINED AS PER TABLE

Table: Alternative Activities To Meet Objectives

Sr. No.	Objective	Activities	Financing Source
1	Universal Coverage	Household Connection along with laying of Water Supply Line in uncovered areas	AMRUT
2	Per Capita of Water Supply	Installation of Tube-Well	AMRUT
3	Reduction of NRW	Replacement of Old-line along with Metering	AMRUT

4. CITIZEN ENGAGEMENT

ULBs will organize and conduct city level citizen consultation and receive feedback on the suggested alternatives and innovations. Each alternative will be discussed with citizens and activities to be taken up will be prioritized to meet the service level gaps. ULB will prioritize these activities and their scaling up based on the available resources. (AMRUT Guidelines; Para 6.6, 6.7 & 7.2). Please explain following questions in not more than 200 words detailing out the needs, aspirations and wishes of the local people.

Question: Has all stakeholders involved in the consultation?

Yes, all stakeholders are involved in the consultation process of formulation of Service Level Improvement Plan.

Question: Has ward/ zone level consultations held in the city?

Yes, ward/ zone level consultations are being held in the city.

Question: Has alternative proposed above are crowd sourced?

Yes, alternative proposed above are crowd sourced.

Question: What is feedback on the suggested alternatives and innovations?

Feedbacks are regularly taken each month both in monthly MIC meetings and at ward level meetings. Feedbacks on the suggested alternatives and innovations are being considered.

Question: Has alternative taken up for discussions are prioritized on the basis of consultations?

Yes, alternatives taken up for discussions are prioritized on the basis of consultations.

Question: What methodology adopted for prioritizing the alternatives?

On the basis of consultation made in MIC Muzaffarpur Municipal Corporation, firstly regularization of water connections, replacement old pipelines, laying of new pipelines in uncovered areas, as per requirement Installation of tube wells then metering of water connections and automation for increasing service efficiency.

5. Prioritize Projects

Based on the citizen engagement, ULB will prioritize these activities and their scaling up based on the available resources to meet the respective objectives. While prioritizing projects, please reply following questions in not more than 200 words.

Question: What are sources of funds?

The source of funding of activities shall be:

1. AMRUT,
2. 14th Finance Commission
3. State Government Funds
4. ULB

Question: Has projects been converged with other program and schemes?

The convergence factor shall be considered while designing and funding of project.

Question: Has projects been prioritized based on “more with less” approach?

Yes, the projects are being prioritized based on “more with less” approach.

Question: Has the universal coverage approach indicated in AMRUT guidelines followed for prioritization of activities?

Yes, universal coverage approach indicated in AMRUT guidelines has been followed for prioritization of activities

6. Conditionalities

Describe in not more than 300 words the Conditionalities of each project in terms of availability of land, environmental obligation and clearances, required NOC, financial commitment, approval and permission needed to implement the project.

Activities which are proposed to be taken do not require land and NOC.

7. Resilience

Required approvals will be sought from ULBs and competent authority and resilience factor would be built in to ensure environmentally sustainable water supply scheme. Describe in not more than 300 words regarding resilience built in the proposals.

Yes, resilience factor, disaster and environmental related factors would be built-in, to ensure environmentally sustainable water supply scheme.

8. Financial Plan

Once the activities are finalized and prioritized after consultations, investments both in terms of capital cost and O&M cost has to be estimated. (AMRUT Guidelines; para 6.5) Based on the investment requirements, different sources of finance have to be identified. Financial Plan for the complete life cycle of the prioritized development will be prepared. (AMRUT Guidelines; para 4, 6.6, 6.12, 6.13 & 6.14). The financial plan will include percentage share of different stakeholders (Centre, State and City) including financial convergence with various ongoing projects. While preparing finance plan please reply following questions in not more than 250 words

Question: How the proposed finance plan is structured for transforming and creating infrastructure projects?

As per the guidelines of the AMRUT, the structured plan of the project has been developed in which a sharing of fund as follows is adopted: 50% from GOI and remaining 30% from State Govt and 20% from ULB.

Question: list of individual projects which is being financed by various stakeholders?

Water Supply Phase I

Question: Has financial plan prepared for identified projects based on financial convergence and consultation with funding partners?

Yes, financial plan prepared for identified projects are based on financial convergence and consultation with funding partners i.e. GOI, state government and ULB.

Question: Is the proposed financial structure is sustainable? If so then whether project has been categorized based on financial considerations?

Yes, the proposed financial structure is sustainable and project has been categorized based on financial considerations.

Question: Have the financial assumptions been listed out?

Yes, financial assumptions have been listed out.

Question: Does financial plan for the complete life cycle of the prioritized development?

Yes, financial plan has been done for the complete life cycle of the prioritized development

Question: Does financial plan include percentage share of different stakeholders (Centre, State, ULBs)

Yes, financial plan include percentage share of different stakeholders (Centre, State and ULB)

Question: Does it include financial convergence with various ongoing projects.

Yes, it includes financial convergence with various ongoing projects

Question: Does it provide year-wise milestones and outcomes?

Yes, year-wise milestones and outcomes have been provided.

DETAILS IN FINANCIAL PLAN SHALL BE PROVIDED AS PER TABLE 8.1, 8.2, 8.3, 8.4 AND 8.5. THESE TABLES ARE BASED ON AMRUT GUIDELINES TABLES 2.1, 2.2, 2.3.1, 2.3.2, AND 2.5.

Table 8.1 Master Plan of Water Supply Projects for Mission period

(As per Table 2.1of AMRUT guidelines)

(Amount in Rs. Cr)

S.No.	Project Name	Priority number	Year in which to be implemented	Year In Which To Be Completed	Estimated Cost
1	Water Supply Improvement Project Package -1	1	2018	2020	380.20 Cr

MASTER SERVICE LEVELS IMPROVEMENTS DURING MISSION PERIOD

S.No	Project Name	Physical Components	Indicator	Change in Service Levels			Estimated Cost
				2015	2017	2020	
1	Water Supply Improvement Project Package -1	Distribution Network – 508 KM, 16 Over Head tank-27.3 ML , Household Connection with meter –70,000 , Raising Main- 17.4 KM, Distribution main -12.05 Km , Replacement of old line 6.65 KM, Tube Well 28 for year 2048 -100.8 MLD	Coverage	17.23 %	-	100%	380.20 Cr
			Per Capita Of Water Supply	129.20 LPCD	-	Surplus	
			NRW	80%	-	20%	
			Quality	70%	-	100%	
			Cost Recovery	0%	-	100%	

ANNUAL FUND SHARING PATTERN FOR WATER SUPPLY PROJECTS

(As per Table 2.3.1 of AMRUT guidelines)

(Amount in Rs. Cr)

Sr. No.	Name Of Project	Total Project Cost Approved By SHPSC	Share				
			GOI	State	ULB	Others	Total
1	Water Supply Improvement Project Package -1	DPR Submitted	-	114.06 Cr	-	266.14 Cr	380.20 Cr

ANNUAL FUND SHARING BREAK-UP FOR WATER SUPPLY PROJECTS

(As per Table 2.3.2 of AMRUT guidelines)

Sr. No.	Name of the Project	GOI	State			ULB			Convergence	Others (ADB)	Total
			14th FC	Others	Total	14th FC	Others	Total			
1	Water Supply Improvement Project Package -1	-	-	114.06 Cr	114.06 Cr	-	-	-	-	266.14 Cr	380.20 Cr
	Total	-	-	114.06 Cr	114.06 Cr	-	-	-	-	266.14 Cr	380.20 Cr

YEAR WISE PLAN FOR SERVICE LEVELS IMPROVEMENTS

(As per Table 2.5 of AMRUT guidelines)

Proposed Projects	Project Cost	Indicator	2015	Annual (Increment from the Baseline Value)					Targets	
				FY 2016		FY 2017	FY 2018	FY 2019	FY 2020	
				H1	H2					
Water Supply Improvement Project Package -1	380.20 Cr	Coverage	17.23 %				20%	50%	100 %	
		Per Capita Of Water Supply	129.20 LPCD						135 LPCD	
		NRW	100%				60%	40%	20%	
		Quality	70%				80%	90%	100%	
		Cost Recovery	0 %						100%	

DATA COLLECTION , DISCUSSION AND VALIDATION BY

Name of the officer deputed in ULB	
Designation	Municipal Commissioner /Executive Officer/ Chief Engineer/.....

Signature	
Name of Parastatal Agency	Bihar Urban Infrastructure Development Corporation
Officer of Parastatal Agency deputed for the task	Mr.Tanay Kumar Das National Team Leader Shah Technical Consultant Pvt. Ltd Design and Supervision Consultant BUIDCo-ADB Contact Number- 9477577134 Email id- dtanay@hotmail.com
Signature of Team Leader DSC / Project In-charge	
Signature of Project Director BUIDCo	
Date of Finalization	