



SERVICE LEVEL IMPROVEMENT PLAN OF WATER SUPPLY

BODH GAYA NAGAR PARISHAD

PREPARED BY

**Regional Centre for Urban and
Environmental Studies Lucknow**

IN CONSULTATION WITH

**Bodh Gaya Nagar Parishad
&
Bihar Urban Infrastructure
Development Corporation
Limited**

CITY NAME – BODH GAYA NAGAR PARISHAD

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 Bodh Gaya Nagar Parishad 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 Nagar Parishad Bodh Gaya which is verified by other line agencies involved in the preparation of DPR and implementation of project from time to time.

Yes, Zone wise information was already mentioned in the DPR. Urban Development and Housing Department Government of Bihar had conducted a survey to collect information from household level and all the information is categorized ward and Zone wise.

In that Survey information related to the existing condition and the requirement raised by the citizens regarding the essential Services provided by Urban Development and Housing Department, Government of Bihar have been categorized ward and Zone wise.

The Primary and Secondary Data available with the Nagar Parishad and Parastatal Agencies have been utilized for the baseline information based on which the Service Level Improvement Plan for Water Supply Scheme for Bodh Gaya Nagar Parishad has been prepared.

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 Nagar Parishad and other Parastatal Agencies that were involved in urban development schemes while preparing the Service Level Improvement Plan

Total population (census 2011)	Location of source of drinking water Population	Total number of house holds	Tap water from treated source
	Total Population = 38,439	6,168	864
	Within the premises	3,514	458
	Near the premises	1,445	177
	Away	1,209	229
Departmental data 2015		5467	4435
Departmental data 2017		5467	4435

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 4435/5467	81.12%	81.12%	100%	C	C
2	Per capita supply of water 14.16 MLD/ 38439 Population = LPCD as per Census 2011 but Project is lay down for 2041 Now 9 Pump is only running or rest of the pump is stand by for Future Demand	368 LPCD	368 LPCD	135 LPCD	D	D
3	Extent of metering of water connections	81.12%	81.12%	100%	C	C
4	Extent of non-revenue water	50 %	50 %	20%	D	D
5	Quality of water supplied	100%	100%	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

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 Connection	18.88%	18.88%
2.	Gap in Per capita water availability	0 LPCD	0 LPCD
3.	Gap in Metering	18.88%	18.88 %
4.	Gap in NRW which include leakage and free water supply to social gathering festivals along with water supply through stand posts.	30%	30%
5.	Gap in Quality of supplied water as per PHE norms.	0%	0%
6.	Gap in Cost recovery with expenditure on electricity and power.	100%	100%
7.	Gap in efficiency of water charges/tax collection	100%	100%

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 only underground water and capacity of these sources(Total Nos of tube wells x Average discharge of each tube well) is 12 x 1.18 MLD=14.16 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. 14.16 MLD water is required to be treated daily. Total treatment Capacity installed in the city is 14.16 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?

Groundwater is existing source of water. Water treatment facility is available. Per capita water supply is =(Total water available/ present Population) 14.16 MLD/ 38,439 Population = 368 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 Urban Infrastructure Development Corporation Limited visited Bodh Gaya Nagar Parishad and conducted a survey to collect information based on which the city is divided into 4 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.	Total No. of Households	Households with Water tap Connection			Households without water tap connections		
		2015	2017	Total	2015	2017	Remaining gap
1.	975 HH	950 HH	25 HH	975 HH	975 HH	975 HH	No Gap
2.	766 HH	480 HH	286 HH	766 HH	766 HH	766 HH	No Gap
3.	1580 HH	1375 HH	205 HH	1580 HH	1580 HH	1580 HH	No Gap
4.	2146 HH	1630 HH	516 HH	2146 HH	2146 HH	2146 HH	No Gap
Total	5467 HH	4435 HH	1032 HH	5467 HH	5467 HH	5467 HH	No Gap

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:-

Total – Total Number of 4 Over Head Tank Outof 4Tank is Working.

Elevated reservoir capacity-4.6 ML

04 Ground Water Reservoir -6.8 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?

Storage capacity is 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 77.46 KM in 4 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 77.46 KM. Pipe lines are laid in all the streets. The objective of universal coverage of water supply is achieved.

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.	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	21.07 KM	21.07 KM	0	21.07 KM	21.07 KM	21.07KM	-
2	10.4 KM	10.4 KM	0	10.4 KM	10.4 KM	10.4 KM	-
3	21.68 KM	21.68 KM	0	21.68 KM	21.68 KM	21.68 KM	-
4	24.30 KM	24.30 KM	0	24.30 KM	24.30 KM	24.30 KM	-
Total	77.45 KM	77.45 KM	0	77.45 KM	77.45 KM	77.45 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	Nagar Parishad Bodh Gaya

Question: How city is planning to execute projects?

City has already executed the project under JnNURM.

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 mm /2017)
1.	Water Supply Scheme Bodh Gaya - Tube well-12 Capacity is= Pump House and Transformer -4 , UGR - 04 – 6.8 ML, 04 Over Head Tank-4.6 ML Distribution network - 77.46 km, Raising main -12.4 km, House connection 5467 HH With meter	JNnURM	33.05 Cr	September 2015	90% Only 18.88% Household Connection is remaining to complete the project

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 able to address the existing gap in water supply system. After the completion of JnNURM Water Supply Scheme.

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

City has already developed Infrastructure under JnNURM so that no additional infrastructure requirement.

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 reducing the NRW and mainstreaming the illegal connections.

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		Demand	Gap
	Present	Ongoing	2015	2017		
						2021
Source	14.16 MLD	0	14.16 MLD	14.16 MLD	14.16 MLD	Surplus
Treatment capacity	14.16 MLD	0	14.16 MLD	14.16 MLD	14.16 MLD	Surplus
Elevated Storage capacity	4.6 ML	-	4.6 ML	4.6 ML	4.6 ML	Surplus
Ground Water Reservoir	6.8 ML	-	6.8 ML	6.8 ML	6.8 ML	Surplus
Distribution network coverage	77.46 KM	-	77.46 KM	77.46 KM	77.46 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 meet 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)

Both Gaya Nagar Parishad 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 unserved areas,
2. Regularization of unauthorized water connections.
3. By increasing user charges
4. By reducing NRW

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, Both Gaya Nagar Parishad 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
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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 Board 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 Board of Bodh Gaya Nagar Parishad, 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?

No, Individual Project Requirement.

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 2.1 of 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	NA				

MASTER SERVICE LEVELS IMPROVEMENTS DURING MISSION PERIOD

S.No	Project Name	Physical Components	Indicator	Change in Service Levels			Estimated Cost
				2015	2017	2020	

Proposed Projects	Project Cost	Indicator	2015	Annual Targets (Increment from the Baseline Value)					
				FY 2016		FY 2017	FY 2018	FY 2019	FY 2020
				H1	H2				
NA									

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	BUDICO
Officer of Parastatal Agency deputed for the task	Er. Rakesh Kumar Project Director , BUDICO Contact Number- 8544413107
Signature	
Date of Finalization	