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PROJECT BENEFIT

1.0 EXISTING STATUS

The drinking water supply situation in urban &rural areas of Bhilwara District is very grim with per capita availability of drinking water from 37 to 70 LPCD and water supply interval from 2 to 5 days in urban areas and 899 villages out of 1688 villages having water quality problem. Water is regularly being transported to Bhilwara City and large number of villages to supply drinking water for meeting bare minimum needs. There are a number of factors which result in the economy being highly vulnerable and growth being constrained by inadequate drinking water supply. These factors are three-fold:- Non availability of dependable surface water source or a perennial river, over-exploitation of ground water sources rendering all the 11 ground water blocks in over exploited category. and historical underinvestment in drinking water infrastructure. The district's economy is severely affected by the high variability of the climate with frequent droughts which impacts the availability of water and drinking water supply services.

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Water resources

The districts have number of rivers such as Banas, Bearach, Kothari, Unli, Mendi, Nakadi, Chandrabhaga and Khari River, but all these rivers are ephemeral. Bhilwara city has one of its drinking water source at Meja Dam, which has not received adequate inflows since long. Vagaries of climatic & rainfall variation have left these sources wanting of adequate flows to serve as dependable source for any drinking water supply arrangements.

Drinking Water Supply

The Status of drinking water supply in Urban towns of Bhilwara district is as below:

S.N.	Name of Town	Population		Total present demand MLD	Present Production MLD	Present Service Level LPCD *	Supply Interval In Hours
		2001	Present				
1	Bhilwara	280128	350000	35	16.5	47	96
2	Asind	14123	16157	1.13	0.75	39	48
3	Mandal	16842	19267	1.18	0.72	43	48

S.N.	Name of Town	Population		Total present demand MLD	Present Production MLD	Present Service Level LPCD *	Supply Interval In Hours
		2001	Present				
4	Gangapur	17073	19532	1.19	0.7	37	120
5	Mandalgarh	20169	23073	1.41	1.31	63	24
6	Bijoliya	12389	14173	0.99	0.99	70	24
7	Shahpura	27792	32572	3.18	1.35	41	48
8	Jahazpur	18815	22051	1.31	1.15	52	48
9	Gulabpura	24362	28552	1.71	1.2	43	48

Present service level is based on production of water. Net availability of water is still lower after discounting the losses in the distribution system

Villages of the district are having either quantity or quality problem and every year water is made available by road transportation in summer seasons specially in tehsils namely Asind, Raipur, Sahara, Bhilwara, Mandal, Banera, Hurda, Kotri and Shahpura. Quality of ground water in about 497 villages of Shahpura, Banera, Jahazpur, Hurda & Mandal block of Bhilwara district is not potable. Detail of quality effected villages of Bhilwara district is shown below;

S. N.	Tehsil	Total Villages	Detail of Quality Effected Villages					
			Fluoride	Fluoride+ TDS	Nitrate	TDS	Others	Total
1	Asind	204	67	34	4	1	5	111
2	Hurda	70	57	0	0	9	0	66
3	Shahpura	150	0	71	0	0	0	71
4	Banera	82	3	8	1	0	0	12
5	Mandal	188	78	1	4	0	0	83
6	Raipur	89	11	8	1	0	0	20
7	Sahara	101	0	8	0	0	0	8
8	Bhilwara	136	10	11	6	3	0	30
9	Kotri	175	42	0	0	4	0	46
10	Jahazpur	217	22	0	12	1	0	35
11	Mandalgar	169	1	0	2	0	8	11

S. N.	Tehsil	Total Villages	Detail of Quality Effected Villages					
			Fluoride	Fluoride+ TDS	Nitrate	TDS	Others	Total
	h							
12	Beejoliya	107	0	0	0	0	4	4
	TOTAL	1688	291	141	30	18	17	497

2.0 Specific Project Benefits

The primary objective of the proposed project is to provide safe & potable drinking water to 9 towns and problematic villages of Bhilwara districts & en-route villages of Bundi district. The objectives of the project are as follows:

- Creation of sustainable infrastructure for drinking water supply in project area.
- Improvement in health and reduction in instances of water borne diseases.
- Improvement of quality of life and the standard of living among the residents especially for women & underprivileged section of society.
- Improved sanitation facilities in the project area.
- Setting up of appropriate institutional mechanism for sustainable operation and maintenance of the facilities for ensuring desired level of service delivery, in line with state water policy and state wide, sector wide reform agenda. In fact, implementation of the proposed World Bank funded multi village multi town drinking water project for Bhilwara would help in fast tracing the reform presses not only in Bhilwara but also in the entire state.

To solve the drinking water problem in project area, it has been proposed to bring water from Chambal River, as a sustainable source of water. Proposed location of source is near Bhainsroadgarh, on upstream of Jawahar Sagar Dam. Proposed site of Intake well is about 125 Km from Bhilwara town.

3.0 PROPOSED SOLUTION

To solve the drinking water problem in Bhilwara district, water supply project for Bhilwara town, 8 other urban towns & 1688 villages of Bhilwara district has been proposed with Chambal River as a sustainable source of water. Proposed location of source is near Bhainsroadgarh on upstream of Kota Dam. Proposed site of Intake well is

about 120Km from Bhilwara town. As Dams have been located on both the upstream and the downstream of the proposed intake location there is assured water throughout the year.

Since about 15 Km transmission main will pass through Bundi district, it is also proposed to cover 25 en-route villages of Bundi district by this project.

4.0 Policy & Reforms

The importance of integrated management of water resources, providing topmost water allocation priority to human drinking water, for the state's economic development and poverty reduction has been recognized by the Government and is incorporated as a key issue in the State Water Policy' 2010. Government is attaching high priority to state wide reforms in water sector, in general and for reforms in drinking water sector, in particular. It has been recognized that that mere investment on construction of new assets is not going to solve the problem on sustainable basis and therefore wide ranging reforms are being contemplated by the State Government, summarized below;

a. In February 2010, Government of Rajasthan (GoR) approved a new State Water Policy of which the main objectives, are i) to adopt an integrated and multi sectoral approach to the water resources planning, development & management on a sustainable basis taking river basin/sub basin as unit; ii) The water resources of the state shall be planned, developed and managed with a river basin/sub basin as a unit adopting multi sectoral approach and treating surface and sub surface water with unitary approach.

b. GoR has, recently taken up benchmarking studies for Urban & Rural water supply schemes in a bid to identify the bottlenecks, in proper performance of schemes, to plan interventions and to assess effectiveness of such interventions made. much greater emphasis is being given on bulk metering, consumer metering and water audit.

c. For ensuring greater local participation, proposals are being prepared to involve PRIs and ULBs in the management of intra village and intra town distribution systems of drinking water in rural and urban areas respectively. Efforts are afoot in creating awareness and capacity building of the rural and urban local bodies.

d. In rural areas, the entire surface source based multi village schemes, as a policy, the intra village system is necessarily to be maintained by the Village Water and Sanitation Committee (VWSC) and tariff is being imposed considering village as one unit. For this well designed IEC campaign is taken up through experienced NGOs before connecting the village with distribution network.

e. To offset financial & other constraints, GoR has identified number of water supply project proposed to be implemented on Public Private Partnership (PPP) model. For two of the projects, technical feasibility studies are under progress for identified projects of water supply for Ajmer & Udaipur City. Efforts are on for appointment of Transaction Advisor for these two projects under IIPDF.

   The proposals for taking up projects on PPP are published on department's website for its wide publicity and to get feedback from all stakeholders i.e. Citizens, consumers groups, potential bidders, NGOs, Employees etc.

f. GoR intends to adopt water pricing to reflect its scarcity value and to utilize it as an effective tool for water demand management to curb its profligate use. The Concept, which is being worked upon for water pricing, is based on following principle;

   i. Considering Water as a social good up to lifeline consumption and an economic good beyond it.

   ii. Defining lifeline consumption limit required to meet the water requirements for basic human needs

   iii. Pricing water consumption up to this lifeline consumption on affordability basis

   iv. Full cost recovery for water consumption beyond lifeline consumption limit

   v. Transparent cross subsidies for excessive consumption with objectives to curb excessive use and to manage demand.

g. As per legal agreement with Madhya Pradesh, it is currently drawing 4000 cusec from the Chambal River for irrigation requirements. However, based on recent experience and studies, the GoR expects 25-30% water use efficiency improvements for irrigation, mainly due to introduction of 'warabandi' system for better management practices, along with improved lining of the canals. The GoR now proposes to use about 125 cusecs from its Chambal entitlement for meeting the drinking water needs of Bhilwara district. This diversion of 2-3% of the Chambal water towards drinking water supply is not expected to have any adverse impact on the irrigation requirements due to the envisaged irrigation efficiency improvements. Also, the highest allocation priority for drinking water supply is specifically supported by the State Water Policy 2010. The GoR also informed the mission that the Chambal source is perennial, with regular supply throughout the year. However, uncertainties regarding the guaranteed supply from Chambal River source were raised during the mission wrap-up meeting - which could adversely affect availability for future drinking water projects. The mission expressed the need for further clarity and detailed assessment regarding the current and future drinking water and agricultural requirements from the Chambal River source, and the related availability and sustainability of the source. The mission also pointed out that the proposed surface water scheme cannot assume availability of local groundwater through conjunctive use, as this is unlikely to achieve the desired drinking water quality or quantity requirements in a secure manner. The mission advised that the design of the proposed project assume that the full drinking water supply requirements are provided from Chambal River source.

h. The Kota barrage is on the downstream of the Bhaisrodgarh the water level will maintain through out the year by releasing water from Maharana Pratap Sagar Dam as well as from Gandhi Sagar Dam. A separate monitoring unit with specific team of task forces will be se up which will maintain the records and supervise the flow of water in the river through the year as same was done in the Chambal-Dholpur and Chambal-SwaiMadhopur project where the monitoring system has already been setup.

Prepared by:

5.0 Rationale for Chambal Bhilwara WS Project

Where as, In most of the water stressed districts of the State, implementation of surface source based projects has been initiated, Bhilwara is the only district, facing acute drinking water crisis, not to have any major drinking water supply project from sustainable surface source. With no dependable local surface source and nearly exhausted ground water sources coupled with poor quality(High fluoride), the district is very much in need of a major drinking water supply project fed from a reliable source, on the highest priority.

The drinking water supply situation in urban &rural areas of Bhilwara District is very grim with per capita availability of drinking water from 37 to 70 LPCD and water supply interval from 2 to 5 days in urban areas and 899 villages out of 1688 villages having water quality problem. Water is regularly being transported to Bhilwara City and large number of villages to supply drinking water for meeting bare minimum needs. There are a number of factors which result in the economy being highly vulnerable and growth being constrained by inadequate drinking water supply. These factors are three-fold:- Non availability of dependable surface water source or a perennial river, over-exploitation of ground water sources rendering all the 11 ground water blocks in over exploited category. and historical underinvestment in drinking water infrastructure. The district's economy is severely affected by the high variability of the climate with frequent droughts which impacts the availability of water and drinking water supply services.

6.0 DESIGN CONCEPT

The present project is designed for the 9 towns and 1688 villages of Bhilwara district and 25 en-route villages of Bundi district. Provision for transmission main conveying water to these areas has been taken as the immediate priority and has been designed accordingly. Design period for the project is taken as 30 years and accordingly population & demand forecast has been done for year 2045. However, in the present study, components of the project except pump house, civil structures of pumping stations and water distribution system (pipe network) have been designed for the 2030 demand as required by PHED. After 2030, parallel pipe lines can be laid, however civil works like cross drainage works, land acquisition, forest clearance, right of way permission etc. are planned for ultimate demand of year 2045.

The system is also designed for rural population of Bhilwara district and en-route villages of Bundi district, but does not include provision of cluster distribution network for the rural areas. The work of cluster distribution system can be formulated & taken up at the later stages.

7.0 SCHEMATIC DIAGRAM

Schematic diagram of the proposed project

8.0 MAIN COMPONENT OF PROJECT

Detail description of the project components of the system are explained in detail in the subsequent chapters of the report; however project components are summarized as under:

- 326 MLD intake works with GSS and Pumping machinery.
- 1800 mm MS Raw Water transmission Main of 48.36 km length and clear water transmission main 68 km length.
- 245 MLD Capacity Water Treatment Plant at Rasadpura.
- Clear Water Reservoirs at Different Head Works at WTP, Intermediate Pumping Stations, Head Works in Bhilwara. 2 hours of storage is provided to arrive at the capacity of the reservoirs in the pump station locations and 2 hours storage at WTP for better operation and serviceability point of view.
- Clear Water Pump Houses at WTP, IPS, Head Works in Bhilwara with 100% provision of standby pumps. 22 hours of pumping has been considered as per the project requirement.
- Laying & jointing of 1400/1300/1200/1000/900/800 mm MS/ DI clear water transmission mains.
- Reorganisation & rehablitation of distribution system in Bhilwara r urban towns including construction of ESRs with capacity as 30% of the demand of 2030, laying of distribution networks for the ultimate year of 2045, reservoirs at 2 hours storage & pump houses with provision of 100% standby pumping capacity with sufficient space allocation for the future expansion for 2045 demand including telemetry and SCADA based controlling mechanisms.

9.0 PROJECT COST

The cost of various components of the project as identified in the design study is as per the table provided below

S. No.	PARTICULARS	Amt. In Lacs
A1	Construction of pump house and sump, including providing and installation of the pumping machinery and switchyard at Intake pumping station.	2345.14
A2	Raw water Pumping Main from Intake to Bhunjar khurd and all allied works required for protection and efficient operation of system	5565.16
A3	Construction of pump house and sump, including the providing and installation of the pumping machinery and switchyard at Bhunjar khurd pumping station.	1888.47
A4	Raw water Pumping Main from Bhunjar khurd to Tilsva IPS and all allied works required for protection and efficient operation of system	6725.00
A5	Construction of pump house and sump, including the providing and installation of the pumping machinery and switchyard at Tilsva pumping station.	1525.97
A6	Raw water Pumping Main from Tilsva IPS to Rasadpura WTP and all allied works required for protection and efficient operation of system	4162.15
A7	245 MLD Capacity Water Treatment Plant & Clear Water Reservoir & Sump & Switchyard and other ancillary Civil Works, Campus Development and all allied works required for protection and efficient operation of plant & system at Rasadpura	5935.92
A8	Clear Water Transmission Main from WTP Rasadpura to Bhilwara Jn and all allied works required for protection and efficient operation of system	18301.00
A9	Clear Water Transmission Main from Bhilwara Jn. To Kawa kheda, Vidhya Niketan, Sukhadia Circle and main PHED Headworks and all allied works required for protection and efficient operation of system	1242.54
A10	Instrumentation for the system including providing the SCADA & PLC system	700.00
A11	Construction of service roads along different reaches of transmission mains	83.70
A12	Power Connection at Intake, Bhunjar Khurd,Tilsva, Bhilwara Jn., Danta Pyara and Haripura Chauraha	1471.43
A13	Survey and consultancy work including design and preparation of Detail Feasibility Report for the 392 villages of the Asind and Mandal Tehsil of Bhilwara district	125.00
A14	Clear Water Transmission Main from Bhilwara Jn. To Danta Pyara to Mandal, Mandal to Haripur Chauraha and all allied works required for protection and efficient operation of system	4284.71
A15	Pumping Station including Pumping Machinery and Electrical accessories including pump house, CWR etc.at Bhilwara Jn.,	638.25
A16	Pumping Station including Pumping Machinery and Electrical accessories including pump house, CWR etc.at Danta Pyara	385.34
A17	Pumping Station including Pumping Machinery and Electrical accessories including pump house, CWR etc.at Haripur Chauraha	311.21
A19	Forest Wild Life Compensation and land Acquisition	3395.00
	Grand Total	59085.99

The estimated present cost of the Chambal- Bhilwara water supply project is Rs 590.86 cr

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