



1. EXECUTIVE SUMMARY OF WATER SUPPLY & SEWERAGE

1.1 PREAMBLE

Indore is the largest city of Madhya Pradesh in terms of its population. As per Census records, population of Indore city in 2011 is 19, 64,086 and the population of Indore metropolitan region is 21, 95,974 after inclusion of 29 villages.

The City is administered by Indore Municipal Corporation for provision of civic facilities and is spread over a geographic area of 276 km². In year 2014, on date 20th November Government of Madhya Pradesh merged 29 villages into IMC limits, thus increasing the jurisdiction of IMC. IMC area is divided in 19 administrative zones & 85 wards.

The water utility is managed by IMC Indore Municipal Corporation that, in addition to being responsible for all its maintenance, construction and operation, is also for sewerage collection, treatment and disposal, road service and construction, town planning and all the main utility services to the population.

IMC intends to convert existing intermittent water supply into (24x7) continuous water supply by improvement and up scaling the existing system and reducing present NRW and to improve service level bench mark. Accordingly, in order short listed the Consultant having expertise in the similar field, IMC call for "Request for Proposal (RFP) as a part of competitive bidding process. IMC, appointed DRA Consultant Pvt. Ltd. as Consultant, to provide their Technical services, and undertake the activity mention in different phase of work (Ref. WO. No 980/SE/WW&D/Project Cell/IMC/Indore dt. 31/05/2016)

As a part of Smart City initiatives and guidelines by IMC officials, Detailed Project Report for ABD Project area on water supply and Sewerage system is being prepared. Accordingly, the pilot project area baseline study was carried out by the Consultant and rehabilitation and Investment plan was prepared and the DPR was submitted to IMC. IMC has suggested few modifications and Revised Detailed Project Report (R2) is being submitted in following structure;

- Volume-1: DPR -Main Report**
- Volume-2: Cost Estimates report**
- Volume-3: Design & Drawings Report**

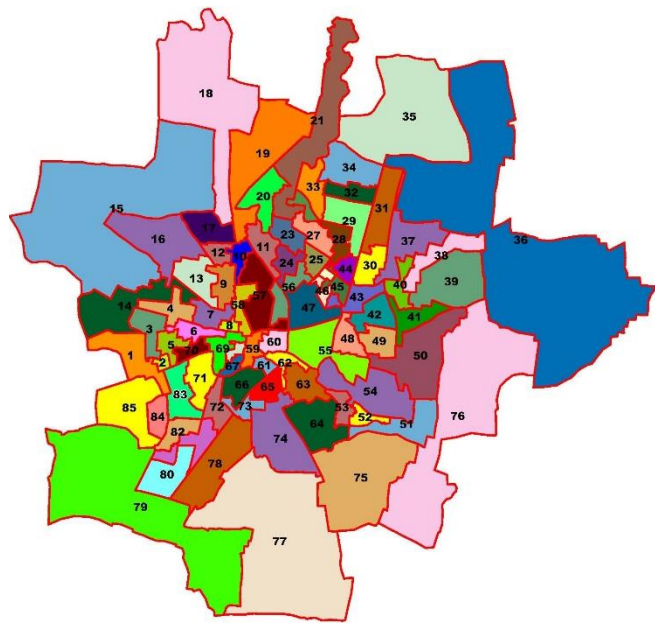


1.2 PRESENT STATUS OF THE WATER SUPPLY & SEWERAGE SYSTEM

The city is getting its drinking water supply from various sources. The water supply as per AMRUT slip of city is around 323 MLD & rate of water supply is 97.67 LPCD. Indore water supply network serve a population of (census 2011) 19.6 lakh. The water services cover 46.65 % of the population. 53.35% of the population lives in uncovered area and there is an important City government's effort to provide universal access to water and sanitation through uncovered area & newly added Area.

There are 3 existing sources of water viz. Narmada River (540 MLD), Yashwant Sagar Dam (45 MLD) and Bilawali Tank (9 MLD).

Total Installed capacity of the surface water sources is 594 MLD and Water Drawn from these sources is 397 MLD only (i.e. 360MLD from Narmada, 34MLD from Yashwant Sagar and 3 MLD from Bilawali).The less availability of raw water is due to low water levels at Narmada River Source (dam has been constructed, but has not been used due to rehabilitation and other issues) and other surface water sources (Dam/Tank) have lesser live capacity.The other sources of water are ground water sources which cater to areas not covered by piped water supply. The Ground water sources have 4945 nos. tube wells and 1004 hand pumps.



The existing sewerage system has a sewerage network of vitrified clay and concrete pipes varying in size from 150mm diameter to 1200mm diameter. The pattern of sewerage catchment of Indore is a typical river-based system, more so because the river Kanh. A tributary of river Kshipra-passes through the centre strip of the city from South to North and its major tributaries meander from western and eastern direction towards the river. The terrain is generally flat and



the maximum elevation difference is about 20m from upstream to downstream ground levels in the system. The sewage treatment is located at North at Kabitkhedi place with a capacity of 335 MLD (total existing 90 MLD plus 245 MLD recently commissioned).

1.3 NEED AND OBJECTIVES OF THE PROJECT

The city is expanding leaps and bound. It is one of the fastest growing metropolitan cities in India. Hence, the coverage needs improvement. The plight of distribution network is poor as the operational zones or water districts have not been designed properly. The pipelines have been laid haphazardly. Though, the many development work executed like construction of ESR, laying of distribution network etc. in the recent past, but the integration of existing system with new system is still not done. Few ESR's are without any distribution network. Proper zoning of the hydraulic system is missing. Distribution system has many direct tapplings feeding to zones. Therefore there is no control on the distribution of drinking water. Due to disarrayed distribution system, the water is not being distributed equitably and with equal pressure. Hence, the distribution network needs reduction of non-revenue water by leakage management and commercial losses through identification and regularization of illegal connections, metering and improvement in revenue systems. Hence, the project is required.

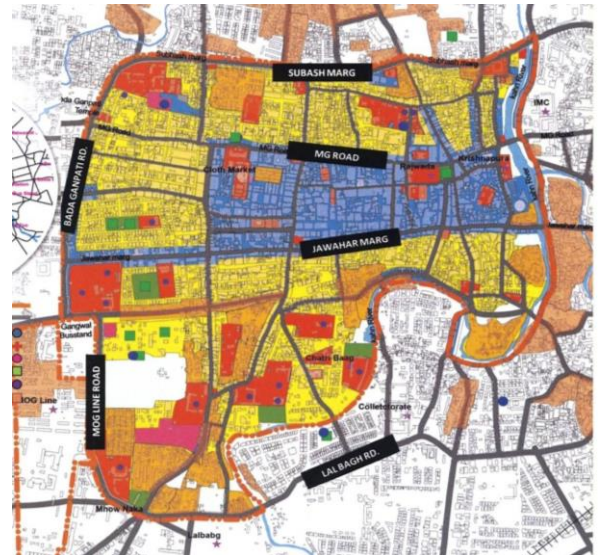
The objectives of the project are;

- Effective utilization of present Raw water available
- Water resource augmentation through leakage reduction
- Improving System efficiency
- Monitoring the energy consumption
- Equitable / Sustainable distribution system
- Improved management of water supply infrastructure and capacity building of existing personnel through appropriate model of private sector participation.



1.4 INTRODUCTION TO ABD PROJECT AREA

Indore Municipal Corporation as part of SMART City initiatives selected Area Based Development (ABD) pilot project area “Rajwada“ to implement from Intermittent to continuous supply and reduce the NRW on priority basis. Therefore, the present Report deals with the distribution network improvement and rehabilitation plan for ABD project area with complete engineering details and drawings. The proposed system / improvement plan is discussed in chapters hereafter.



The ABD project area is the core central part of the Indore City. The area covers the administrative zone boundary of Zone no. 1 (Kila Maidan), Zone No. 2 (RajMohalla), Zone No. 3 (Nagar Nigam), Zone No. 11 (Nehru Stadium), and Zone No. 12 (Harsiddhi Zone). The project area comprised of 742 Acres of area covering 24000 nos. of estimated water consumers. The population of the project area is 1, 20,000 (Approx). No of slums in the project area is 27.

1.5 GAP ASSESSMENT OF THE PRESENT SYSTEM

Following are the critical issues prevailing with existing water supply & Sewerage system and hence resulting into gap between water management and citizen services;

1. In current scenario, the bulk water supplied into the system has too many direct tappings for distribution of water resulting into pressure drop and non-filling of ESR and leading to un-equitable distribution.
2. The city does not have any metered water connections. Hence, the quantity of water consumption and the physical losses in the city is difficult to be estimated.
3. Serving area/ zone served by each elevated service reservoir (ESR) was not designed as per their capacity. Moreover, distribution pipelines laid in haphazard manner.



4. There is substantial loss of water due to old and worn out pipelines leading to leakage
5. In addition there are more chances of having unauthorised / illegal connections in the distribution system.
6. There are too many deep bore wells within the distribution network.
7. Integrated map / drawings of distribution network are not available for proper demand supply management.
8. In absence of proper instrumentation system there is no accountability for water supplied and distributed. This is leading to un-efficient operation of the system.
9. There is proper complaint registration and redressal mechanism for repairs & maintenance leading to poor services and dissatisfaction among consumers.
10. There is no metering policy and tariff policy in place. Consumers are being charged on monthly basis on flat rate irrespective of their consumption.
11. The Sewerage system is very old and dilapidated condition i.e. laid during the Holkar's state in 1936.
12. Households are not fully covered and connected with sewerage network.
13. Through the project area has network of Primary and Secondary sewer lines but the linking between these two is missing at few places and sewage is not being carried upto STP fully, resulting sewage disposal into natural drain / river.
14. The treated sewerage is not being reused or recycled. The Treated Sewage is being discharged in Kanh River which is used for agricultural irrigation purpose in the downstream hinterland.

1.6 TARGET SERVICE LEVEL IN WATER SUPPLY

The targeted Service Level Benchmarks (SLB's) in water supply system tabulated below suggests the need to address the specific areas of services i.e. continuity of supply, NRW, metering, consumer complaints, water quality, monitoring etc. The efforts are needed to develop the infrastructure (OHT's, network, and monitoring system) for efficient delivery of water, efficient metering and billing mechanism to reduce water loss and performance based O & M practices for improved Water Supply & Sewerage System. The achievement of desired service level benchmark shall need investment for infrastructure improvement and holistic long term approach through appropriate Public Partnership Model with involvement of all stakeholders.



Sr . N o.	Key Performance Indicators (KPI)	Service Level Benchmark as per MoUD	Existing Service Level Benchmark *	Targeted Year for Achievement
1	Coverage of Water Supply	100%	46.65%	2021
2	Per Capital Supply of Water	150 LPCD ^{##}	97.67 LPCD	2021
3	Continuity of Supply	24 hrs	45 min -1 hrs / alternate day	2022
4	Extent of Metering of Water Connections	100%	0.02%	2020
5	Extent of Non-revenue water	20%	66.82%	2022
6	Efficiency in Redressal of Complaints	90%	No such data	2021
7	Quality of Water	100%	98.06%	2020
8	Efficiency in collection of water related charges	80%	45.76%	2022

**Source: - Service Level Improvement Plan Report of IMC*

##-As per MOM on dated 23.09.2016decided with Engineer in chief UADD to take min water supply @ 150 lpcd for Indore city.

1.7 TARGET SERVICE LEVEL IN SEWERAGE SYSTEM

The targeted Service Level Benchmarks (SLB's) in Sewerage system tabulated below suggests the need to address the specific areas of services i.e. household connectivity, coverage of sewerage network, efficient collection system and adequate treatment capacity etc.

Sr . N o.	Key Performance Indicators (KPI)	Service Level Benchmark as per MoUD	Existing Service Level Benchmark *	Targeted Year for Achievement
1	Coverage of latrines (individual or community)	100%	96.02%	2020
2	Coverage of sewerage network services	100%	61.80%	2020
3	Efficiency of collection of sewerage	100%	36.72%	2020
4	Efficiency in Treatment: Adequacy of sewerage treatment capacity	100%	36.72%	2020

Source: - Service Level Improvement Plan Report of IMC



1.8 PRESENT SUPPLY AND DEMAND

The present supply and water demand for the project area is below;

Name of ESR	Total Pop. Yr.2020	LPCD Rate 150	Total Demand in ML	Fire Demand (100(P)^0.5)	Total Demand in ML	Total Demand in ML Yr.2020 (10% dist. losses)
Jinsi Hat CA	46960	150	7.04	0.09	7.13	7.92
Subhash Chowk CA	34275	150	5.14	0.08	5.22	5.8
Chhatribagh CA	45266	150	6.79	0.09	6.88	7.64
Proposed OHT CA	39848	150	5.98	0.09	6.07	6.74
	166349	600	25	0.35	25	28.10

For more details please refer to Chapter 6 of the report.

1.9 PROJECTED POPULATION WATER DEMAND

Population Projection for water demand was worked out for the Project as per different methods available. Based on the population projection as per earlier report / consultant studies and census data, the population trend of Indore is matching with Graphical method. Hence, Graphical method is adopted for further analysis. For more details please refer to Chapter 6 of the report.

Sr.No	Name of ESR	Total Pop. Yr.2035	Total Demand in ML Yr.2035 (10% dist. losses)	Total Pop. Yr.2050	Total Demand in ML	Total Demand in ML Yr.2050(10% dist. losses)
1	Jinsi Hat CA	63625	10.72	79125	11.99	13.32
2	Subhash Chowk CA	40120	6.79	48951	7.44	8.27
3	Chhatribagh CA	54691	9.22	63668	9.66	10.73
4	Proposed OHT CA	47114	7.96	57943	8.79	9.77
		205550	34.69	249687	38	42.09



1.10 PROPOSED IMPROVEMENT PLAN

Proposed improvement plan for the ABD Project area is summarized as per following; For more details of the proposed system please refer to Chapter 10, 11, 12 and 13 of this report.

1.10.1 Proposed Water Supply system

Water Source

For the better feasibility and to ensure dedicated supply to the ABD project area, it is proposed to connect existing 1000 mm feeder main to 1700 mm Transmission main laid under Narmada Phase-III project instead of 1200 mm line i.e. interconnect existing feeder of 1000 mm with 1700 mm Transmission Main. The interconnection point will be at Rajeev Gandhi Chowk near the Bijalpur Control Station.



Proposed GSR

It is proposed to construct Ground Service Reservoir i.e. sump near MOG lines of capacity 6 ML. It is proposed to discard the existing direct distribution network supply from 450 mm and 525 mm emanating from 750 mm Gambhir Line near to Bada Ganpati and instead collect the water at above proposed GSR / sump. The proposed sump will pump the water to all the ESR covered under ABD project area. It is also proposed to install a 3 (2 W + 1S) nos. of submersible pump to feed water to these ESR.

Proposed Distribution Network

As per the hydraulic modelling of the system, following distribution network is proposed for the project area;



Command Area	Existing Pipe length	New Proposed Pipe length	Replacement Proposed Pipe length	Total
CHHATRIBAG CA				
Cast iron	2729			2729
Concrete	994			994
Steel	345			345
Ductile Iron			318	318
HDPE		774	17366	18140
CP SHEKHAR NAGAR PROP. OHT				
Cast iron	1319			1319
Steel	437			437
Ductile Iron		308	796	1104
HDPE	1952	913	13554	16419
JINSI HAT CA				
Cast iron	587			587
PVC	23			23
Ductile Iron	1403	430		1833
HDPE	3209	1028	16010	20247
SUBHASH CHOWK CA				
Cast iron	1372			1372
Concrete	399			399
Steel	40			40
MS	3			3
Ductile Iron	982		474	1456
HDPE		431	14071	14502
Total Pipe length (Meters)	15794	3884	62589	82267
Total Pipe length (kms)	15.79	3.88	62.59	82.27

Total 66.47 kms of new distribution pipeline network along with 7.6 kms of feeder pipelines is proposed for the ABD Project area. For more details please refer to Chapter 10 of the report.

1.10.2 Proposed Sewerage System

Zonal population and Sewage Generation

The project area has been designed for immediate stage for the year 2035 & Ultimate stage Yr. 2050. The population projection is based on census population 2011.



Year	2020	2035	2050
Projected Design Population ABD project Area	166349	205550	249687
Sewage Generated (MLD)	20.96	25.90	31.46
Say	21.0	26.0	31.0

Zoning Proposals for the Collection System

The ABD project area boundary has two primary main lines of 1600 mm dia. and 600 mm dia. running more or less parallel along the West side and East side of the project area respectively. The collection system is designed for three zones namely a West zone on primary network of 1600 mm dia., East zone on 600 mm dia. and a Central Zone on proposed Decentralized STP network.

Proposed sewer network

Summary of Diameter wise Sewer Length (m) for project Area is as below;

Diameter in MM	Total (m)
200	40644.80
250	4107.10
300	2809.10
350	1042.70
400	1513.60
450	90.40
500	928.30
600	751.60
Total (m)	51888
Total (kms)	51.88

For more details please refer to Chapter 11 of the report.

1.10.3 Proposed De-centralized STP

Proposed STP



Based on the expansion and up gradation of the existing sewage collection system suggested above in the project area, the sewage treatment and disposal proposals is considered as per below;



	2020	2035	2050
Population	63711	75896	80431
Sewage Generated = 126 Lpcd	8027585	9562896	10134294
Demand in MLD	8.03	9.56	10.13

The sewage treatment plant of 10 MLD capacity is proposed considering the ultimate sewage demand and hence installation is suggested in single phase for intermediate as well as ultimate phase. The proposed location would be at C. P. Shekhar Nagar within the project area.

The Treatment Process

This process which has an inbuilt mechanism for Nitrification, De-nitrification and Biological Phosphorous Removal to degrade nutrients like Total Nitrogen (TN) and Phosphorous (TP) is preferable. The biological process shall be based on either continuous inflow SBR with intermittent discharge systems **or** Intermitted inflow with intermittent discharge systems. The biological design for the activated sludge system shall be based upon the kinetic requirements for nitrification and de-nitrification, to ensure the required effluent quality is achieved. The desired performance is outlet BOD < 10 mg/l, COD < 50 mg/l, SS < 10 mg/l, P < 2 mg/l and N < 10 mg/l.

For more details please refer to Chapter 12 of the report.

1.10.4 Proposed Treated Effluent Re-use system

Source planning & demand

Existing sewer System / network of IMC is considered as main source for re-use water demand for non-potable water applications like flushing, gardening etc. and accordingly dual piping arrangement is suggested. As per the CPHEEO manual, 80 % of the water supply without 15% losses, is to be taken as the sewage



generation. The sewage generation will, therefore, be taken @ 126 lpcd, calculation of which is attached with design basis for sewerage system chapter 8. ABD project area is generating approximately 21.0 MLD sewage in year 2020 and for thus, water re-use demand for non-potable use requirement would be 8.70 MLD, calculation of which is given in chapter 13.

Proposed OHT

The storage capacities of Elevated reservoirs are calculated based considering immediate as well as intermediate stage requirement and accordingly OHT of 3 ML capacity is proposed near to CP Shekhar Nagar. The water re-use network of 22.7 km is required within the project area.

Proposed feeder network

Summary of proposed pipe length for Re-use water is as below;

Diameter in MM	HDPE	Total Length (m)
110	11837	11837
160	6231	6231
200	3156	3156
315	1482	1482
Total (m)	22706	22706

For more details please refer to Chapter 13 of the report.

1.11 ROAD MAP TO CONTINUOUS WATER SUPPLY

It includes the planning & feasibility for improving the existing situation & upgrades the system for uninterrupted supply of water. The strategy for improvement to achieve uninterrupted water supply needs a holistic approach with some policy decisions i.e.

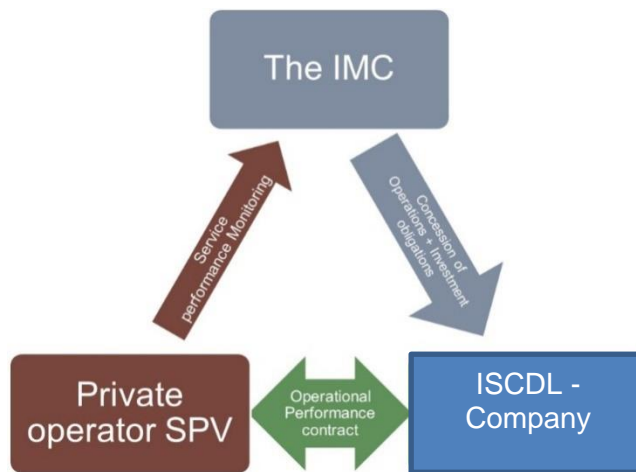
- (a) Supply side efficiency which includes efficient system to distribute the water from source to consumer meter more efficiently.
- (b) Demand side efficiency for metering & tariff policy and consumer awareness to adapt water conservation methods.
- (c) Managerial reforms to bring in performance and accountability in the system.

A. Water loss reduction strategy is discussed in this report for reduction of Commercial losses and Technical losses. The commercial loss reduction strategy includes reducing unmeasured consumption, tackling authorized unbilled un-

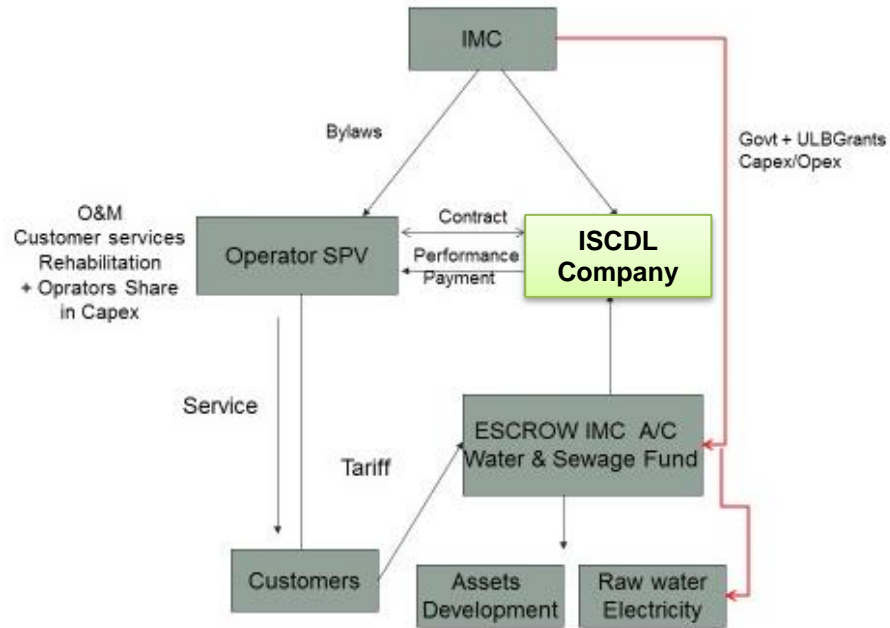


metered consumption and efficient metering and billing system. The technical loss reduction program includes rehabilitation of deteriorated network, service connections, and fittings with modern leak proof material to reduce water losses.

- B. Feasibility for supplying continuous water supply was assessed in this report for availability of water to meet the demand for present and projected population. Water demand assessment done for existing and proposed level of water losses. Topography of project area, land use pattern and location of ESR was considered for creating hydraulic sub zone with in the project area.
- C. Investment plan to rehabilitate the distribution network is prepared and components and estimated project cost are discussed in Chapter 14 and tabulated as hereafter.
- D. Implementation strategy to ensure sustainability through performance based management contracts with private sector participation. The rehabilitation and O & M strategy with private sector participation to implement the project through performance based contract are discussed in this report under Chapter 15.



- E. The institutional framework between IMC & Operator shall be as per below;



1.12 PROJECT COST

The Estimated Project cost is categorised in following table;

Sr. No	Description	Unit	Qty	Amount in Rs.	Amount in Crore Rs.
A)	Water supply				
1	DMA Formation in ABD Project Area	Year	3	76,701,632	7.67
2	Providing , lowering, laying & jointing D.I 300 & 400 mm dia. Fedder for new proposed Sump and then fill ESR of ABD project Area	RMT	6163	57,183,828	5.72
3	construction of New proposed GSR of 6 ML in ABD project Area	Nos.	1	13,155,380	1.32
4	Pumping machinery (3 nos. of pump)	Nos.	3	4,152,803	0.415
5	Providing , lowering, laying & jointing distribution network of various diameter in ABD project Area	RMT	69012	290,891,400	29.09
6	House service connection in ABD project Area	Nos.	24000	255,409,446	25.54
	Sub total of Water Supply work (A)			697,494,489	69.75
B)	Sewer System				
7	Providing , lowering, laying & jointing collection system din ABD project Area	RMT	52030	338,061,422	33.81



Sr. No	Description	Unit	Qty	Amount in Rs.	Amount in Crore Rs.
8	House service connection in ABD project Area	Nos.	24000	71,712,000	7.17
9	Construction of decentralized STP	MLD	10	103,685,608	10.37
Sub total of Sewer work (B)				513,459,030	51.35
c)	Reuse water				
10	construction of New OHT of 3 ML in ABD project Area for reuse water storage	Nos.	1	22,350,000	2.24
11	Pumping machinery (3 nos. of pump)	Nos.	3	3,944,239	0.39
12	Providing , lowering, laying & jointing Reuse network of various diameter in ABD project Area	RMT	23842	63,270,000	6.33
Sub total of Reuse Network (C)				89,564,239.00	8.96
Total (A+B+C)				1,300,517,758	130.05
				44,403,952.00	4.44
Total Amount				1,339,533,291	133.95
O & M Cost for 10 Years					
14	Operation & maintenance cost for ABD project Area for 10 Yrs.	Year	10	495,230,940	49.52
15	Operation & maintenance cost for SEWER network For ABD project Area for 10 Yrs. (o& M cost is 0.5 Cost of Capx)	Year	10	444,242,499	44.42
16	Operation & maintenance cost for Decentralized STP For ABD project Area for 10 Yrs. (2.71 Rs M ³ including electrical cost)				
17	Operation & maintenance cost for Reuse network For ABD project Area for 10 Yrs. (o& M cost is 0.5% Cost of Capx)	Year	10	6,420,604	0.64
Total				945,894,043	94.59
Contingencies 3% (for spares, chemicals, machinery etc.)				28,376,821	2.84
Total Amount				974,270,864	97.43
Total Bid cost (A+B)				2,313,804,155	231.380

**EXECUTIVE SUMMARY FOR ABD PROJECT AREA –RFP/BID DOCUMENT**

Brief Summary of Final Bid term and Contract Structure is as following;

1	Name of the Contract	“Implementation of Continuous Pressurised Water Supply and Sewerage System with Reuse of Water in ABD Area of Indore Municipal Corporation and Operation & Maintenance for the Period of Ten Years “
2	Project Cost	Estimated Project Cost Rs. 133.95 Crores (O & M Cost Rs. 94.59 Crores)
3	Type of Contract	Performance Based Management Contract (Asset ownership and sovereign rights remains with IMC)
4	Employer	Indore Municipal Corporation
5	Contractor	M/s. Vishnu Prakash . R. Pungalua
	Project start date	26.07.2018
	Project End date	25.07.2021
6	Scope of Contract	<ul style="list-style-type: none">• Water Supply;- OHT’s, Direct tapping points & Distribution System• Sewerage System- Collection and disposal, STP’s Water re-use• Distribution to consumers• Full customer services including but not limited to: meter installation, reading, billing and customer complaints handling.• On job Training to IMC employees• Demand side management for water consumption within the norms of 150 lpcd• Inclusion : O & M, repairs, replacement , Customer services• Exclusions: Bulk Water source
7	Duration	30 Months Construction period +10 years O & M
8	Project Area	ABD Project Area (300 Hectors)
9	Business Responsibilities	Contractor: O&M, Management and major Investments. ISCDL (Indore smart city development Limited): <ul style="list-style-type: none">• Decide the level of subsidy versus tariff• Establish tariff structure• Secure availability of water at OHT / Project Area• Demand RiskPay subsidies , if any
10	Monitoring committee (ISCDL) & Role of ISCDL	<ul style="list-style-type: none">• Independent committee to be controlled by Govt. of MP• Independent Project Management Consultancy• Monitor the key performance indicators• Monitor the Contractor’s technical and financial performance, its legal and contractual obligations
11	Resolving disputes	<ul style="list-style-type: none">• Procedures & timelines shall be strictly regulated in the agreement.• For minor dispute, the ISCDL committee may take up the decision.• Madhya Pradesh Madhyastham Adhikaran Adhinyam 1983.
12	Tariff Adjustments	<ul style="list-style-type: none">• Tariff to be determined by IMC• No link of Contractor payment with slab and category of consumer.
13	Governing law	<ul style="list-style-type: none">• The Contractor must comply with all Indian laws, regulations, orders and directives that may affect the lease contract
14	Transfer of staff	<ul style="list-style-type: none">• No transfer of employees to Contractor only assignment of maintenance employees to Contractor for capacity building
15	Scope of Works	A. Design (SIP) and Construction



	B. Operational Services (for apprx. 24000 number connections) – From Inlet of ESR to Consumer connections in respective operational zones within ABD project area of IMC)	
	The Works component consists of following sub-components: 1. DMA Establishment works 2. Capital Works as per BOQ 2. O&M of the Water Supply and Sewerage System	
	Water Supply Construction Works	
	Survey and investigations of transmission and distribution network for levels (including water & sewerage network)	Estimated length 100 to 150 kms
	Construction of New OHT and GSR	<ul style="list-style-type: none"> • GSR of of 6 ML Capacity- 1 Nos. • Pumping machinery -3 nos.
	Distribution System- proposed New pipelines / Replacement of pipes	75 km
	Providing House Service Connections MDPE pipe on D.I pipe	24000 (Apprx.)
	Providing House Service Connections MDPE pipe on HDPE pipe	
	providing and Installing domestic & commercial customer Fully AMR meters	
	Providing House Service Connections MDPE pipe on D.I pipe	
	Estimate for the work of providing and Installing Bulk Flow Meter .	14 nos.
	Providing & Fixing PRV Valves	2 nos.
	Water Meter Testing Bench Facility	15 mm to 50 mm 80 mm to 300 mm
	Finding invisible leaks in pipeline network, carrying out repairs and allied works in IMC Command area	100 kms (Indicative)
	Road Works (Road Cutting and Road restoration)	For entire system
	Development, Installation of GIS based pipe Network including real-time consumer meter reading and billing & collection system & Complaint Redressal System.	Covering all Bulk supply points, DMA inlet and outlet points, ESR inlet points and OHT and proposed STP's, within ABD Project area
	Sewerage works Construction Works	
	No. of Sewerage zones	3 zones
	providing, lowering, jointing, installation of collection system within ABD Project area (approx. 24000 Connections)	52 km
	Providing, jointing, laying, testing and commissioning of HDPE PE-100/PN-6 (suitable for pulling method for jointing) pipes for sewer line as per IS-14743:1996 by Trenchless Method adopting	Estimated length 28 kms



		any suitable technology below ground at required depth	
		RCC NP3 Vertical Casted - Providing at site, lowering & laying in trenches, aligning & jointing of RCC pipes NP3 class (with s/s ends) IS: 458 - 1988 (amended up to date) marked and pipes from 300 mm upto 2000 mm	1. Estimated length 1 kms
		Providing and constructing Construction brick masonry circular manhole 1.22m internal dia at bottom & 0.56 dia at top.	Manhole "Type-A" = 1302Nos.,
		Construction brick masonry circular manhole 1.52m internal dia at bottom & 0.56 dia at top.	Manhole "Type-B" = 327Nos.,
		RCC Precast Type (Depth <= 1.65 m) - Providing, fixing and constructing of pre-cast RCC M-40 grade circular manholes (using sulphate resistant cement) with internal dia 1.0m	Manhole "Type-B" = 327Nos.,
		Providing House Service Connections	24000 (Apprx.)
		CCTV mounted on float with inspection provision for Sewer inspection	Entire Sewerage Network
		Road Works (Road cutting & Road restoration)	For entire system
		Construction of decentralized Sewage Treatment Plant / Sewage Pumping Station at proposed location of C. P. Shekhar Nagar	10 MLD Capacity (SBR Technology)
		Water Reuse network:- providing, lowering, jointing, installation of water re-use network of various diameters within ABD Project area	Non potable water use like flushing, gardening etc. pipelines of length 24 km (HDPE)
		Construction of New OHT for water re-use system	3 ML Capacity
		Operating and Maintenance of water supply, Sewerage System including water reuse and intermediate Pumping stations with performance guarantee, billing and collection system.	For 10 Years after commissioning date
16	Contractor Payment	All the payments under contractor payment terms shall be made through ISCDL.	
		1(A) Establishment of DMA's i) 30% of 100% of quoted cost after establishing DMA ii) 50% of 100% of quoted cost after completion of water loss iii) 20% of 100% of quoted cost after achieving 24 x7 pressurised water supply	



	<p>1(B) Construction Works as per BOQ 100% as per actual measurement as per annuity payment</p> <ul style="list-style-type: none">i) For providing and stacking of pipe including all pipeline accessories<ul style="list-style-type: none">a. 60% of the cost of pipeline on supply and stacking at siteb. 15% of the cost of pipeline on laying, jointing,c. 10% of the sectional hydro testingd. 5% after road restoration workse. 10% on commissioning of pipelines / DMAii) For providing Mechanical/ Electrical, Instrumentation and other items<ul style="list-style-type: none">a. 60% of the quoted price, against supply and storage at Site;b. 20% after installation of the equipment;c. 10% after testing and trial run completed successfully; andd. 10% on commissioning of the equipment.iii) For Civil works- like excavation, chamber, disposal, refilling etc. 100% after final inspection and successful execution of all related works upto to the satisfaction of Engineeriv) For Moling / HDD Method<ul style="list-style-type: none">i. 70% after laying, jointing,ii. 10% after successful sectional hydro testingiii. 5% after road restoration worksiv. 15% on commissioning of DMAv) For Construction of ESR & GSR etc. (Items covered: Item No. 45,46) The 83% amount of the respective items shall be paid as per following breakup and 17% amount shall be paid as monthly annuity payment for 120 months<ul style="list-style-type: none">i. 10% on Preliminary work, rooting out fallen trees and excavation, casting of leveling course / PCC of footing and casting of based slabii. 20% after casting 50% tank wall and partition walliii. 15% after casting of full tank wall and partition walliv. 15% after casting top slab including arrangement for manhole covers, air vent and central ventilation, including casting of staircase, railing for stair case and roof top.v. 30% after providing, fixing pipes and specials for inlet, overflow scour, outlet, bell mouths, grating, puddle collars, duck foot bends, sluice valves, sluice gates, electromagnetic flowmeters and their required chambers etc. complete.vi. 10% after finishing and testing of the structure, providing and fixing water level indicator, lightning conductors, air vent flow recorded, protection work, and all other work as given in tender document. Paining as per specification and submission of 5 copies of completion drawing and site clearance including handing over of structure.<p>The payment shall be made as per the breakup approved by the IMC after award of work.</p>vi) For Construction of 10 MLD STP. (Items covered: Item No. 99) The 83% amount of the respective items shall be paid as per following breakup and 17% amount shall be paid as monthly annuity payment for 120 months<ul style="list-style-type: none">i. 80% progressive payment as per progress of work,ii. 10% on testing & trial runiii. 10% on commissioning
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		<p>2. Operations & Maintenance services based on performance 2A Payment for O&M Services Water Supply Services i) Maximum Fixed Fees equal to 70% of O&M Fees for respective month; ii) Maximum Performance Fee equal to 30% of O&M Fees for respective month as per Performance Target and Measurement under contract.</p> <p>2B Payment for O&M Services Sewerage & Reuse (i) Maximum Fixed Fees equal to 70% of O&M Fees for respective month; (ii) Maximum Performance Fee equal to 30% of O&M Fees for respective month as per Performance Target and Measurement under contract. (iii) Reuse of Water: 50% of total Sewerage O&M fees over and above the Sewerage O&M fees.</p>
		<p>3. Monthly Annuity Payment as quoted in price bid for 120 months</p>
19	Key Performance Indicators & weightage on Performance based Payment	<p>Water Supply 1. Water loss/ NRW level -5% weightage 2. Collection Efficiency – 5% weightage 3. Continuous (24 x7) Water supply- 10% weightage 4. Water quality – 5% weightage 5. Consumer complaint - 5% weightage</p> <p>Sewerage 1. Continuous operation of STP & SPS - 10% weightage 2. Establishment of CRM centres for redressal of consumer queries in time - 5% weightage 3. Monitoring Sewer spills from main, branch and lateral sewers - 5% weightage 4. House sewer connection request in time - 5% weightage 5. Quality of effluent - 5% weightage</p>
21	Performance security	The performance security is 5% of the contract price
	Additional Performance security	Additional performance security of 5% of the Contract price will be recovered from the contractor from RA bills
22	Liquidate damages / Penalty	<ol style="list-style-type: none"> 1. For DMA Establishment Works, the liquidated damages are 10% of the lump sum due to the Contractor for the number of DMAs whose establishment is behind schedule; for every month of delay. 2. For the construction works the liquidate damage are 10% of value of balance work is behind the schedule for every month of day. 3. Additional 10% as Liquidated Damages over and above fees deduction as per Schedule 5 & 7 (i.e. Payment Terms and Performance Targets & Measurements) for the period under consideration. 4. Maximum deduction upto 10% of the Contract value 5. If contractor fails to adhere the provisions of time cap for road restoration mentioned in section 6 employers requirement, he shall be penalized as per below:- <ol style="list-style-type: none"> a. For a stretch uncovered by WBM/WMM/PCC after refilling of trench beyond 10 days, a penalty of Rs.: 6000/- per day per km of incomplete length will be imposed and recovered from next Running Payment to contractor. b. If the length of uncovered by WMM/WBM/PCC exceed, 5.0km, a penalty of Rs. 3000/- per day per km of uncovered length over 5.0km of WMM/WBM/PCC will be imposed and same shall be recovered from the next Running Payment to contractor.
23	Bidding Process	Single Stage Two Envelop (Qualification + Technical + Financial)
24	Bid Structure	Part I: Technical Bid (Volume –I)



		Section 1 to 5: Instructions to Bidders (ITB) Section 6 : Employear’s requirement (ERQ) Section 7 : General Conditions of Contract Section 8 : Particular Conditions of Contract Section 9 : Contract Forms Part I: Technical Bid (Volume-II) Section 6 : Detailed Technical Specifications Part II: Financial Bid Price Bid with BOQ
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