

1.0 PROJECT BRIEF

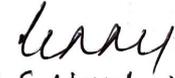
1.1 BACKGROUND

Bhilwara district has been facing acute shortage of drinking water since last 10 years. Poor rainfall and over-extraction of groundwater have rendered all the 11 ground water blocks over-exploited. Various ground water sources developed in last few years have not proved sustainable. Poor ground water quality made the drinking water situation worse in the district. There is no dependable surface water source in Bhilwara. The only surface source for drinking water supply of Bhilwara town, Meja Dam, has not received sufficient water since last many years. Thus with no dependable local surface source and nearly exhausted ground water sources coupled with poor quality, 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 600 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. This has resulted in the vulnerable economy and constrained growth of the district. The factors causing drinking water problem in Bhilwara District 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. Work of Cluster Scheme of 315 Villages of Mandargarh, Bijoliya and Jahajpur Tehsils along with Augmentation of UWSS of Mandargarh and Bijoliya Towns from Aroli Headworks under CHAMBAL-BHILWARA WATER SUPPLY PROJECT PHASE – II with operation and maintenance for 10 years on Single Point Responsibility Turnkey basis, was originally awarded to M/s Pratibha Industries Ltd, Mumbai vide letter no. F ()/Ar. Bhl (Phase-II)/2013-14/1673-1681 dated 01.10.2013 of Additional Chief Engineer, PHED, Project Region, Ajmer. The stipulated date of commencement & completion of work was 10.10.2013 & 09.10.2016. The contractor started the work after getting necessary approvals from the department but failed to maintain prorata progress as per contract agreement. The existing contract has been rescinded and it is now proposed to get the balance work of original agreement completed through the proposed new contract. Brief detail of awarded work order to M/s Pratibha Industries Ltd, Mumbai and the work completed is enclosed as Annexure-B, of volume I.

1.2 PROJECT OBJECTIVE

The primary objective of the project is to provide safe & potable drinking water to all 9 towns and 1688 villages of Bhilwara district. The Chambal – Bhilwara Water Supply Project is contemplated and planned in two phases. The Phase I of Chambal – Bhilwara Water Supply Project is framed to create infrastructure of the project for the water demand up to year 2030 for nine towns of Bhilwara


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district namely Bhilwara, Gulabpura, Gangapur, Mandal, Mandalgarh, Asind, Jahazpur, Shahpura and Bijoliya along with 1688 villages of Bhilwara district and 23 en-route villages of Bundi district.

In the Phase II of the project, the works of branches from transmission system for improvement and coverage of 8 other towns along with augmentation of their water supply system, distribution system for clusters for coverage of 1688 villages of Bhilwara district along with intra-village distribution and construction of village level reservoirs shall be taken.

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.

1.3 BRIEF PARTICULARS OF THIS PACKAGE

This Package is for the Cluster Scheme of 179 Villages of Mandalgarh Tehsil, 107 Villages of Bijoliya Tehsil and 29 Villages of Jahajpur Tehsil along with Augmentation of UWSS of Mandalgarh and Bijoliya Towns under Phase II of Chambal – Bhilwara Water Supply Project. The scope of this package includes all works required for delivering Chambal water, through PSPs and CWTs to 179 villages of Mandalgarh Tehsil, 107 villages of Bijoliya Tehsil and 29 Villages of Jahajpur Tehsil along with augmentation of UWSS of Mandalgarh and Bijoliya Towns of Bhilwara District, from Aroli headworks. The work under this package broadly includes works of Transfer Mains, Cluster Pumping Mains, Transfer and Cluster pumping stations, Electromechanical, Instrumentation and SCADA activities at each Pumping Station, Cluster distribution system, CWRs, ESRs, Village Distribution System, PSPs, CWTs, IEC activities and Operation and Maintenance for 10 years after defect liability period of one year to deliver designed quantity of water of Chambal river to 179 villages of Mandalgarh Tehsil, 107 villages of Bijoliya Tehsil and 29 villages of Jahajpur Tehsil along with augmentation of UWSS of Mandalgarh and Bijoliya Towns of Bhilwara District. Clusters of villages have been formed looking to topography of area and feasibility to provide water from elevated service reservoirs. One ESR has been proposed for one cluster. All the 315 villages of Mandalgarh, Bijoliya and Jahajpur Tehsils have been proposed to be divided in 57 clusters.

Earlier The work of “Work of Cluster Scheme of 315 Villages of Mandalgarh, Bijoliya and Jahajpur Tehsils along with Augmentation of UWSS of Mandalgarh and Bijoliya Towns from Aroli Headworks under CHAMBAL-BHILWARA WATER SUPPLY PROJECT PHASE – II with operation and maintenance for 10 years on Single Point Responsibility Turnkey basis” was originally awarded to M/s Pratibha Industries Ltd, Mumbai vide letter no. F ()/Ar. Bhl (Phase-II)/2013-14/1673-1681 dated 01.10.2013 of Additional Chief Engineer, PHED, Project Region, Ajmer. The


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stipulated date of commencement & completion of work was 10.10.2013 & 09.10.2016. The contractor started the work after getting necessary approvals from the department but failed to maintain prorata progress as per contract agreement. Brief detail of awarded work order to M/s Pratibha Industries Ltd, Mumbai and the work completed is enclosed as Annexure-B of volume I.

M/s Pratibha Industries Ltd, Mumbai, has since, left the work incomplete after execution of approximately 12.03% of work only. The existing contract has been rescinded and it is now proposed to get the balance work of original agreement completed through the proposed new contract. The scope of work, specifications & conditions of contract for the proposed new contract shall remain the same as that was with M/s Pratibha Industries Ltd, Mumbai. The new contractor, under this contract, shall own the responsibility for the entire work already done, materials supplied by M/s Pratibha Industries Ltd, Mumbai.

The bidder is required to study the work already done by M/s Pratibha Industries Ltd, Mumbai, designs & drawings already approved & account for the remedial measures for any defects errors or omissions, if observed. The new contractor shall be responsible for any defects, if noticed at any time, in the previous work & shall account for the same while submitting the bids. No extra payment shall be made for any rectification (including cost of material/equipments required for rectification) required in the work already done. All the works done by previous Contractor are to be dovetailed with the new work. The bidder may use the already approved designs, drawings & other approvals given to M/s Pratibha Industries Ltd, Mumbai in consultation with EiC, or may submit new drawings & designs for approval incorporating the executed works as is where is basis. The bidder shall own the responsibility for its correctness & sufficiency as if it were submitted by the bidder.

The whole of the balance work including mobilization, reconnaissance, design, manufacturing, transportation, construction, installation, testing, commissioning & trial run & demobilization, has to be completed within a period of 32 months, calculated from the commencement date, which is 10 days after the written order to commence the work.

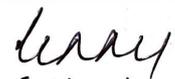
Annexure-B Vol-I narrating works already done will be part of the Tender Document.

1.3.1 Population And Water Demand

1.3.1.1. Mandalgarh Tehsil

SN	Name of Village	Code No	Populati on 2001	Populati on 2030	Populati on 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
1	Achala Ji Ka Khera	02930100	405	682	893	37.51	49.12
2	Ajeetpura	02939700	77	130	170	7.15	9.35
3	Amartiya	02943300	467	787	1031	43.29	56.71
4	Amli	02929700	815	1373	1798	75.52	98.89
5	Ampura	02926200	368	620	812	34.10	44.66
6	Anando Ka Khera	02939300	140	236	309	12.98	17.00
7	Anwasa	02938400	321	541	708	29.76	38.94
8	Badanpura	02938900	556	937	1227	51.54	67.49
9	Bageed	02935600	1026	1728	2263	95.04	124.47
10	Bagthala	02926800	125	211	276	11.61	15.18
11	Bakhatpura	02929400	261	440	576	24.20	31.68


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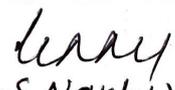
SN	Name of Village	Code No	Populati on 2001	Populati on 2030	Populati on 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
12	Barla	02935100	616	1038	1359	57.09	74.75
13	Baroo Khera	02936600	739	1245	1630	68.48	89.65
14	Baroondni	02935200	5445	9172	12012	504.46	660.66
15	Beekran	02931100	1135	1912	2504	105.16	137.72
16	Beeliya	02927500	873	1471	1926	80.91	105.93
17	Beer Ka Khera	02936900	396	667	874	36.69	48.07
18	Beethalpara	02935700	922	1553	2034	85.42	111.87
19	Bhand Ka Khera	02936200	135	227	297	12.49	16.34
20	Bharenda	02941900	371	625	819	34.38	45.05
21	Bharji Ka Khera	02930200	142	239	313	13.15	17.22
22	Bharliya	02934100	403	679	889	37.35	48.90
23	Bhat Kheri	02940100	244	411	538	22.61	29.59
24	Bhawani Singh Ka Khera	02932900	268	451	591	24.81	32.51
25	Bhopalgarh	02941200	91	153	200	8.42	11.00
26	Bigod	02933600	10756	18119	23729	996.55	1305.10
27	Bilod	02934900	483	814	1066	44.77	58.63
28	Chainpuriya	02943000	309	521	682	28.66	37.51
29	Chainpuriya @ Theekariya	02933300	741	1248	1634	68.64	89.87
30	Chandpura	02926100	52	88	115	4.84	6.33
31	Charan Kheri @ Sopura	02943200	168	283	371	15.57	20.41
32	Chawandiya	02929600	299	504	660	27.72	36.30
33	Chitoriya	02943400	467	787	1031	43.29	56.71
34	Dalsingh Ji Ka Khera	02940300	426	718	940	39.49	51.70
35	Damti	02941700	241	406	532	22.33	29.26
36	Danji Ka Khera	02931600	303	510	668	28.05	36.74
37	Daulji Ka Khera	02941500	525	884	1158	48.62	63.69
38	Deogarh	02931500	55	93	122	5.12	6.71
39	Deopur	02933200	119	200	262	11.00	14.41
40	Deopura	02930800	247	416	545	22.88	29.98
41	Deopuriya	02929100	131	221	289	12.16	15.90
42	Devi Singh Ka Khera	02936500	355	598	783	32.89	43.07
43	Devipura	02934700	982	1654	2166	90.97	119.13
44	Dewaliya	02935300	475	800	1048	44.00	57.64
45	Dhakar Kheri	02935500	1362	2294	3004	126.17	165.22
46	Dhaman Gati	02935000	433	729	955	40.10	52.53
47	Dhamniya	02927800	2891	4870	6378	267.85	350.79
48	Dhanwara	02940600	1783	3003	3933	165.17	216.32
49	Dhorela	02941100	469	790	1035	43.45	56.93
50	Dolpura	02938800	1008	1698	2224	93.39	122.32


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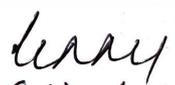
SN	Name of Village	Code No	Populati on 2001	Populati on 2030	Populati on 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
51	Dudaji Ka Khera	02931300	144	243	318	13.37	17.49
52	Fatehpura	02941300	84	141	185	7.76	10.18
53	Ganeshpura	02932500	859	1447	1895	79.59	104.23
54	Gariyan	02941400	119	200	262	11.00	14.41
55	Gopalpura	02932400	417	702	919	38.61	50.55
56	Goth	02937500	89	150	196	8.25	10.78
57	Govta	02942200	569	958	1255	52.69	69.03
58	Gudha	02930700	391	659	863	36.25	47.47
59	Gulgoan	02939600	225	379	496	20.85	27.28
60	Hameeriya	02940800	745	1255	1644	69.03	90.42
61	Hari Singh Ka Khera @ Nathawaton Ka Khera	02927400	377	635	832	34.93	45.76
62	Harjaspura	02929200	420	707	926	38.89	50.93
63	Harpura	02928100	641	1080	1414	59.40	77.77
64	Heengwaniya	02934600	573	965	1264	53.08	69.52
65	Hindu Singh Ka Khera @ Chhur Ka Khera	02927600	408	687	900	37.79	49.50
66	Jagpura	02928000	649	1093	1431	60.12	78.71
67	Jal Ka Khera	02927200	495	834	1092	45.87	60.06
68	Jalam Ki Jhonpariyan	02940000	618	1041	1363	57.26	74.97
69	Jaliya	02933000	1366	2301	3013	126.56	165.72
70	Jasaji Ka Khera	02931400	565	952	1247	52.36	68.59
71	Jasuji Ka Khera	02929800	1007	1696	2221	93.28	122.16
72	Jhanjhola	02930300	871	1467	1921	80.69	105.66
73	Jojwa	02935900	3312	5579	7306	306.85	401.83
74	Jujarpur	02941000	386	650	851	35.75	46.81
75	Kabariya Khurd	02937800	131	221	289	12.16	15.90
76	Kachhola	02928300	6346	10690	14000	587.95	770.00
77	Kacholiya Kalan	02932000	173	291	381	16.01	20.96
78	Kacholiya Khurd	02931900	194	327	428	17.99	23.54
79	Kali Khol	02942600	617	1039	1361	57.15	74.86
80	Kalyanpura @ Haron Ka Khera	02937100	993	1673	2191	92.02	120.51
81	Karar Kheri	02930600	245	413	541	22.72	29.76
82	Kasiramji Ka Khera	02937700	64	108	141	5.94	7.76
83	Katariyon Ka Khera	02926400	335	564	739	31.02	40.65
84	Kekariya	02942800	419	706	925	38.83	50.88
85	Khachrol	02937300	1787	3010	3942	165.55	216.81
86	Khakhiji Ka Khera	02938300	117	197	258	10.84	14.19
87	Khakhunda	02926600	434	731	957	40.21	52.64
88	Kham Ka Khera	02939900	81	136	178	7.48	9.79


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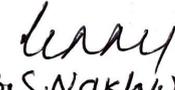
SN	Name of Village	Code No	Populati on 2001	Populati on 2030	Populati on 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
89	Khangarji Ka Khera	02942000	219	369	483	20.30	26.57
90	Khatwara	02934200	3676	6192	8109	340.56	446.00
91	Kherpura @ Meghpura	02934000	373	628	822	34.54	45.21
92	Khokhra	02941600	643	1083	1418	59.57	77.99
93	Kishanpuriya	02938600	294	495	648	27.23	35.64
94	Lachhmangarh	02928400	200	337	441	18.54	24.26
95	Ladpura	02941800	3066	5165	6764	284.08	372.02
96	Lalpura	02937000	437	736	964	40.48	53.02
97	Latala	02928200	217	366	479	20.13	26.35
98	Laxmipura	02927000	252	424	555	23.32	30.53
99	Lodhiyana	02936000	589	992	1299	54.56	71.45
100	Madhu Puriya	02928700	213	359	470	19.75	25.85
101	Mahtaji Ka Khera	02934500	919	1548	2027	85.14	111.49
102	Mahuwa	02932100	4959	8353	10939	459.42	601.65
103	Makariya	02937400	537	905	1185	49.78	65.18
104	Mal Ka Khera	02940700	682	1149	1505	63.20	82.78
105	Mala Ka Khera	02930000	184	310	406	17.05	22.33
106	Mali Khera	02933700	1032	1738	2276	95.59	125.18
107	Mandi Gusaiyan	02936300	246	414	542	22.77	29.81
108	Mandi Nathan	02935800	78	131	172	7.21	9.46
109	Manganj	02942500	330	556	728	30.58	40.04
110	Mangtala	02930900	1391	2343	3068	128.87	168.74
111	Manpura	02932300	3400	5727	7500	314.99	412.50
112	Meetha	02927700	221	372	487	20.46	26.79
113	Meghpura	02940200	203	342	448	18.81	24.64
114	Mochariyon Ka Khera	02939500	378	637	834	35.04	45.87
115	Mohanpura	02933900	453	763	999	41.97	54.95
116	Mohanpura	02939200	1620	2729	3574	150.10	196.57
117	Mol	02933100	552	930	1218	51.15	66.99
118	Motaron Ka Khera	02942400	1206	2032	2661	111.76	146.36
119	Mukan Garh	02932200	537	905	1185	49.78	65.18
120	Mukund Puriya	02936700	559	942	1234	51.81	67.87
121	Nahargarh	02927900	676	1139	1492	62.65	82.06
122	Nahargarh	02934400	614	1034	1354	56.87	74.47
123	Nahargarh @ Jodhpuriya	02942700	337	568	744	31.24	40.92
124	Narsingh Sagar	02942900	307	517	677	28.44	37.24
125	Nathji Ka Khera	02929900	322	542	710	29.81	39.05
126	Nawalpura	02938000	501	844	1105	46.42	60.78
127	Nayagaon	02933800	277	467	612	25.69	33.66


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128	Neel Ki Kheri	02936800	580	977	1279	53.74	70.35
129	Neem Ka Khera	02938500	614	1034	1354	56.87	74.47
130	Padampura	02932700	338	569	745	31.30	40.98
131	Padampura	02943100	533	898	1176	49.39	64.68
132	Peepalda	02938100	522	879	1151	48.35	63.31
133	Peethaji Ka Khera	02936400	701	1181	1547	64.96	85.09
134	Peethalpara	02926700	156	263	344	14.47	18.92
135	Phoolji Ki Kheri	02943500	394	664	870	36.52	47.85
136	Pratappura	02933400	440	741	970	40.76	53.35
137	Raiseengpura	02937200	777	1309	1714	72.00	94.27
138	Rajgarh	02926500	700	1179	1544	64.85	84.92
139	Rajpura	02928800	408	687	900	37.79	49.50
140	Ralayata	02932800	1101	1855	2429	102.03	133.60
141	Ramchandraj Ka Khera	02940400	212	357	468	19.64	25.74
142	Ramthali	02942100	722	1216	1592	66.88	87.56
143	Ranikhera	02934300	991	1669	2186	91.80	120.23
144	Rooparel	02930400	105	177	232	9.74	12.76
145	Rooptalai	02939800	566	953	1248	52.42	68.64
146	Salampura	02929500	396	667	874	36.69	48.07
147	Salampura @ Tinduri	02938700	168	283	371	15.57	20.41
148	Sand	02936100	638	1075	1408	59.13	77.44
149	Sangrampura	02931800	171	288	377	15.84	20.74
150	Saran Ka Khera	02939000	357	601	787	33.06	43.29
151	Sarana	02942300	2292	3861	5056	212.36	278.08
152	Sardarji Ka Khera	02938200	593	999	1308	54.95	71.94
153	Sarthala	02928600	1501	2528	3311	139.04	182.11
154	Seegoli	02935400	2443	4115	5389	226.33	296.40
155	Shaktaji Ka Khera	02930500	502	846	1108	46.53	60.94
156	Shreenagar	02931700	501	844	1105	46.42	60.78
157	Shyam Garh	02943600	311	524	686	28.82	37.73
158	Shyampura	02940900	2702	4552	5961	250.36	327.86
159	Sonyana	02932600	595	1002	1312	55.11	72.16
160	Suras	02934800	1663	2801	3668	154.06	201.74
161	Surdiya	02937600	201	339	444	18.65	24.42
162	Swaroopura	02939100	376	633	829	34.82	45.60
163	Tahla	02943700	756	1273	1667	70.02	91.69
164	Takhatji Ka Khera	02931200	93	157	206	8.64	11.33
165	Thal Kalan	02927300	2000	3369	4412	185.30	242.66
166	Thalkhurd	02927100	578	974	1276	53.57	70.18
167	Thool Khera	02933500	39	66	86	3.63	4.73


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 (B.S. Nakla)
 अधिशाषी अभियन्ता
 जन. स्वा. अभि. वि. परियोजना
 खण्ड माण्डलगढ़ (जिला भीलवाड़ा)

SN	Name of Village	Code No	Populati on 2001	Populati on 2030	Populati on 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
168	Ummedpura	02926300	492	829	1086	45.60	59.73
169	Undaron Ka Khera	02940500	1069	1801	2359	99.06	129.75
170	Genoli	-	1272	2143	2806	117.87	154.33
171	Kundaliya	-	149	251	329	13.81	18.10
172	Hoda	-	1528	2574	3371	141.57	185.41
173	Tiroli	-	429	723	947	39.77	52.09
174	Baldarka	-	632	1065	1395	58.58	76.73
175	Karanpura	-	327	551	722	30.31	39.71
176	Phalasiya	-	1046	1762	2308	96.91	126.94
177	Bhiaripura	-	233	392	513	21.56	28.22
178	Rampuriya	-	221	372	487	20.46	26.79
179	Dhakar Kheda	-	277	467	612	25.69	33.66
	TOTAL		137798	232121	303983	12766.655	16719.07

1.3.1.2. Bijoliya Tehsil

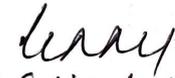
S. No.	Name of Village	Code No	Pop. 2001	Pop. 2030	Pop. 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
1	Amarniwas	02952900	94	158	207	8.69	11.39
2	Amarpura	02944000	909	1531	2005	84.21	110.28
3	Amritpuriya	02950000	256	431	564	23.71	31.02
4	Ant	02955000	388	654	856	35.97	47.08
5	Anti	02955800	1651	2781	3642	152.96	200.31
6	Aroli	02948000	1226	2065	2704	113.58	148.72
7	Bahadur Ji Ka Khera	02954300	204	344	451	18.92	24.81
8	Baniyon Ka Talab	02954500	1461	2461	3223	135.36	177.27
9	Banka	02944400	855	1440	1886	79.20	103.73
10	Barodiya	02944200	591	996	1304	54.78	71.72
11	Barwa	02951700	172	290	380	15.95	20.90
12	Berisal	02948500	1081	1821	2385	100.16	131.18
13	Bhagwanpura	02952800	178	300	393	16.50	21.62
14	Bheroopura	02955200	215	362	474	19.91	26.07
15	Bhooti	02953000	675	1137	1489	62.54	81.90
16	Bhopatpura	02944600	1265	2131	2791	117.21	153.51
17	Bijoliyan Khurd	02946300	2181	3674	4811	202.07	264.61
18	Bilona Bari	02947700	45	76	100	4.18	5.50
19	Brijpura	02951800	209	352	461	19.36	25.36
20	Brindawan	02947000	77	130	170	7.15	9.35
21	Chandji Ki Kheri	02948900	1325	2232	2923	122.76	160.77
22	Cheeta Bara	02949800	639	1076	1409	59.18	77.50
23	Chenpuriya	02945200	313	527	690	28.99	37.95
24	Chhatri Khera	02945000	148	249	326	13.70	17.93
25	Chhatri Khera	02946900	270	455	596	25.03	32.78


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S. No.	Name of Village	Code No	Pop. 2001	Pop. 2030	Pop. 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
26	Danpura	02955600	364	613	803	33.72	44.17
27	Debiniwas	02952600	280	472	618	25.96	33.99
28	Deogarh	02953700	160	270	354	14.85	19.47
29	Deonagar	02953800	711	1198	1569	65.89	86.30
30	Deroli	02951500	260	438	574	24.09	31.57
31	Dobiya	02951900	201	339	444	18.65	24.42
32	Fatehpur	02950400	221	372	487	20.46	26.79
33	Ganeshpura	02950900	988	1664	2179	91.52	119.85
34	Girdharpura	02949100	347	585	766	32.18	42.13
35	Golam Garh	02947500	5	8	10	0.44	0.55
36	Gopalniwas	02948300	156	263	344	14.47	18.92
37	Gopalpura	02950100	614	1034	1354	56.87	74.47
38	Gordhan Niwas	02948800	196	330	432	18.15	23.76
39	Gordhanpura	02945100	1104	1860	2436	102.30	133.98
40	Govind Niwas	02951300	312	526	689	28.93	37.90
41	Govindpura	02953200	470	792	1037	43.56	57.04
42	Gudha	02955900	1643	2768	3625	152.24	199.38
43	Haripura	02954900	26	44	58	2.42	3.19
44	Harji Pura	02951400	282	475	622	26.13	34.21
45	Hemniwas	02954200	560	943	1235	51.87	67.93
46	Indrapura	02949600	781	1316	1723	72.38	94.77
47	Jalindri	02944300	2336	3935	5153	216.43	283.42
48	Jawda	02945900	907	1528	2001	84.04	110.06
49	Jhadoli	02948200	715	1204	1577	66.22	86.74
50	Jhalon Ka Dhoondha	02955500	81	136	178	7.48	9.79
51	Jolas	02949700	311	524	686	28.82	37.73
52	Kalighati	02955400	285	480	629	26.40	34.60
53	Kalyanpura	02948600	639	1076	1409	59.18	77.50
54	Kama	02953100	688	1159	1518	63.75	83.49
55	Kaner	02947100	18	30	39	1.65	2.15
56	Kantwara	02954600	651	1097	1437	60.34	79.04
57	Karlao	02947200	225	379	496	20.85	27.28
58	Kasya	02952400	2162	3642	4770	200.31	262.35
59	Kerkhera	02954700	1304	2197	2877	120.84	158.24
60	Kesuvilas	02945600	289	487	638	26.79	35.09
61	Kharipur	02947400	998	1681	2201	92.46	121.06
62	Kherariya	02944900	666	1122	1469	61.71	80.80
63	Kishanniwas	02950700	232	391	512	21.51	28.16
64	Kishanpuriya	02945400	170	286	375	15.73	20.63
65	Lachhmanpura	02950800	125	211	276	11.61	15.18
66	Lakshmi Niwas	02948700	439	739	968	40.65	53.24
67	Laxshmi Khera	02945300	871	1467	1921	80.69	105.66
68	Lorda	02944500	392	660	864	36.30	47.52
69	Madhopura	02943800	693	1167	1528	64.19	84.04
70	Makreri	02954000	826	1391	1822	76.51	100.21
71	Mandol	02953300	253	426	558	23.43	30.69


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S. No.	Name of Village	Code No	Pop. 2001	Pop. 2030	Pop. 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
72	Mangarh	02946400	294	495	648	27.23	35.64
73	Manji Sahab Ka Khera	02950200	770	1297	1699	71.34	93.45
74	Manpura	02945800	172	290	380	15.95	20.90
75	Mogarwasa	02954400	220	371	486	20.41	26.73
76	Motipura	02954100	326	549	719	30.20	39.55
77	Naya Gaon	02950300	1097	1848	2420	101.64	133.10
78	Nayanagar	02946700	4973	8377	10971	460.74	603.41
79	Neemri Gawa	02949400	211	355	465	19.53	25.58
80	Pachyanpura	02949300	324	546	715	30.03	39.33
81	Paparbar	02949500	404	681	892	37.46	49.06
82	Patiyal	02946500	5	8	10	0.44	0.55
83	Phoolan	02946200	37	62	81	3.41	4.46
84	Purohithon Ka Khera	02950500	697	1174	1537	64.57	84.54
85	Rakholi	02949000	172	290	380	15.95	20.90
86	Rampuriya	02944100	613	1033	1353	56.82	74.42
87	Ramrda	02945700	28	47	62	2.59	3.41
88	Rasdpura	02947900	2681	4516	5914	248.38	325.27
89	Resunda	02955300	352	593	777	32.62	42.74
90	Sadaramji Ka Khera	02953900	653	1100	1441	60.50	79.26
91	Saipeepla	02943900	277	467	612	25.69	33.66
92	Salawatiya	02948400	2962	4990	6535	274.45	359.43
93	Satkundiya	02955100	609	1026	1344	56.43	73.92
94	Shambhoopura	02952700	414	697	913	38.34	50.22
95	Shopura	02948100	111	187	245	10.29	13.48
96	Soonthi	02944800	116	195	255	10.73	14.03
97	Sukhpura	02947300	1066	1796	2352	98.78	129.36
98	Surajbilas	02954800	266	448	587	24.64	32.29
99	Teekhi	02946100	108	182	238	10.01	13.09
100	Tharoda	02946000	1711	2882	3774	158.51	207.57
101	Tilaswan	02952200	2190	3689	4831	202.90	265.71
102	Udpuriya	02951100	382	643	842	35.37	46.31
103	Umaji Ka Khera	02951200	390	657	860	36.14	47.30
104	Ummedpura	02955700	429	723	947	39.77	52.09
105	Ummedramji Ka Khera	02953400	105	177	232	9.74	12.76
106	Uttamnagar	02944700	195	328	430	18.04	23.65
107	Veekam Pura	02950600	506	852	1116	46.86	61.38
		TOTAL	68251	114969	150564	6323.295	8281.02

1.3.1.3. Jahajpur Tehsil

SN	Name of Village	Code No	Population 2001	Pop. 2030	Pop. 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
1	Laip Ka Khera	02919300	406	684	896	37.62	49.28
2	Khema Ka Khera	02914400	360	606	794	33.33	43.67

1.3.1.3.

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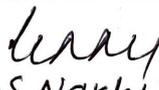
CB.S. Nakla
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SN	Name of Village	Code No	Population 2001	Pop. 2030	Pop. 2045	Water Demand 2030(KLD)	Water Demand 2045 (KLD)
3	Mal Ka Khera	02911600	885	1491	1953	82.01	107.42
4	Bei	02917400	1133	1909	2500	105.00	137.50
5	Utharna	02915900	716	1206	1579	66.33	86.85
6	Khaneriya	02904500	156	263	344	14.47	18.92
7	Jheekali	02918200	569	958	1255	52.69	69.03
8	Goga Ka Khera	02914700	416	701	918	38.56	50.49
9	Nathoon	02906800	1099	1851	2424	101.81	133.32
10	Babaji Ka Khera	02916400	418	704	922	38.72	50.71
11	Dhor	02909600	931	1568	2053	86.24	112.92
12	Rajpura	02924500	522	879	1151	48.35	63.31
13	Bheem Ka Khera	02920200	238	401	525	22.06	28.88
14	Rama Ka Khera	02924800	125	211	276	11.61	15.18
15	Taloda	02921300	1029	1733	2270	95.32	124.85
16	Baroda	02912700	884	1489	1950	81.90	107.25
17	Deo Nagar	02916500	445	750	982	41.25	54.01
18	Kabri	02911100	244	411	538	22.61	29.59
19	Nathadand	02924200	339	571	748	31.41	41.14
20	Kishanpura	02911000	350	590	773	32.45	42.52
21	Shakar Garh	02909500	3412	5748	7528	316.14	414.04
22	Devi Singhji Ka Khera	02909200	13	22	29	1.21	1.60
23	Balapura	02916900	247	416	545	22.88	29.98
24	Jhojhar	02921700	635	1070	1401	58.85	77.06
25	Panna Ka Khera	02913200	271	457	598	25.14	32.89
26	Bhopalpura	02912000	208	350	458	19.25	25.19
27	Laxmipura	02913700	233	392	513	21.56	28.22
28	Bakhera	02925500	363	611	800	33.61	44.00
29	Brij Ki Doongri	02916700	271	457	598	25.14	32.89
		TOTAL	16918	28499	37321	1567.445	2052.655

1.3.2 Design Criteria

- The transfer mains and rising mains have been designed with software based on modified Hazen William formula. Metallic pipes have been selected for use in all sizes of transfer mains and rising mains from one pumping station to next pumping station as well as to cluster ESRs upto designed demand of year 2045.
- The pumping machinery has been proposed for 15 years i.e 2030 demand.
- The construction of clear water reservoir has been proposed for capacity of 2 hours demand.
- The capacity of the ESRs has been adopted as half day demand.
- The cluster rising mains have been designed for 16 hrs. for rural areas and for 20 hrs. for urban areas.
- Minimum pressure at each village transfer chamber has been kept as 12.00 meter at peak load to connect the other habitations later on through nearby distribution lines.


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- The main system will be laid upto the village entry point called the Village transfer point. Provision has been taken to construct a double chamber consisting of sluice valve in one part under control of the PHED and water meter in the second part under joint control of PHED and village water committee.
- The distribution has been designed by using EPANET. The pipe size calculated for the distribution system where working pressure in the network permits its use.
- The minimum pipe dia of 90mm has been adopted for internal village distribution network.
- The material of various types of pipelines have been adopted as per guidelines issued by the PPC meeting 182 dated 20.02.2010. Metallic pipes for transfer mains & cluster rising mains to ESRs has been adopted as per the guideline mentioned in the pipe policy decided in PPC meeting, i.e long rising main from CWR to cluster ESRs etc in all type of soil. The uPVC/HDPE pipe line has been adopted in distribution system for rural area.
- The period for operation and maintenance has been taken 10 years as per departmental policy.

1.4 PROJECT COMPONENTS FOR RURAL SECTOR

1.4.1 Details of Formation of Cluster

All the 315 villages of Mandalgarh, Bijoliya and Jahajpur Tehsils proposed to be covered in this proposal have been divided into **57** rural area clusters. The formations of clusters of habitations have been done on following considerations:

- 1) As far as possible the ESR has been kept in the area of Gram Panchayat as per technical suitability.
- 2) General topography of the area i.e. rising/falling terrain.
- 3) Social aspect i.e. size of village for location of ESR.
- 4) Economizing of capitalized energy charges.
- 5) Concept of totality of user command.


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1.4.2 Transfer pumping/ Gravity Mains

Transfer pumping mains shall be laid between two pumping stations to pump water from PS to CWRs. Transfer Gravity mains shall be laid between Tapping Point to pumping stations to convey water from TP to CWRs. Details of proposed transfer mains are as given below:

S. No.	Transfer Main section	Size (mm)	Type	Length Original Scope of Work (KM)
1	Aroli PS - Bijoliya CWR	450	DI K-7	14.90
2	Aroli PS – Chand Ji Ki Kheri CWR	250	BWSC-16	12.00
3	Bijoliya PS - Mahua CWR	400	DI K-7	12.15
		350	DI K-9	22.45
		200	DI K-7	6.20
4	Bijoliya PS - Shakargarh CWR	400	DI K-9	24.00
		350	DI K-7	8.00
		300	DI K-7	30.00
		200	DI K-7	8.10
5	Ladpura TP - Mandalgarh Jn.	300	DI K-9	16.00
6	Mandalgarh Jn.- Mandalgarh CWR	200	DI K-7	0.20
7	Mandalgarh Jn.- Mandalgarh Town CWR	250	DI K-7	1.20
8	Tapping Point Bijoliya – Bijoliya Town CWR	200	DI K-7	1.00
Total		-	-	156.20

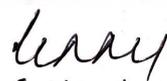
Work Executed by M/s PIL Mumbai.

Size (mm)	Type	Length Supplied (KM)	Length Laid (KM)	Length tested (KM)	Length commissioned (KM)
450	DI K-7	13.2575	4.8095	0.00	0.00
250	BWSC-16	7.0950	6.5728	4.6562	0.00
400	DI K-7	0.00	0.00	0.00	0.00
350	DI K-9	0.00	0.00	0.00	0.00
200	DI K-7	15.500	15.500	14.9997	0.00
400	DI K-9	3.9835	0.00	0.00	0.00
350	DI K-7	13.5980	5.0000	4.8265	0.00
300	DI K-7	14.2325	14.2286	12.6319	0.00
300	DI K-9	10.488	9.581	5.781	0.00
250	DI K-7	1.20	0.00	0.00	0.00

1.4.3 CWR & Pumping Station

Six pumping stations at Aroli, Bijoliya, Chand Ki Kheri, Mahua, Shakargarh and Mandalgarh are proposed to pump water into ESRs of 57 clusters. Clear water reservoirs are proposed at the


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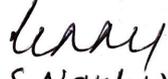
following pumping stations. Capacity of CWR has been taken equal to 2 hours demand for the design year 2030.

S. No.	PS Location	No. of Cluster Pumps		No. of Transfer Pumps		CWR capacity (KL)
		Working	Standby	Working	Standby	
1	Aroli	3	3	2	2	-
2	Bijoliya	6	6	1	1	1510
3	Chand Ji Ki Kheri	5	5	-	-	320
4	Mahua	3	3	-	-	480
5	Shakargarh	3	3	-	-	260
6	Mandalgarh	3	3	-	-	280

Work of CWRs already completed by M/s Pratibha Industried, Ltd

S.N.	Description of work	Unit	No. or Qty of Executed Work
1	Construction of RCC Clear Water Reservoir including overflow, inlet chamber, outlet chamber with Motorised Sluice valves on inlet and outlet chamber at: Muha 480 KL		
	Earth work and PCC work	No	1.00
	RCC works up to floor slab	No	1.00
	RCC works up to top ring beam	No	1.00
	RCC works of roof slab / Top dome	No	1.00
	Completion of leakage test	No	1.00
2	Bijoliya 1510 KL		
	Incomplete Earth work only	No	0.00


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1.4.4 Cluster Pumping Mains

Pumping mains from cluster pumping stations to ESRs has been designed and accordingly size of pipes has been adopted. Details of cluster pumping mains are as follows:

S. No.	Pipe Size	Type	Pipe length in KM		
			DI K-7	DI K-9	BWSC-16
1	100 mm	DI/BWSC	82.125	0.0	0.0
2	150 mm	DI/BWSC	130.375	10.0	0.0
3	200 mm	DI/BWSC	68.45	1.0	0.0
4	250 mm	DI/BWSC	0.0	0.0	27.025
		Total	280.95	11	27.025

Work executed by M/s Pratibha Industries Ltd.

S. No.	Pipe Dia., mm	Length executed in KM		
		DI K-7	DI K-9	BWSC-16
1	100	S-8.4380 L&J-7.2966 T- 4.7381 C- 0.0	S-0.0 L&J-0.0 T- 0.0 C- 0.0	
2	150	S-32.7135 L&J-28.3188 T- 23.8591 C- 0.0	S-9.999 L&J-5.9083 T- 3.8076 C- 0.0	
3	200	S-18.144 L&J-14.6624 T- 14.0292 C- 0.0	S-4.482 L&J-4.44890 T- 0.0 C- 0.0	
3	250	S-0.0 L&J-0.0 T- 0.0 C- 0.0	S-0.0 L&J-0.0 T- 0.0 C- 0.0	S-0.0 L&J-0.0 T- 0.0 C- 0.0


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1.4.5 Cluster Distribution System

There are 57 clusters for 315 villages under this package. Cluster distribution pipe lines from ESR to Village transfer chamber have been designed using EPANET software. Provision for one ESR for every cluster and one VTC for every village is taken. The details of cluster distribution mains from ESRs to Village Transfer Chambers of each village are given below.

1.4.5.1. HDPE Pipe lines:

S. No.	Pipe Size (mm)	Type	As per original scope of work Length (KM)	Work executed by PIL Length (KM)	Balance Length (KM)
1	110	HDPE Class-6	281.58	0	281.58
2	125	HDPE Class-6	110.95	0	110.95
3	160	HDPE Class-6	140.64	0	140.64
4	200	HDPE Class-6	58.67	0	58.67
5	250	HDPE Class-6	3.65	0	3.65
6	310	HDPE Class-6	2.25	0	2.25
Total			597.74	0	597.74

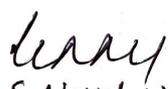
1.4.5.2. DI Pipe lines:

S. No.	Pipe Size (mm)	Type	As per original scope of work Length (KM)	Pipe Supplied by PIL (KM)	Pipe Laid by PIL (KM)	Pipe Hyd. Tested Length (KM)	Pipe commissioned Length (KM)
1	100	DI K-7	31.38	0.00	0.00	0.00	0.00
2	150	DI K-7	19.95	0.00	0.00	0.00	0.00
3	200	DI K-7	6.55	0.00	0.00	0.00	0.00
4	250	DI K-7	0.41	0.406	0.00	0.00	0.00
4	350	DI K-7	0.25	0.00	0.00	0.00	0.00
Total			58.54	0.406	0.00	0.00	0.00

1.4.5.3. Elevated Service Reservoirs:

S. No.	Capacity (KL)	No. of ESRs with staging			
		20 m	22 m	24 m	Total
1	100	7	-	2	9
2	100-150	11	-	-	11
3	150-200	9	-	1	10
4	200-250	4	1	2	7
5	250-300	10	-	3	13
6	300-350	3	-	-	3
7	350-400	-	1	-	1
8	400-450	2	-	-	2
9	500-550	1	-	-	1


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S. No.	Capacity (KL)	No. of ESRs with staging		
		20 m	22 m	24 m
Total		47	2	8
				Total
				57

S.NO.	NAME OF CLUSTER	PROPOSED CAPACITY	STAGING IN M
LADPURA PS			
1	Daulji Ka Khera	100	20
2	Chitoriya	260	20
3	Sarana	240	24
4	Seegoli	510	20
5	Baroondni	400	22
6	Ladpura	270	24
TRIVENI PS			
1	Bigod	435	20
2	Khatwara	300	20
3	Suras	160	20
4	Jojawa	210	20
5	Deopura	220	24
6	Beer Ka Khera	170	20
Mahua PS			
1	Jasuji Ka Khera	320	20
2	Sarthala	170	20
3	Dhamaniyan	420	20
4	Thal Kallan	250	22
5	Kachhola	180	20
6	Katariyon Ka Khera	110	20
7	Manpura	320	20
MANDALGARH PS			
1	Nawalpura	260	24
2	Kachrol	240	20
3	Jalim Ki Jhopriya	100	24
4	Mohanpura	100	24
5	Genoli	100	20
6	Hoda	130	20
7	Baldarka	130	20
AROLI PS			
1	Berisal	300	20
2	Rasadpura	260	20
3	Naya Nagar	270	20
BIJOLIYA PS			
1	Sardarramji Ka Khera	130	20
2	Makreri	210	20
3	Kama	200	24
4	Bijoliya	200	20


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S.NO.	NAME OF CLUSTER	PROPOSED CAPACITY	STAGING IN M
5	Bijoliya Khurd	100	20
6	Banka	100	20
7	Mandola	280	20
8	Mahua	290	20
9	Beekran	100	20
10	Shyampura	200	20
11	Mal Ka Kua	130	20
12	Undrao Ka Khera	310	20
13	Jalindri	270	24
14	Mangtola	190	20
15	Purohito Ka Khera	170	20
CHAND JI KI KHERI PS			
1	Kasya	120	20
2	Tilsva	230	20
3	Anti	100	20
4	Baniyon Ka Talab	120	20
5	Guda	140	20
6	Gopalpura	210	20
7	Chandji Ki Kheri	100	20
8	Indrapura	130	20
SHAKARGARH PS			
1	Shakargarh	300	20
2	Kabri	200	20
3	Dhor	280	20
4	Khema ka Khera	120	20
5	Brij Ki Doongri	120	20

Work of ESRs already completed by M/s Pratibha Industried, Ltd

S.N.	Description of work
1	Design & Construction of Elevated Service Reservoirs as per specifications including fixing inlet; outlet; washout & overflow pipes, installation of valves on inlet; outlet; washout & overflow pipes, puddle collars, duck foot bends, pipe interconnecting the incoming & out going mains with all specials; float valve with auxiliary valve, water level indicator, plinth protection works, finishing, testing and commissioning complete as per the specifications and scope of work at
2	Beer Ka Khera (Mukandpuria) (work upto bottom of ring beam below bottom dome already completed, Refer Annexure-B Vol-I)
3	Sarthala (work upto bottom of ring beam below bottom dome already completed, Refer Annexure-B Vol-I)
4	Dhamaniyan (work upto top dome already completed, Refer Annexure-B Vol-I)


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S.N.	Description of work
5	Nawalpura (Kachrol), (work upto bottom of ring beam below bottom dome already completed, Refer Annexure-B Vol-I)
6	Hoda (work upto bottom of ring beam below bottom dome already completed, Refer Annexure-B Vol-I)
7	Baldarka (work upto bottom of ring beam below bottom dome already completed, Refer Annexure-B Vol-I)
8	Makreri (Padampura) (work upto bottom of ring beam below bottom dome already completed, Refer Annexure-B Vol-I)

1.4.6 Village distribution System

Provision for internal village distribution pipe lines has also been taken from VTC to Public Stand Posts (PSPs) and Cattle Water Troughs (CWTs) for all the villages to be covered under this project. Number of PSPs and CWTs has been worked out on the basis of designed population for the year 2030. Taking one PSP per 100 persons and one CWT per 500 persons, provision of 3934 PSPs and 920 CWTs has been taken for all 315 villages. Details of pipe lines to be provided and laid under this project for internal village distribution are given below:

S. No.	Pipe Size (mm)	Type	Original scope Length (KM)	Work done by PIL Length (KM)	Balance Length (KM)
1	90	uPVC class-3	141.470	0.00	141.470
2	110	uPVC class-3	42.45	0.00	42.45
3	125	uPVC class-3	42.45	0.00	42.45
4	140	uPVC class-3	28.31	0.00	28.31
5	160	uPVC class-3	28.31	0.00	28.31
Total			282.99	0.00	282.99

1.4.7 I.E.C. Activities

The main objective of I.E.C. activities is the support of the operation and maintenance of the water supply project and to maximize its benefits for the the target population. The activities under this component shall primarily be focused for building environment for project acceptance. A village level committee viz “Village Water Health and Sanitation Committee (VWHSC)” shall be formed and will take up all the tasks related to the project.

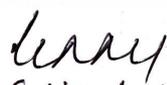
Work already executed by Pratibha Industries Ltd.

14 VWHSC has been formed and village map making, site selection of PSPs & CWTs already completed Refer Annexure-B Vol-I

1.5 PROJECT COMPONENTS FOR URBAN SECTOR

The work includes delivering of water to Mandalgarh and Bijoliya Towns as per designed demand. Provision for one no. pumping station each at Mandalgarh and Bijoliya towns along with


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construction of 02 No. ESRs of 100 KL & 115 KL capacities at Mandalgarh town and 02 No. ESRs of 125 KL and 155 KL capacities at Bijoliya town and electromechanical, instrumentation and SCADA activities at PS of each town have been taken for augmentation of urban water supply scheme of Mandalgarh and Bijoliya Towns. The details of pipelines proposed to cover the Mandalgarh and Bijoliya Towns are as follows:

S. No.	Pipe Dia.	Material	Length of Pipeline, Mtrs.			Total Length, Mtrs.
			Rising Main	Distribution Main	Distribution Pipeline	
1	100 mm	DI K7	1290	7125	49995	58410
2	150 mm	DI K7	7995	995	0.00	8990
3	200 mm	DI K7	1550	200	0.00	1750
		Total	10835	8320	49995	69150

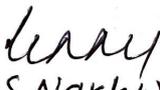
One AEN office and one JEN office are also proposed at each town.
No work executed by M/s PIL under this section.

1.6 OPERATION & MAINTENANCE

After completion of the physical works, there would be a defect liability period of 1 year during which the scheme would be operated and maintained by the contractor free of cost. Thereafter, the scheme shall be operated & maintained by the contractor for a period of ten years. During the O&M period, the contractor shall be fully responsible for:

- Operation & maintenance of pumping stations, clear water reservoirs, elevated service reservoirs, PSPs and CWTs.
- Operation & Maintenance of transfer mains/rising mains/distribution mains/ distribution pipelines with all pipeline appurtenances.
- Metering and Submission of Daily Production and Distribution Report.


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