

CONCEPT NOTE

PROVIDING WATER SUPPLY TO KODIHALLI AND OTHER 298 HABITATIONS IN KANAKAPURA TALUK, RAMANAGARA DISTRICT under DBOT

(Part of Special conditions of Contract)

1. OVERALL DBOT TENDER SCOPE AND IDEA

- (i) Traditionally, the projects for water supply are tendered in terms of what is known as "Item Rate" tender. In other words, the Detailed Scheme Report (DSR) and detailed design and technical estimate of the work are drawn-up in advance by the agency calling the tender. The bidders, in such a case, execute the already designed water supply scheme and bidding is basically on the cost of execution of a known design and DSR.
- (ii) In the present case the tender is for (i) Design (ii) Build (iii) Operate & (iv) Transfer. This methodology of tender has been selected for the following reasons –
 - a. Kodihalli and other 298 Habitations in Kanakapura Taluk Rural Water Supply Project is a "Greenfield" water-supply project. Therefore, there are viable multiple alternatives in terms of design and technology (within the overall standards as laid down by CPHEEO & Other Guidelines/Standards).
 - b. Further, the size of the project is large and major part of rural area of Kanakapura Taluka of Ramanagara District will get water-supply over a geographical area spread over about 1,59,426 hectares. This means the design options are multiple.
 - c. The Tamil Nadu Water Supply & Drainage Board (TWAD) has executed DBOT projects on similar scale and experience has shown that the approach of DBOT can give more optimal solutions in terms of design and cost and also reduce execution time of the large water-supply projects.
 - d. KUIDFC has also used DBOT method to execute "Davangere Town Sewerage Treatment Plant".
 - e. In the same lines, Gadag district entire rural habitations covering water supply scheme has been awarded and work implementation has started.
 - f. In this context the Cabinet approval has been accorded for implementation of this project on DBOT based tender.
- (iii) The (a) source of water, (b) population to be catered and their location (the water requirement at destination villages/habitations) shall be made available to the DBOT bidders as input data (c) as far as possible suitable government land available for the components of the scheme be selected and bidder should get permission from the concerned departments wherever it is inevitable to locate any component in private lands, bidder has to make his own arrangements to procure land.
- (iv) It is expected that bidders shall propose and prepare an optimal design to meet the water supply requirement and actually prepare a Scheme Report as accurate as possible which will be the basis of contract. This Scheme Report shall be submitted as part of the Technical Bid and same shall be evaluated by a Committee of Technical Experts. A bid which proposes a Scheme Report that is technically not sound, is perfunctory/superficial, and does not conform to actual field facts/reality and CPHEEO Standards & Guidelines shall be rejected at the stage of Technical Evaluation itself.



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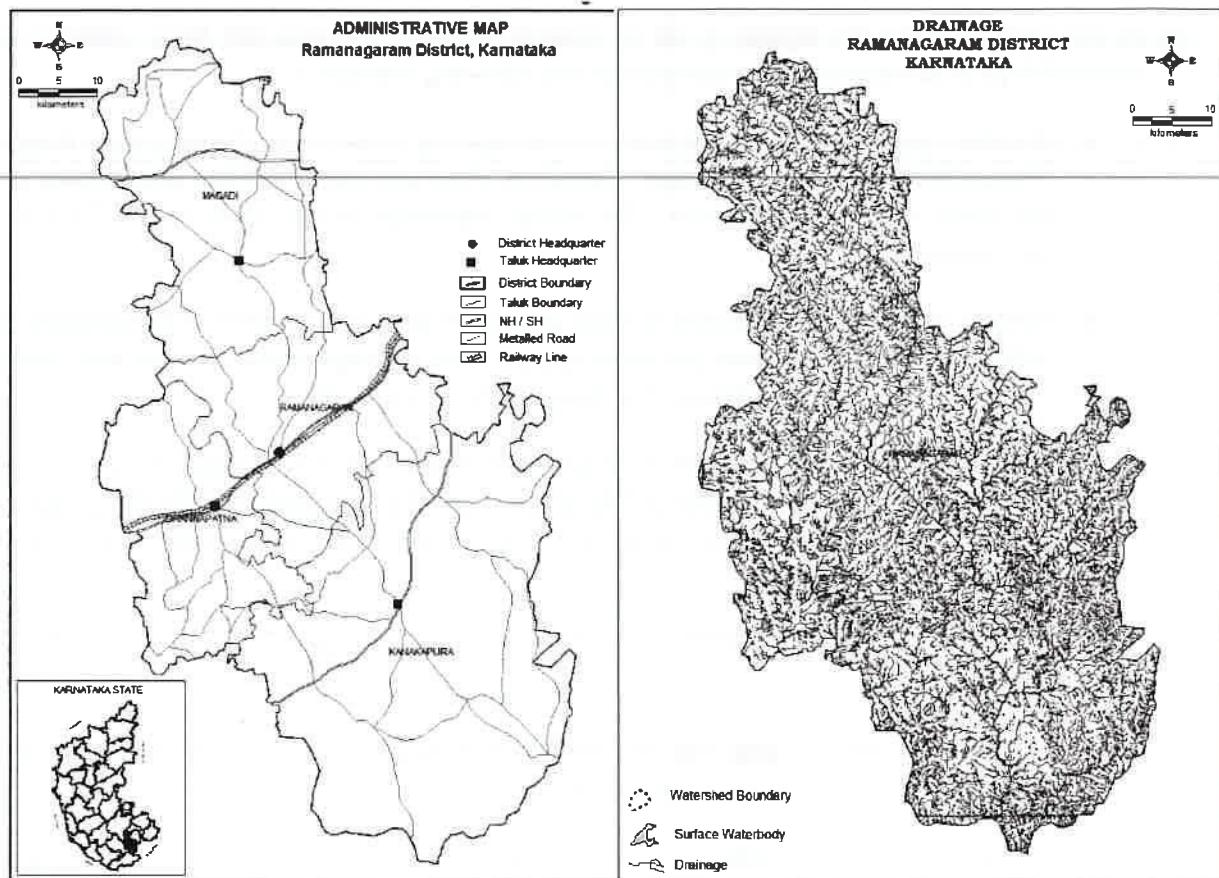
GENERAL

District Profile

Ramanagar was ruled by the British Officer "Sir Barry Close", (1756–1813), in pre-Independence times, hence Ramanagara was earlier called as "**CLOSEPET**". It was renamed as "**RAMANAGARA**" by the former Chief Minister of Karnataka State Sri Kengal Hanumanthaiah. The architect, builder and mentor of the present Bengaluru City Sri Kempegowda is from Magadi Taluk of Ramanagara District. It is approximately 50 km southwest of Bangalore. It has an average elevation of 747 metres (2450 feet). The district covers an area of 3576 sq. km.

The district is divided into four taluks namely- (i) Channapatna, (ii) Kanakapura, (iii) Magadi (iv) Ramanagara.

There are 18 hoblies, 130 gram panchayats, 4 towns /urban agglomerations, 2 Municipalities and 823



villages. Out of 823 villages 770 are inhabited and remaining 53 are uninhabited villages. The National Highways-NH-209 & 206 are passing through the district. Ramanagara district includes the Bidadi industrial area, which houses the manufacturing units of Toyota and Coca-Cola, and a 1400 MW combined cycle gas-based power plant. Ramanagara is also famous for its Huge Rocks. As per 2011 census, the total population in the district is 10,82,739 persons which is 1.77% of Karnataka population, with a density of 303 persons/sq.km. The rural and urban population constitutes 75.31% and 24.69% respectively.

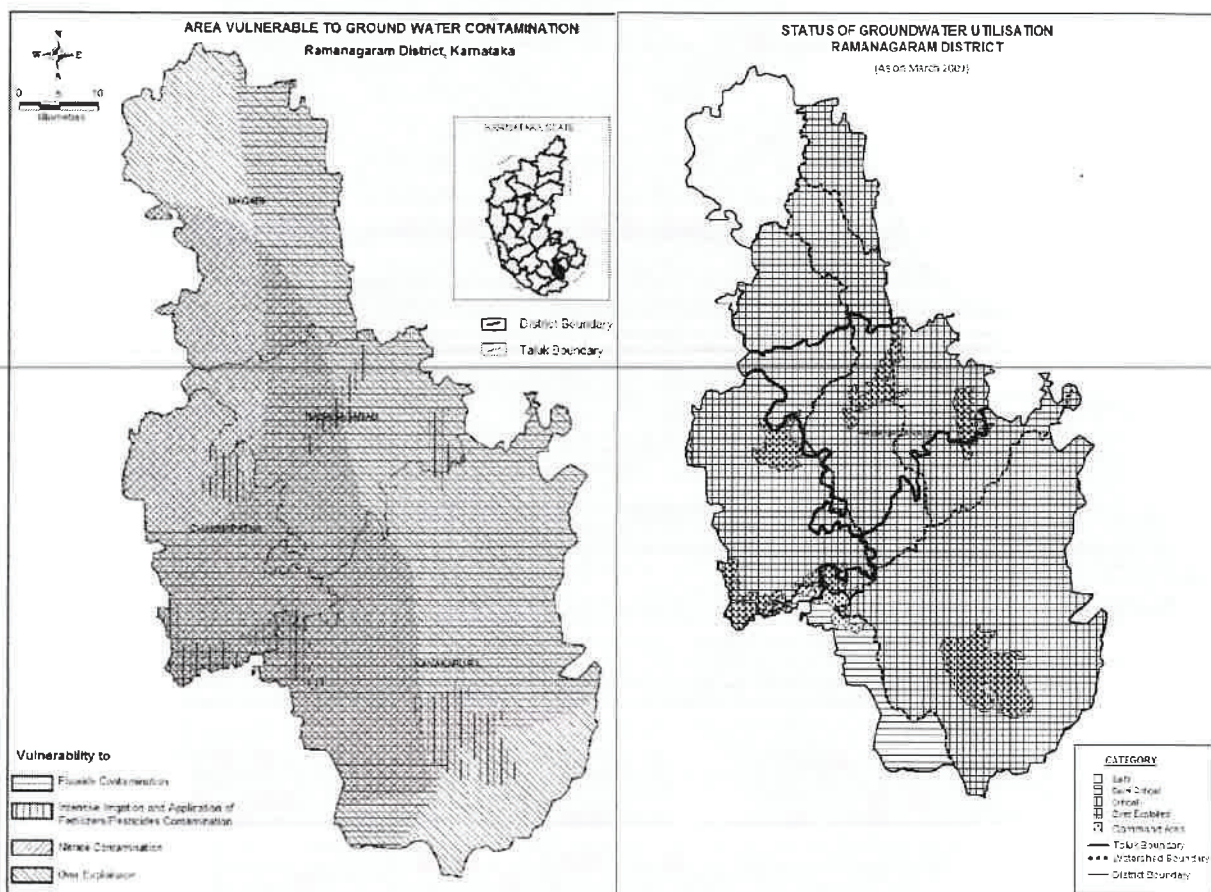
Ground Water Scenario



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The pH of ground water generally ranges from 7.42 to 9.09 and at certain places more than 10 indicating feeble to strong alkaline nature of groundwater. The electrical conductivity ranges from 310 to 2990 $\mu\text{S}/\text{cm}$ at 25°C . High concentration of nitrates ($>45 \text{ mg}/\text{lit}$) is observed in major parts of the district and about 44% of samples were found to be unsuitable for drinking. This may be attributed to unscientific disposal of domestic waste, natural sewage and industrial pollution.

The Fluoride concentration in shallow and deep ground water is within permissible to desirable limits except at certain localities like Gademarnahalli cross (2.75 ppm) and Henguru (1.85ppm) villages.

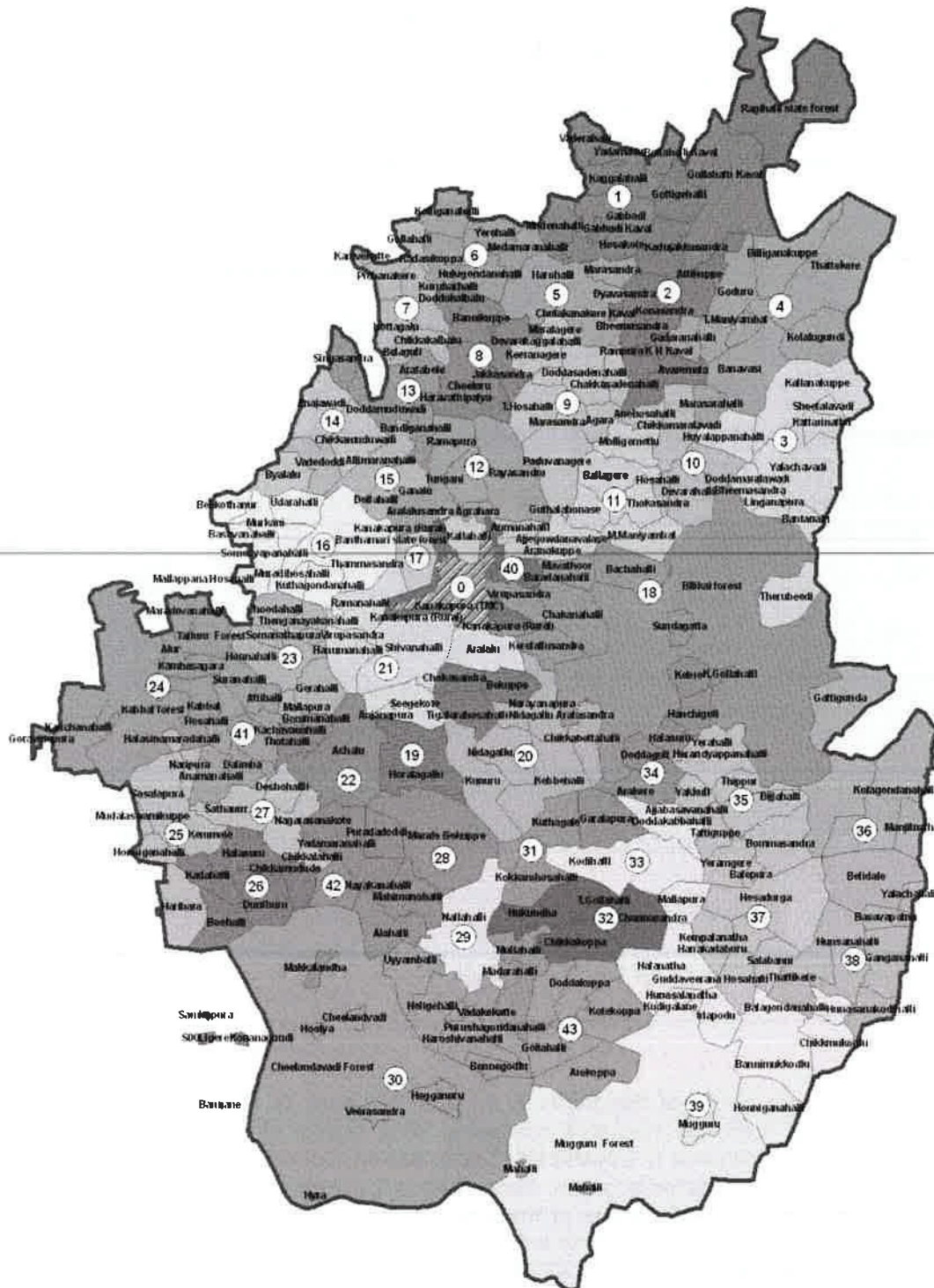


Taluk Profile

Kanakapura situated to the South of Bangalore is on the right bank of the river Arkavathi. The Taluk has geographical area of 1,59,426 Hectares consisting of 6 hobli's viz., a) Kasaba b) Harohalli c) Maralawadi d) Kodihalli e) Sathanur f) Uyyamballi. There are 43 Grama Panchayaths in the taluk. The main potentiality of this taluk is Granite quarries, Agriculture is the main source of income for people.

Kanakapura is a town and the headquarters of Kanakapura Taluk in the Ramanagar district in the state of Karnataka, India. Kanakapura is situated 55 km south to Bangalore on National Highway NH 209, on the banks of the river Arkavathi (Incarnation of River Kaveri) and 27 km from Ramanagara and 96 Km from Mysore, this taluk is famous for the production of silk and granite. It is located among the lush green forests of the state of Karnataka, as it has something for everyone ranging from avid trekkers to history buffs and wildlife enthusiasts. The main tourist attraction of this place is Sangama, Mekedatu, Muthatthi, Bilikallu Betta, Kabbalu, and Churchifalls. Kanakapura is located at 12.55°N 77.42°E . It has an average elevation of 638 metres (2093 feet). As of 2011 India census, Kanakapura rural had a population of 2,96,863.

According to Central Ground Water Board report 2013 Kanakapura taluk falls under over exploited ground water utilization. The quarrying and crushing operations has resulted in the deterioration of surface water in comparison with the qualities of ground water. In some cases the bore well water is contaminated with Nitrates and fluorides and other harmful chemicals. The fluoride contamination varies from 1.60mg/l to 2.5mg/l, the nitrate contamination varies from 50mg/l to 80mg/l and the iron contamination varies from 0.5mg/l to 1.19mg/l. The Taluk is depended on ground water as source for drinking and other needs because of the quality and quantity problems.



The Habitations of the Taluka are having drinking water supply schemes with bore wells as source. But yield from bore wells dwindle down during summer and the water supply is affected and the Habitations face scarcity of drinking water. In some cases the bore well water is contaminated with Nitrates and fluorides and other harmful chemicals. Therefore it is necessary to provide safe and dependable water supply scheme to the Habitations.

Rural Drinking Water and Sanitation Department of Govt. of Karnataka is the agency responsible for planning and execution of water supply and sanitation projects in rural areas of Karnataka State. RDW&SD has formulated a project for supplying potable water to all the habitations in the project area of Kanakapura Taluk from a sustainable surface source as a step towards solving the problem permanently. RDW&SD has prepared a Preliminary Report for the above multi village drinking water supply scheme for a general understanding and for broad guidelines.

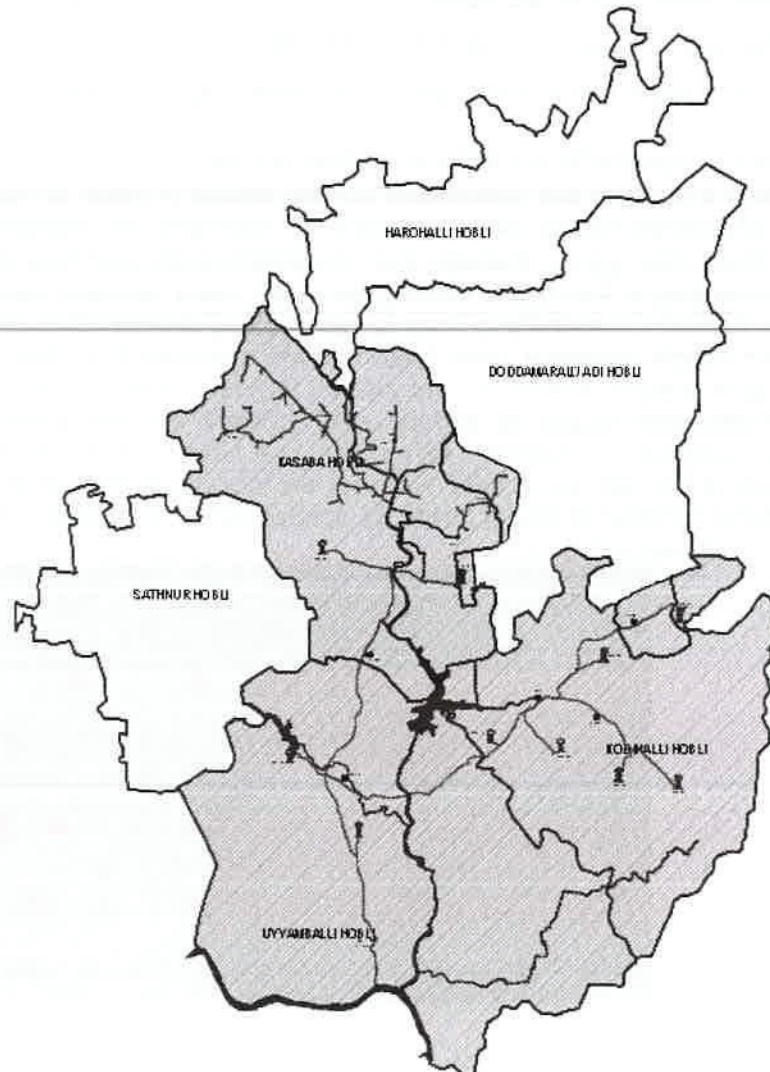
The source of supply has to be dependable and water should be potable and free from harmful

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chemicals. This is possible if surface water (River or Tank) is taken as source with Water Treatment Plant. Since demand of each village will be usually small we have to go in for Multi Village Water Supply Scheme with common source and Water Treatment Plant. Then clear water has to be transmitted to the service reservoirs/storage stand posts in the Habitations to be covered through Master Balancing Reservoir or Tanks and network of gravity mains, looking in to the topography of the area. In some cases where the village is located at higher elevation, intermediate sump with pumping arrangement will have to be provided for supplying water to such village.

The Present project has covered 4 hoblis of Kanakapura Taluk to supply safe drinking water viz-

- a) DoddaAlahalli b) Kodihalli c) Uyyamballi and d) Doddamaralawadi (Partly)



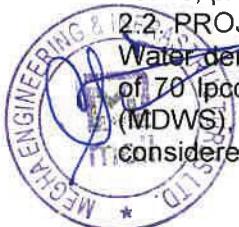
2. POPULATION PROJECTION AND WATER DEMAND ANALYSIS:

2.1. POPULATION PROJECTION:

Projected population for different project years for each of the census village was calculated by various methods considering past population values for years 1991, 2001 and 2011. As the said project is a mega project covering 299 Nos. of habitations, the design base year has been considered as 2018 with 3 years planning, execution and commissioning period. The project intermediate design year shall be 2033 and project ultimate design year shall be 2048. Based on past growth trend, the projected population value considered for each village is lowest value obtained from various projection methods. The total projected population of habitations in the project area for the project implementation year of 2018 is 1.55 Lakhs, project intermediate year of 2033 is 1.65 Lakhs and project ultimate year of 2048 is 1.74 Lakhs.

2.2. PROJECTED WATER DEMAND:

Water demand has been worked out for different project years considering per capita water supply rate of 70 lpcd as per "Strategic Plan (2011 - 22)" published by Ministry of Drinking Water and Sanitation (MDWS), Govt. of India. As practiced in RDW&SD rural water supply projects, 20% losses has been considered as transmission and distribution losses. Loss of water in WTP has been minimized by



recirculating the filter backwash water (i.e., 5%). The summary of projected water demand as arrived for the project area is given in Table. As seen in said table, the total projected water demand for habitations in the project area for the project implementation year of 2018 is 14.45 MLD, project intermediate year of 2033 is 15.40 MLD and project ultimate year of 2048 is 16.20 MLD.

Sl. No	Description	Projected Population		
		2018	2033	2048
1	Projected population	154870	164970	173540
2	Per capita supply rate (lpcd)	70	70	70
3	Net water demand at Habitation entry (MLD)	12.75	13.59	14.29
4	Gross water demand including 25% losses (MLD)	14.45	15.40	16.20

3.0 SELECTION OF SURFACE SOURCE FOR THE PROJECT:

In order to identify a suitable and sustainable surface source of water to meet the water demand of the project area, a preliminary source study was done by evaluating the available surface sources. Cauvery River, Shimsa River near Iggalur Barrage and Thorekadanahalli and Arkavathi Reservoir are the major surface sources existing in the region. Among the above major sources, water drawl from Cauvery River is more feasible as water availability in River is assured and shared between Karnataka and Tamilanadu and many water supply schemes have been already executed from this river supplying to adjoining towns and group of villages. Hence, for the present project, Cauvery River has been considered as the suitable and sustainable source of surface water. Based on field study, the intake point may be considered near Upstream of Sangam with intake pipe below the low water level where water will be available throughout the year as on date. However the location of drawl shall be finalized after a detailed study. The tentative location of intake points for various existing schemes and proposed intake point for present scheme is shown in Figure.



4.0 PROJECT PROPOSAL:

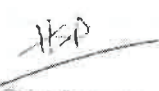
Under the proposed project, it is being considered to draw required quantity of raw water from Cauvery River and supply to project habitations after treatment. The project components include intake structure, raw water rising mains, WTP, treated water pumping station and intermediate pumping stations (IPSs), clear water bulk supply mains, local lifting stations (LS), master balancing tanks or reservoirs (MBTs/MBRs), gravity feeder mains up to all habitations in project area etc. The project villages are grouped into to clusters with each cluster having 15- 18 villages. All the project components shall be designed for ultimate stage water demand of 16.20 MLD. The intake structure may be located at upstream of Sangam on Cauvery River. The raw water to be conveyed to proposed WTP to be located within the project area. Intermediate pumping station shall be provided to avoid very high head pumping. The treated water from WTP shall be conveyed to MBTs/MBRs at each cluster through a bulk water transmission main network. The treated water stored at MBRs shall be conveyed to existing OHTs in each habitation through a gravity feeder main network duly disinfecting with 0.5mg/lit of residual chlorine available at village OHT feeding point. Whichever village is not having any OHT, a separate OHT of 50% of ultimate daily demand or 10000 lt capacity whichever is higher with 7.5 m staging at the highest level in that village shall be constructed as part of this scheme. The design of the entire scheme as per the design criteria given elsewhere.



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Volume -II : Technical BID

Clause No.	Page No. in the booklet	Written as	Read as
6.0	10	The required extent of land for intake structure cum pumping station, WTP clear water storage tank, pumping station, BPT, intermediate sumps, pumping stations, MBRs/MBTs etc. shall be located on available Govt land and if bidder proposes alternative, suitable land has to be secured by contractor only at his own cost. The lands secured by the contractor from private sources shall be registered in the name of the respective gram panchayats only before starting the work. The contractor shall secure in-principle agreement from land owners to sell the land. The value of lands shall not be higher than guidance value (fixed by GOK for 2014-2015) plus 50%. Also it is the responsibility of contractor to obtain right of way/ right of use permission from land owners and other Govt. agencies.	The required extent of land for intake structure cum pumping station, WTP clear water storage tank, pumping station, BPT, intermediate sumps, pumping stations, MBRs/MBTs etc. shall be located on available Govt land and if bidder proposes alternative, suitable land has to be secured by contractor only at his own cost. The lands secured by the contractor from private sources shall be registered in the name of the respective gram panchayats only before starting the work. The contractor shall secure in-principle agreement from land owners to sell the land. The value of lands shall not be higher than guidance value (fixed by GOK for 2014-2015) plus 50%. Also it is the responsibility of contractor to obtain right of way/ right of use permission from land owners and other Govt. agencies. i) It is the sole responsibility of contractor to procure the land within time. ii) For any delay in obtaining land, no Arbitration will be allowed.


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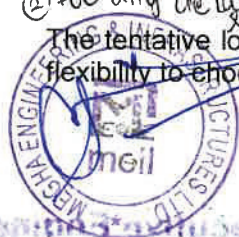
5.0 OPERATION PHILOSOPHY FOR MANAGEMENT OF BULK WATER SUPPLY:

As the proposed surface water scheme is a mega project involving many project components including intake, IPSS, LSSs, MBTs, pipelines etc. which are interlinked with each other, manual operation of the scheme is difficult and requires huge manpower. In case of manual operation there are chances of human error and system cannot be synchronized completely to prevent overflows, water losses, and inequitable supply among habitations. Hence a comprehensive proven "Integrated Water Management System" shall be provided for the scheme for automated operation. The system provided shall include Integrated District Management System (IDMS), Water Management Districts (WMDs), Air Management System (AMS) and Reservoir Management System (RMS) or SCADA system for effective operation and maintenance of the scheme.

6.0 SECURING OF LAND:

The required extent of land for intake structure cum pumping station, WTP, clear water storage tank, pumping station, BPT, intermediate sumps, pumping stations, MBRs / MBTs etc. shall be located on available government land and if bidder proposes alternative, suitable land has to be secured by Contractor only at his own cost. The lands secured by the Contractor from private sources shall be registered in the name of the respective gram panchayats only before starting the work. The Contractor shall secure in-principle agreement from land owners to sell the land. The value of lands shall not be higher than Guidance Value (fixed by GOK for 2014 - 2015) plus 50%. Also it is the responsibility of Contractor to obtain right of way / right of use permission from land owners and other Govt. agencies.

For any delay in obtaining land, no arbitration will be allowed. It is the sole responsibility of the contractor to procure the land within time.
 The tentative locations identified by RDW&SD, subject to final feasibility/ acceptance by bidder with the flexibility to choose his own alternative sites with minimum land acquisition at his own cost.




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Sl No	Components	Tentative Locations Identified by RWS&SD
1	Head works	Upstream of Sangam Bank of Cauvery River in Kanakapura Taluk
2	Raw water rising main	Along the cart track up to WTP
3	Water Treatment Plant	Near Nayakanadoddi
4	Clear Water Rising Main up to MBT	All Along existing Roads
5	Intermediate Pumping Stations	One near Kodihalli MUSS and One near Daddalahalli
6	Locations of MBTs	MBT's at higher altitudes comprising 15-18 habitations depend on elevation to deliver water by gravity
7	Clear Water Gravity Main from MBTs to Habitations OHTs	All Along existing Roads from respective MBTs to Habitations OHTs

7.0 TECHNICAL COMMITTEE

The Review and Evaluation Committee (Technical Expert Committee) to review and evaluate the technical proposal/PSR/Evaluation shall be formed with Chief Engineer RDW&S Dept and other expert members of credibility and independent standing – including experts from Premier Institutions/Organizations. The recommendations of this committee with regard to the technical bid shall be final and binding.

8.0 SITE VISIT BY BIDDERS

It is essential to visit all the probable/feasible site locations by bidder and to produce documentary evidence having visited all the proposed locations.

9.0 PROPOSED SERVICE LEVEL

The present service level and the source has been mentioned in the population list and as per Karnataka Government's Cabinet decision, it is proposed to provide 70 lpcd water.

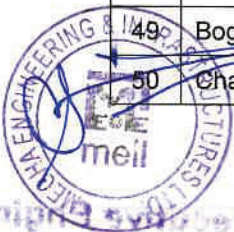
ANNEXURE 1 PROJECTED POPULATION AND WATER DEMAND FOR PROJECT VILLAGES / HABITATIONS IN PROJECT AREA FOR DESIGN

Sl. No.	Name of Village / Habitation	Projected population		Supply Rate (LPCD)	Requirement at tapping point (2033)		Requirement at tapping point (2048)	
		2033	2048		Litres	MLD	Litres	MLD
1	Hegganuru	1520	1580	70	141867	0.142	147467	0.147
2	Suthkattedoddi	160	180	70	14933	0.015	16800	0.017
3	Hegnurdoddi	1200	1260	70	112000	0.112	117600	0.118
4	Nayakaradoddi	420	450	70	39200	0.039	42000	0.042
5	Kuppedoddi	170	190	70	15867	0.016	17733	0.018
6	Heligehalli	2770	2890	70	258533	0.259	269733	0.270
7	Vadakekatte	320	340	70	29867	0.030	31733	0.032
8	Hosadoddi	370	390	70	34533	0.035	36400	0.036
9	Haroshivanahalli	1270	1330	70	118533	0.119	124133	0.124
10	Nallahalli Doddi	150	170	70	14000	0.014	15867	0.016
11	Bennegoddu	430	460	70	40133	0.040	42933	0.043
12	Adkenahalli	50	70	70	4667	0.005	6533	0.007

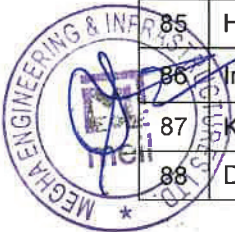


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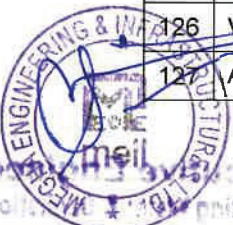
13	Churchidoddi	730	760	70	68133	0.068	70933	0.071
14	Makkalandha	330	350	70	30800	0.031	32667	0.033
15	Marale Matt	110	130	70	10267	0.010	12133	0.012
16	Marale	1420	1480	70	132533	0.133	138133	0.138
17	Marale Bekuppe	1560	1620	70	145600	0.146	151200	0.151
18	Thavaregatta	230	250	70	21467	0.021	23333	0.023
19	Tokinayakanadoddi	270	290	70	25200	0.025	27067	0.027
20	Chikkegowdanadoddi	610	640	70	56933	0.057	59733	0.060
21	Krishnegowdanadoddi	590	620	70	55067	0.055	57867	0.058
22	Mahimnahalli	1070	1120	70	99867	0.100	104533	0.105
23	Doddalahalli	5410	5620	70	504933	0.505	524533	0.525
24	Uyyamballi	2970	3090	70	277200	0.277	288400	0.288
25	Yadmarnahalli	2010	2100	70	187600	0.188	196000	0.196
26	Nayakanahalli	1220	1280	70	113867	0.114	119467	0.119
27	DKS Nagara	350	370	70	32667	0.033	34533	0.035
28	Chilavandoddi	260	280	70	24267	0.024	26133	0.026
29	Hosadoddi Hulya	350	370	70	32667	0.033	34533	0.035
30	Muthrayanapura	50	70	70	4667	0.005	6533	0.007
31	Nallahalli	2160	2250	70	201600	0.202	210000	0.210
32	Harobebe	1280	1340	70	119467	0.119	125067	0.125
33	Jyothinagara	770	800	70	71867	0.072	74667	0.075
34	DKS Doddi	190	210	70	17733	0.018	19600	0.020
35	Sipayidoddi	260	280	70	24267	0.024	26133	0.026
36	Kadledoddi	80	100	70	7467	0.007	9333	0.009
37	Rayappanadoddi	70	90	70	6533	0.007	8400	0.008
38	Moolegundi	160	180	70	14933	0.015	16800	0.017
39	Kapinigowdanadoddi	240	260	70	22400	0.022	24267	0.024
40	Kuthagale	480	510	70	44800	0.045	47600	0.048
41	Garalapura	620	650	70	57867	0.058	60667	0.061
42	Neralehattidoddi	330	350	70	30800	0.031	32667	0.033
43	Mullahalli	1480	1540	70	138133	0.138	143733	0.144
44	Shettikeredoddi	620	650	70	57867	0.058	60667	0.061
45	Hukundha	1480	1540	70	138133	0.138	143733	0.144
46	Guruvayyanadoddi	150	170	70	14000	0.014	15867	0.016
47	Sriramasagara	380	400	70	35467	0.035	37333	0.037
48	T Gollahalli	860	910	70	80267	0.080	84933	0.085
49	Boganajappanadoddi	140	160	70	13067	0.013	14933	0.015
50	Challipuradoddi	540	570	70	50400	0.050	53200	0.053



51	I Gollahalli	520	550	70	48533	0.049	51333	0.051
52	Tagadegowdanadoddi	60	80	70	5600	0.006	7467	0.007
53	Doddakoppa	80	100	70	7467	0.007	9333	0.009
54	Balepura Doddi	40	60	70	3733	0.004	5600	0.006
55	Kotekoppa	1340	1400	70	125067	0.125	130667	0.131
56	Arepalya	40	60	70	3733	0.004	5600	0.006
57	Bolamallappanadoddi	130	150	70	12133	0.012	14000	0.014
58	Arekoppa	350	370	70	32667	0.033	34533	0.035
59	Alkuli	180	200	70	16800	0.017	18667	0.019
60	Shivanegowdanadoddi	540	570	70	50400	0.050	53200	0.053
61	Marigowdandoddi	470	500	70	43867	0.044	46667	0.047
62	Therigedoddi	130	150	70	12133	0.012	14000	0.014
63	Aremegaladoddi	160	180	70	14933	0.015	16800	0.017
64	Kalligowdanadoddi	470	500	70	43867	0.044	46667	0.047
65	Gollaradoddi	450	480	70	42000	0.042	44800	0.045
66	Kortkeredoddi	740	770	70	69067	0.069	71867	0.072
67	Kokkarehosahalli	580	610	70	54133	0.054	56933	0.057
68	Chamblikedoddi	690	720	70	64400	0.064	67200	0.067
69	Marsandra	390	410	70	36400	0.036	38267	0.038
70	Kodihalli	4120	4290	70	384533	0.385	400400	0.400
71	Indranagara	250	270	70	23333	0.023	25200	0.025
72	Ramapuradoddi	310	330	70	28933	0.029	30800	0.031
73	Kodipura	530	560	70	49467	0.049	52267	0.052
74	Chikkakoppa	950	1000	70	88667	0.089	93333	0.093
75	Pillegowdanadoddi	100	120	70	9333	0.009	11200	0.011
76	Muninagara	50	70	70	4667	0.005	6533	0.007
77	Channasandra	890	940	70	83067	0.083	87733	0.088
78	Mallapura	570	600	70	53200	0.053	56000	0.056
79	Arjanahalli	780	810	70	72800	0.073	75600	0.076
80	Aalanatha	2530	2640	70	236133	0.236	246400	0.246
81	Bevinamaradoddi	790	820	70	73733	0.074	76533	0.077
82	Kudigalane Doddi	100	120	70	9333	0.009	11200	0.011
83	Dimbdahalli	300	320	70	28000	0.028	29867	0.030
84	Iralapodu	920	970	70	85867	0.086	90533	0.091
85	Hosadoddi Kodihalli	570	600	70	53200	0.053	56000	0.056
86	Iregowdanadoddi	420	450	70	39200	0.039	42000	0.042
87	Kebre	400	430	70	37333	0.037	40133	0.040
88	Doddakabbahalli	920	970	70	85867	0.086	90533	0.091



89	Thattiguppe	650	680	70	60667	0.061	63467	0.063
90	Bijjahalli	1160	1210	70	108267	0.108	112933	0.113
91	Lambanlthandya	340	360	70	31733	0.032	33600	0.034
92	Thippur	1150	1200	70	107333	0.107	112000	0.112
93	Ajjabasavanahalli	570	600	70	53200	0.053	56000	0.056
94	Yakkuli	510	540	70	47600	0.048	50400	0.050
95	Gunaganahalli	1990	2080	70	185733	0.186	194133	0.194
96	Chikkabballi	330	350	70	30800	0.031	32667	0.033
97	Aralimaradoddi	450	480	70	42000	0.042	44800	0.045
98	Bannalli	260	280	70	24267	0.024	26133	0.026
99	Nayakaladoddi	230	250	70	21467	0.021	23333	0.023
100	Doddaguli	900	950	70	84000	0.084	88667	0.089
101	Ulsuru	2340	2430	70	218400	0.218	226800	0.227
102	Hanchiguli	710	740	70	66267	0.066	69067	0.069
103	Hunsemaradoddi	110	130	70	10267	0.010	12133	0.012
104	Megalkebre	320	340	70	29867	0.030	31733	0.032
105	K gollahalli	300	320	70	28000	0.028	29867	0.030
106	Herandyappanahalli	1510	1570	70	140933	0.141	146533	0.147
107	Anthegowdanadoddi	230	250	70	21467	0.021	23333	0.023
108	Arkere	900	950	70	84000	0.084	88667	0.089
109	Arkere Colony	500	530	70	46667	0.047	49467	0.049
110	Bamsandra	430	460	70	40133	0.040	42933	0.043
111	Kadashivanahalli	560	590	70	52267	0.052	55067	0.055
112	Alagadagalu	580	610	70	54133	0.054	56933	0.057
113	Gattigunda	730	760	70	68133	0.068	70933	0.071
114	Kolagondanahalli	2840	2960	70	265067	0.265	276267	0.276
115	Gulvadi	630	660	70	58800	0.059	61600	0.062
116	Gulvadi Doddi	550	580	70	51333	0.051	54133	0.054
117	Chamundipura	320	340	70	29867	0.030	31733	0.032
118	Aralagadakalu	770	800	70	71867	0.072	74667	0.075
119	Thimmegawdanadoddi	230	250	70	21467	0.021	23333	0.023
120	Chanmallipura	390	410	70	36400	0.036	38267	0.038
121	Bilidale	340	360	70	31733	0.032	33600	0.034
122	Guddaveerana Hosahalli	400	430	70	37333	0.037	40133	0.040
123	Kempalanatha	520	550	70	48533	0.049	51333	0.051
124	Anakadburu	880	930	70	82133	0.082	86800	0.087
125	Salabanni	590	620	70	55067	0.055	57867	0.058
126	Valase	250	270	70	23333	0.023	25200	0.025
127	Achnayakanadoddi	450	480	70	42000	0.042	44800	0.045



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128	Beemegowdanadoddi	570	600	70	53200	0.053	56000	0.056
129	Yeramgere	870	920	70	81200	0.081	85867	0.086
130	DKS Doddli	90	110	70	8400	0.008	10267	0.010
131	Balepura	280	300	70	26133	0.026	28000	0.028
132	Hosadurga	1500	1560	70	140000	0.140	145600	0.146
133	Keremegaladoddi	130	150	70	12133	0.012	14000	0.014
134	Chikkyeramgere	270	290	70	25200	0.025	27067	0.027
135	Chikkelegowdanadoddi	200	220	70	18667	0.019	20533	0.021
136	Vasapanadoddi	190	210	70	17733	0.018	19600	0.020
137	Maraladoddi	410	440	70	38267	0.038	41067	0.041
138	Kenchegowdanadoddi	110	130	70	10267	0.010	12133	0.012
139	Thimmanadoddi	50	70	70	4667	0.005	6533	0.007
140	Kabbalayyanadoddi	130	150	70	12133	0.012	14000	0.014
141	Mugguru	490	520	70	45733	0.046	48533	0.049
142	Honniganahalli	960	1010	70	89600	0.090	94267	0.094
143	Varthipura	180	200	70	16800	0.017	18667	0.019
144	Maralipura	400	430	70	37333	0.037	40133	0.040
145	Bannimukkodlu	1250	1310	70	116667	0.117	122267	0.122
146	Chikkamukudlu	520	550	70	48533	0.049	51333	0.051
147	Bandedoddi	100	120	70	9333	0.009	11200	0.011
148	Bandedoddi 1	210	230	70	19600	0.020	21467	0.021
149	Poojarinayakanadoddi	390	410	70	36400	0.036	38267	0.038
150	Baspatna	330	350	70	30800	0.031	32667	0.033
151	Aluhuchegawdanadoddi	230	250	70	21467	0.021	23333	0.023
152	Hunusnahalli	530	560	70	49467	0.049	52267	0.052
153	Neralehatti	150	170	70	14000	0.014	15867	0.016
154	Ganganahalli	90	110	70	8400	0.008	10267	0.010
155	Gollaradoddi	580	610	70	54133	0.054	56933	0.057
156	Sarahaddinadoddi	40	60	70	3733	0.004	5600	0.006
157	Hunsnakodihalli	330	350	70	30800	0.031	32667	0.033
158	Sidlingammanadoddi	120	140	70	11200	0.011	13067	0.013
159	Kalashettipura	140	160	70	13067	0.013	14933	0.015
160	Balagondanahalli	170	190	70	15867	0.016	17733	0.018
161	Thattekere	210	230	70	19600	0.020	21467	0.021
162	Doddamarayanadoddi	430	460	70	40133	0.040	42933	0.043
163	Chikkakondanahalli	570	600	70	53200	0.053	56000	0.056
164	Ramanahalli	500	530	70	46667	0.047	49467	0.049
165	Hanumanahalli	370	390	70	34533	0.035	36400	0.036



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166	Thulasidoddi	240	260	70	22400	0.022	24267	0.024
167	Kanchikalanadoddi	160	180	70	14933	0.015	16800	0.017
168	Shivanahalli	740	770	70	69067	0.069	71867	0.072
169	Doddathandya	800	840	70	74667	0.075	78400	0.078
170	Gadasahalli	500	530	70	46667	0.047	49467	0.049
171	Kalegowdanahalli	500	530	70	46667	0.047	49467	0.049
172	Chowkasandra	980	1030	70	91467	0.091	96133	0.096
173	Seegekote	780	810	70	72800	0.073	75600	0.076
174	AnajavadiThandya	560	590	70	52267	0.052	55067	0.055
175	Thenginamaradoddi	160	180	70	14933	0.015	16800	0.017
176	B.S.Doddi	420	450	70	39200	0.039	42000	0.042
177	Gangaiahnadoddi	300	320	70	28000	0.028	29867	0.030
178	Hosadoddi	300	320	70	28000	0.028	29867	0.030
179	Horlagallu	1130	1180	70	105467	0.105	110133	0.110
180	Madappanadoddi	250	270	70	23333	0.023	25200	0.025
181	Koonur	290	310	70	27067	0.027	28933	0.029
182	Koonur Bettegowdanadoddi	120	140	70	11200	0.011	13067	0.013
183	Kariyannahalli	220	240	70	20533	0.021	22400	0.022
184	Hullibele	450	480	70	42000	0.042	44800	0.045
185	Hullibele J.C	220	240	70	20533	0.021	22400	0.022
186	Terinadoddi	1100	1150	70	102667	0.103	107333	0.107
187	Katammanahalli	140	160	70	13067	0.013	14933	0.015
188	ThigalaraHosahalli	1110	1160	70	103600	0.104	108267	0.108
189	T.Bekuppe Circl	330	350	70	30800	0.031	32667	0.033
190	Aralallu	1920	2000	70	179200	0.179	186667	0.187
191	Nidagallu	110	130	70	10267	0.010	12133	0.012
192	Nidagallu J.C	70	90	70	6533	0.007	8400	0.008
193	Gollaradoddi	130	150	70	12133	0.012	14000	0.014
194	Kalkeredoddi	60	80	70	5600	0.006	7467	0.007
195	Kumanidoddi	130	150	70	12133	0.012	14000	0.014
196	Narayanapura	330	350	70	30800	0.031	32667	0.033
197	Jogamanahosahalli	410	440	70	38267	0.038	41067	0.041
198	T. Bekuppe	690	720	70	64400	0.064	67200	0.067
199	Mallapanadoddi	100	120	70	9333	0.009	11200	0.011



200	Dyapegowdanadoddi	370	390	70	34533	0.035	36400	0.036
201	Cheeranakuppe	500	530	70	46667	0.047	49467	0.049
202	Javanammanadoddi	630	660	70	58800	0.059	61600	0.062
203	Lakshimipura	390	410	70	36400	0.036	38267	0.038
204	Virupasandra	810	860	70	75600	0.076	80267	0.080
205	Baradanahalli	940	990	70	87733	0.088	92400	0.092
206	Chakanahalli	230	250	70	21467	0.021	23333	0.023
207	Gowdahalli	500	530	70	46667	0.047	49467	0.049
208	Keralalusandra	1390	1450	70	129733	0.130	135333	0.135
209	Srinivasanahalli	310	330	70	28933	0.029	30800	0.031
210	Muneshwaranadoddi	100	120	70	9333	0.009	11200	0.011
211	Ankachari doddi	80	100	70	7467	0.007	9333	0.009
212	Kebbahalli	620	650	70	57867	0.058	60667	0.061
213	Bettegowdanadoddi	480	510	70	44800	0.045	47600	0.048
214	Bettegowdanadoddi Indranagara	150	170	70	14000	0.014	15867	0.016
215	Srinivasapura	90	110	70	8400	0.008	10267	0.010
216	Golahalli	110	130	70	10267	0.010	12133	0.012
217	Jogamanahosahalli JC	310	330	70	28933	0.029	30800	0.031
218	S.M.Krishna Nagara	110	120	70	10267	0.010	11200	0.011
219	Muddammanadoddi	70	80	70	6533	0.007	7467	0.007
220	Kebbedoddi	430	450	70	40133	0.040	42000	0.042
221	Ramadurgadadoddi	230	240	70	21467	0.021	22400	0.022
222	Ramadevaradoddi	70	80	70	6533	0.007	7467	0.007
223	Allikeredoddi	400	410	70	37333	0.037	38267	0.038
224	Bachallidoddi	90	100	70	8400	0.008	9333	0.009
225	Mavathoru	110	120	70	10267	0.010	11200	0.011
226	Yarenahalli	180	190	70	16800	0.017	17733	0.018
227	Puttegowdanadoddi	120	130	70	11200	0.011	12133	0.012
228	Hosahallidoddi	240	250	70	22400	0.022	23333	0.023
229	M.Maniyambal	1170	1200	70	109200	0.109	112000	0.112
230	Thokasandra	1080	1110	70	100800	0.101	103600	0.104
231	Budiguppe	1240	1280	70	115733	0.116	119467	0.119
232	Suntaradoddi	110	120	70	10267	0.010	11200	0.011
233	Chatra	150	160	70	14000	0.014	14933	0.015



234	Adanakuppe	660	680	70	61600	0.062	63467	0.063
235	Banglavoru	390	400	70	36400	0.036	37333	0.037
236	Anamanahalli	830	860	70	77467	0.077	80267	0.080
237	Chikkanamanahalli	410	430	70	38267	0.038	40133	0.040
238	Dombaradoddi	240	250	70	22400	0.022	23333	0.023
239	Kallahalli	1540	1580	70	143733	0.144	147467	0.147
240	Voddaradoddi	160	170	70	14933	0.015	15867	0.016
241	Hosakote	1140	1170	70	106400	0.106	109200	0.109
242	Thamsandra	1140	1170	70	106400	0.106	109200	0.109
243	Thamsandra Circle	190	200	70	17733	0.018	18667	0.019
244	Thigalarahalli	880	910	70	82133	0.082	84933	0.085
245	Agrahara	210	220	70	19600	0.020	20533	0.021
246	Chatra Agrahara	300	310	70	28000	0.028	28933	0.029
247	Aralalasandra	870	900	70	81200	0.081	84000	0.084
248	Aralalasandra Gate	40	50	70	3733	0.004	4667	0.005
249	Bamdebasappanadoddi	100	110	70	9333	0.009	10267	0.010
250	Maregowdanadoddi	240	250	70	22400	0.022	23333	0.023
251	Varagerahalli	330	340	70	30800	0.031	31733	0.032
252	Venkatappanadoddi	100	110	70	9333	0.009	10267	0.010
253	Basavanabannikuppe	410	430	70	38267	0.038	40133	0.040
254	Hasthinapura	210	220	70	19600	0.020	20533	0.021
255	Madegowdanadoddi	100	110	70	9333	0.009	10267	0.010
256	Rampura	710	730	70	66267	0.066	68133	0.068
257	Anjanapura	120	130	70	11200	0.011	12133	0.012
258	Huchegowdanadoddi	40	50	70	3733	0.004	4667	0.005
259	Jampalegowdanadoddi	230	240	70	21467	0.021	22400	0.022
260	Kurigowdanadoddi	440	460	70	41067	0.041	42933	0.043
261	Rayasandra	580	600	70	54133	0.054	56000	0.056
262	Thoppaganahalli	610	630	70	56933	0.057	58800	0.059
263	Girigowdanadoddi	380	390	70	35467	0.035	36400	0.036
264	Gopasandra	420	440	70	39200	0.039	41067	0.041
265	Sampanadoddi	340	350	70	31733	0.032	32667	0.033
266	Thungani	1030	1060	70	96133	0.096	98933	0.099
267	Allmaranahalli	890	920	70	83067	0.083	85867	0.086



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268	Ganallu	1070	1100	70	99867	0.100	102667	0.103
269	Gendekere	90	100	70	8400	0.008	9333	0.009
270	Kuthikaldoddi	330	340	70	30800	0.031	31733	0.032
271	Swatharanagar	100	110	70	9333	0.009	10267	0.010
272	Konamanahalli	850	880	70	79333	0.079	82133	0.082
273	Maligegowdanadoddi	310	320	70	28933	0.029	29867	0.030
274	Hunusemadadoddi	460	480	70	42933	0.043	44800	0.045
275	Hosahoniganadoddi	560	580	70	52267	0.052	54133	0.054
276	Halehonegowdanadoddi	160	170	70	14933	0.015	15867	0.016
277	Keremagaladoddi	380	390	70	35467	0.035	36400	0.036
278	Bevudoddi	220	230	70	20533	0.021	21467	0.021
279	Basavanadoddi	540	560	70	50400	0.050	52267	0.052
280	Vadedoddi	370	380	70	34533	0.035	35467	0.035
281	Mayaganadoddi	330	340	70	30800	0.031	31733	0.032
282	Kebedoddi	190	200	70	17733	0.018	18667	0.019
283	Bachdidoddi	240	250	70	22400	0.022	23333	0.023
284	Chikamaduvadi	1910	1960	70	178267	0.178	182933	0.183
285	Thimasandra	1370	1410	70	127867	0.128	131600	0.132
286	Allisabaradoddi	200	210	70	18667	0.019	19600	0.020
287	Anajavadi	810	840	70	75600	0.076	78400	0.078
288	Haripura	60	70	70	5600	0.006	6533	0.007
289	Chikenahalli Gate	70	80	70	6533	0.007	7467	0.007
290	Chikenahalli	1590	1630	70	148400	0.148	152133	0.152
291	Kembarala	90	100	70	8400	0.008	9333	0.009
292	Alligodde Thandya	290	300	70	27067	0.027	28000	0.028
293	Sakarathi Thandya	240	250	70	22400	0.022	23333	0.023
294	Thimegowdanadoddi	340	350	70	31733	0.032	32667	0.033
295	Bylala	800	820	70	74667	0.075	76533	0.077
296	A K Doddi	180	190	70	16800	0.017	17733	0.018
297	Sidapura	140	150	70	13067	0.013	14000	0.014
298	Medradoddi	130	140	70	12133	0.012	13067	0.013
299	Kadivekeredoddi	180	190	70	16800	0.017	17733	0.018

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