WASH Baseline Assessment

Report Of
Chikkaballapur City

(Findings from a Water, Sanitation & Hygiene Survey)

Technology Informatics Design Endeavour (TIDE)

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TIDE 25 @ 2018

BORDA SOUTH ASIA

Disclaimer

This report is a result of a research study and is intended as a guideline document to help in planning interventions in water, sanitation, and hygiene in the town. It has been developed based on data collected in field, data from municipality records, data and information obtained from concerned officials along with field observations by **TIDE team.**

All care has been taken to ensure correctness in collecting, validating, & processing the data. All analysis is based on standard scientific principles & made in good faith. Any error is inadvertent and sincerely regretted. The recommendations in the report are made solely based on the data made available to us, our observations made during survey, field assessment and discussion with the concerned officials. The findings of the report are valid as on date of the data provided.

While TIDE welcomes feedback and discussion on the report, we suggest expert consultations. We are not liable for any loss or damage through any action / implementation arising out of this report. Please write to us at **iwm@tide-india.org for any queries.**

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List of Abbreviations

ADB	Asian Development Bank
CMC	City Municipal Council
CSR	Corporate Social Responsibility
FHTC	Functional household tap connection
FSM	Faecal sludge treatment plant
FSTP	Faecal sludge treatment plant
GLSR	Ground level service reservoir
HHS	House Holds
HP	Horsepower
IHHL	Individual Household Latrines
IPS	Intermediate pumping station
IT	Individual Toilet
KM	Kilometer
KUWS&DB	Karnataka Urban Water Supply and Drainage Board
MLD	Million liters per day
MSW	Municipal solid waste
NRW	Non-revenue water
ODF	Open Defecation Free
O&M	Operation and maintenance
OHT	Overhead tank
PMAY	Pradhan Mantri Awas Yojana
PPE	Personal Protection Equipment's
STP	Sewage treatment plant
SWM	Solid waste management
TPD	Tonnes per day
UGD	Under Ground Drainage
ULB	Urban Local Body
WASH	Water and Sanitation Hygiene
WB	World bank
WSP	Waste stabilization pond
WTP	Water treatment plant

Executive summary for Baseline report

Technology Informatics Design Endeavour (TIDE) is the implementing organization in Karnataka for the program 'Integrated water management in urban areas as a core task of municipal services of general interest'. The program has been conceptualized by a German NGO Bremen Overseas Research & Development Agency (BORDA). It has been initiated in 2 states in India, viz Karnataka and Ladakh and in 2 other countries of Nepal and Bangladesh. In Karnataka, Chikkaballapur and Chintamani are the partner towns, chosen for this cycle of the program from 2021 to 2023.

The main objective of the program is 'Improved municipal water and sanitation services are provided to disadvantaged citizens of Chikkaballapur and Chintamani town'. This baseline survey report is a result of the project specific baseline study conducted in both the cities in the first year of the program. The purpose of the survey is to inform about the present situation in the cities on WASH aspects and drive interventions to address gaps and leverage opportunities. The areas covered in the survey include WASH specific features on water resources and management, solid waste management, sewage and grey water treatment, and public toilets. From the governance point of view, institutional arrangements along with municipal finance and capacity enhancement assessment are covered in the study. An interesting focus area under the study is the health and hygiene of sanitation workers who play a vital role in WASH in Indian cities.

The baseline study has drawn data and information from primary surveys to a considerable extent, particularly on WASH aspects. A lot of secondary research has been done through perusal of publicly available relevant documents. The section on municipal finance, for instance is based on the allocated budget. Interaction with CMC officials and personnel at sites are another major source of information for this study, particularly with respect to WASH implementation on the ground.

While Chikkaballapur city is the capital of the Chikkaballapur district, Chintamani city is marginally more populated than the other. Both are categorized as City Municipal Council (CMC) based on their population and have 31 wards each. It is noteworthy that the two cities, though close by, have very different nature of water resources. Chikkaballapur is managing largely with surface water while Chintamani is heavily dependent on its ground water, putting a stress on water table. The study has established the demand supply gap in the cities, which should result in some strong interventions in this area. It is commendable that both the cities have achieved ODF free status and have a good public toilet system. Through a Sanitation mapping tool, the study has identified gaps in the management of some of the public toilets. The sewerage network is largely functional in both cities, with septage management in place. However certain operational issues have been captured in the study. With respect to solid waste management, legacy waste comes out as a big area of concern in both the cities. As part of this study, digital maps have been created for both the towns with respect to certain WASH aspects.

This report is an excellent source that establishes WASH baseline in the two cities. We hope this leads to objective, data driven interventions on the ground either through the program or otherwise. Our ultimate goal is to improve the people's living condition and reduce the health and environmental risks associated with inadequate water supply and sanitation and this study is a first step in that direction.

Please write to us as **iwm@tide-india.org** for any feedback / suggestions on the report.

Summary

City Profile

Chikkaballapur city is the district headquarters of Chikkaballapur district in the Indian state of Karnataka. The city of Chikkaballapur is approximately 56 km to the north of Bengaluru. With an administrative boundary of 18.25 sq. km, Chikkaballapur has an estimated population of 70,000 as of 2021 (constituting 51% males and 49% females). Chikkaballapur is the commercial hub for the silk industry and is the second-largest district practicing sericulture.

Slums

The city has eight notified slums, accounting for about 29% of the total city population. Water stagnation, Waste dumping, and an unhygienic environment are commonly prevalent in these slums.

Toilets

The city has 11 public toilets and 2 community toilets. As per the ODF+ requirement, 6 out of 11 public toilets are in usable condition but dirty, two are not in usable condition, two are not in operation, and one is clean and usable. One of the primary reasons affecting the functioning of these toilets is the scarcity of water, especially during the summer months.

Water Supply

The city is supplied with 5 MLD of water, approximately 70 liters per capita consumption in a day from Jakkalamadagu reservoir. Only 50% of the households have tapped water connection from the municipality, and others mainly rely on borewells or other water sources. The frequency of water supply is intermittent, with 2 hours of supply per day and twice a week.

Water Resource

The primary source of water supply to the city is from Jakkalamadagu reservoir (surface water) and is delivering water to almost 80% of the total city population. The remaining 20% population is meeting their water needs through borewells (groundwater). Though the city has both surface and groundwater sources, there is a high dependency on surface water.

Centralized Sewage system

The total wastewater generated in the city is 4.13 MLD approximately. 91% of the households have a UGD connection and are connected to a Sewage Treatment Plant (STP) of 10 MLD capacity. 9% of the household have an unsewered network (single pit) and is getting disposed into the nearest manhole through a desludging machine by private operators.

Sewage Treatm ent facility

STP with a design capacity of 10 MLD is located at Kelathota (1.8 km from the city center). The technology adopted is the 'Waste Stabilization Pond System' and comprises two anaerobic ponds, facultative ponds, and maturation ponds. With a treatment efficiency of 85%, the treated water from the STP is let into nearby Amanikere lake.

Greywater

Greywater is not channelized separately from blackwater, and there are no onsite facilities for the treatment in non-sewered areas. UGD Connection is 91%, and 9% goes untreated, readily gets disposed into the surrounding areas, low-lying areas & open drains, The Connection to the UGD network from unsewered areas needs to be connected to UGD, but the community is reluctant to comply as it incurs cost.

Solid waste

The total waste generated in the city is about 34.3 tonnes per day, with an average of 470 grams of waste generated per person. The CMC collects about 22 to 26 tonnes of waste generated through a door-to-door collection system, and the remaining waste is getting disposed of on the roadside/open space. The collection frequency is daily for wet waste and twice a week for dry waste. The collected waste is processed at the SWM processing unit.

Solid waste Processing unit

The city has a 15-acre facility at Puttatimmanahalli (10 km away from the city). The processing capacity of the unit is 10 TPD and comprises a windrow pan, vermicompost tanks, biogas plant, incinerator, bailing machine, 35 mm, and 4 mm screens for sieving.

Sanitation Workers

There are about 125 sanitation workers employed in the city, out of which 41 are permanent, and the remaining are on a contract basis. The sanitation workers have limited access to essential services. Safe working procedures is not being followed by sanitation workers, despite various training programs conducted by CMC.

Municipal Finance

The conventional sources of CMC revenue include tax, non-tax, grants & loans. The municipal finances and revenue break-up on water and sanitation-related services mainly includes Solid Waste Management capital, O&M expenditures, Capital / Revenue Income.

Capacity Enhancement

The City Municipal Council Chikkaballapur undertakes capacity building through exposure visits and training for the high and mid-level professionals. The sanitation workers are sensitized periodically on health, safety, waste management practices, and safe handling.

01 City Profile

Chikkaballapur city is the district headquarters of the newly created Chikkaballapur district in the state of Karnataka, India (Figure 1.1). The city is about 56 km from north of Bengaluru and the nearest airport is Bengaluru international airport which is 30 km from Chikkaballapur city. "Panchagiri" is a common descriptor of Chikkaballapur as it is surrounded by 5 picturesque hills among which Nandi hills is famous. The city profile is presented in Table 1.1.

FIGURE 1.1

LOCATION MAP, CHIKKABALLAPUR

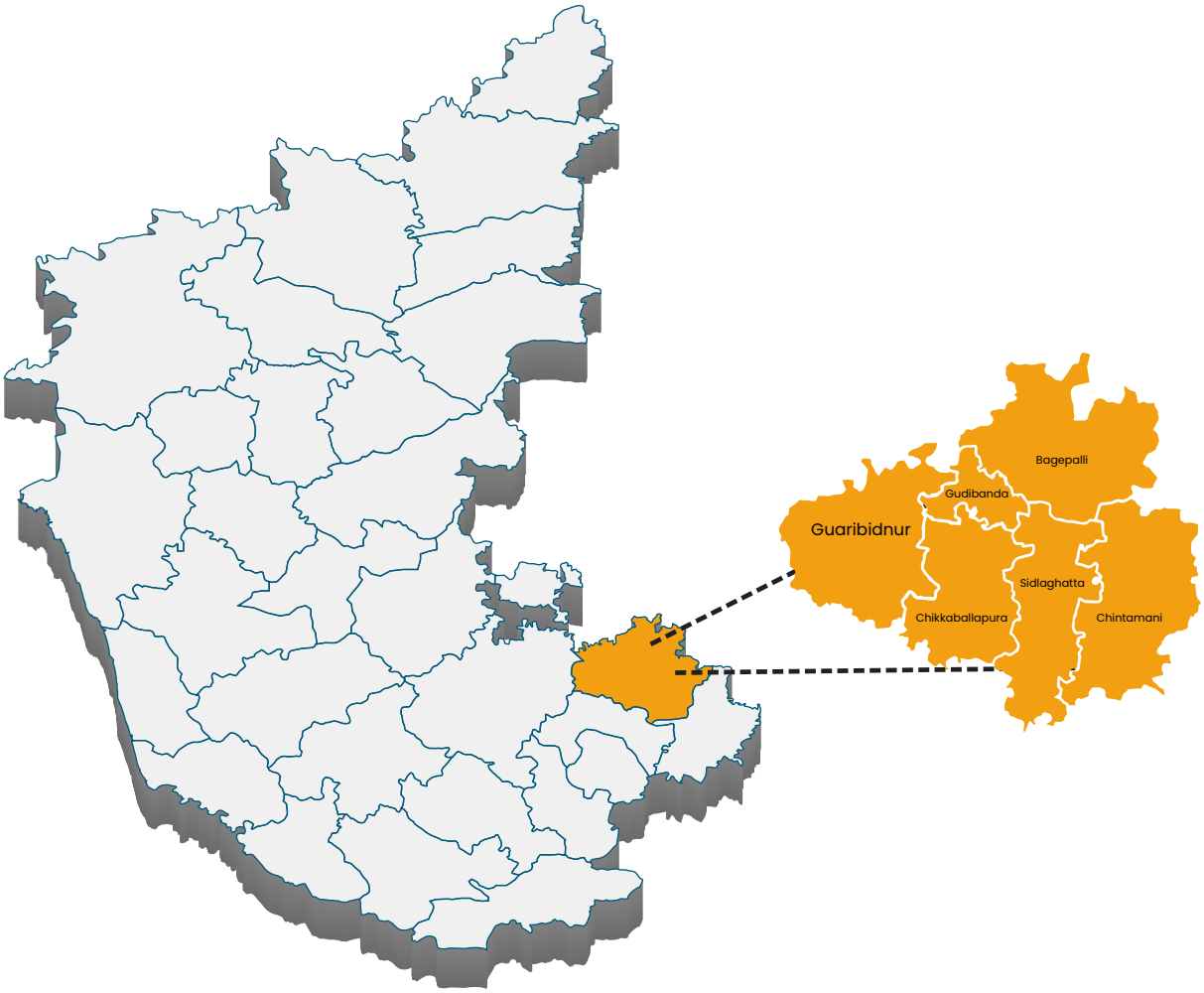


Table 1.1

City Profile

Chikkaballapur

	Chikkaballapur City	
1	Province/District/State/UT	Karnataka State, Chikkaballapur
2	Area of the city (sq. km)	18.25
3	Number of administrative division (Wards)	31
4	Total population	
	2011 census Male	32,129
	2011 census Female	31,523
	Estimated Present (2021): Male	37,204
	Estimated Present (2021): Female	36,503
5	Population growth rate (%)	
	2011 census	63,652
	Estimated 2021	15.80 (Population-73709)
6	No. Properties	
	Residential	15,050
	Commercial	2600
	Institutional	61
	Others	71
7	No. of Notified Slums	08

Source: SWM-DPR, CMC, Chikkaballapur

Demography

Chikkaballapur city is a City Municipal Council (Population falling under 50,000 to 3 Lakh) and the administrative boundary is spread over an area of 18.25 sq km divided into 31 wards (Figure 1.2). The City has a population of 63,652 of which 32,129 (50.47%) are males while 31,523 (49.52%) are females as per a report released by Census India 2011 (Figure 1.3). Analyzing the previous growth trend, it is estimated that the population of the city is increasing at a growth rate of 15.80%, details of which can be seen in Table 1.2. The projected population in the year 2021 is estimated to be 73,709 (Geometrical Increase method, 2021) of which 37,204 are males while 36,503 are females (Table 1.3). The List of the of wards with population distribution along with ward area is as shown in Figure 1.4. There are registered 14902 residential household units in the city with an average household size of 4.9 persons per household. Additionally, there are 2600 commercial properties, 61 institutional properties and 71 other properties which majorly includes industries (Figure 1.5).

Figure 1.2

Ward Population & Area, Chikkaballapur

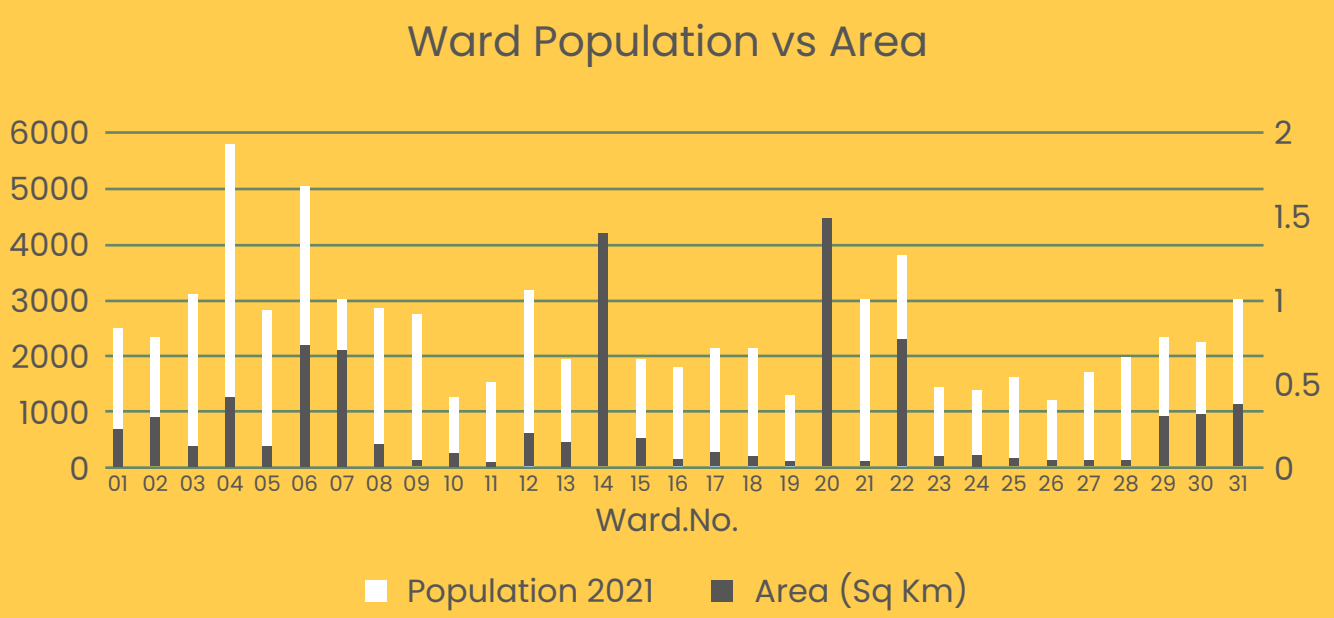


Figure 1.3

Male Female Ratio, Chikkaballapur

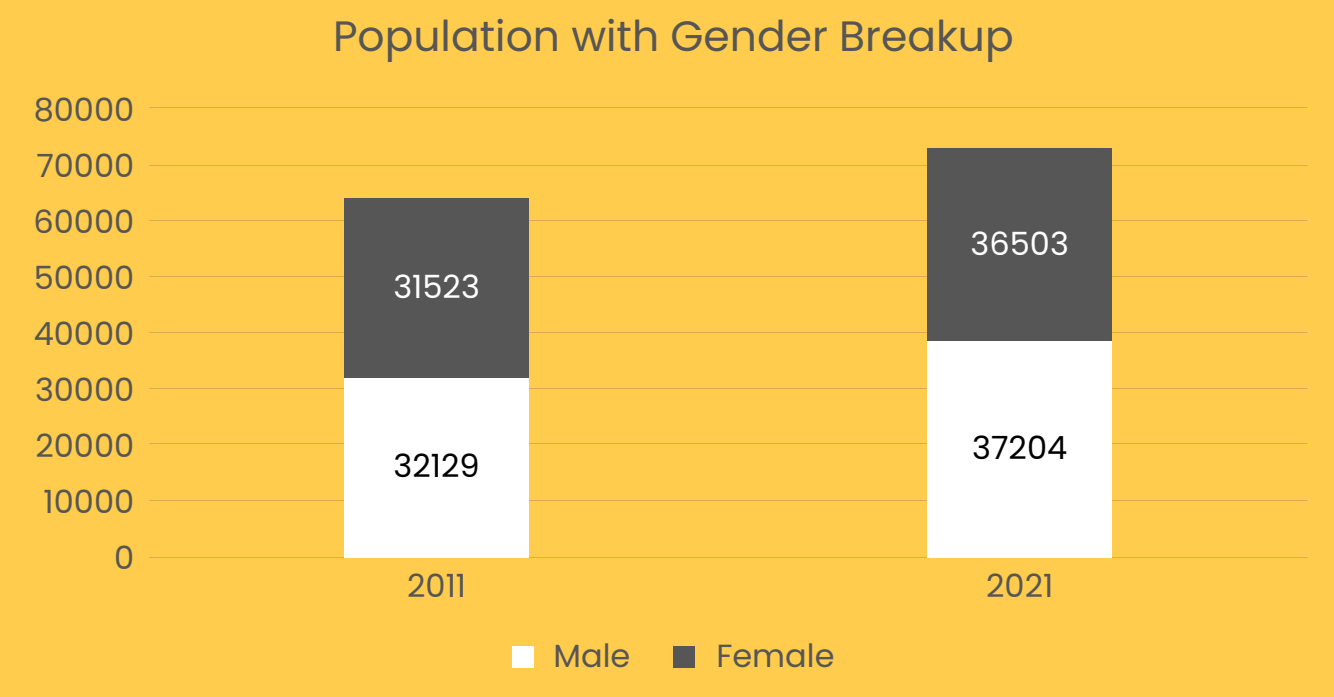


Table 1.2

population trend, chikkaballapur

Sl. No	Year	Population	Incremental %
1	1991	47221	-
2	2001	54968	16.4
3	2011	63652	15.8
4	2021	73709	15.8
5	2031	85503	Estimated at growth rate of 16%

Source: As per Office of the Registrar General and Census Commissioner (www.censusindia.gov.in)

Table 1.3

Ward details, Chikkaballapur

Ward. No.	Name	Area (Sq. Km)	No. of Households	Population 2011	Population 2021	General Income status (Ex: Low, High, Mix, High Slum population etc.)
01	Vapasandra	0.2311	538	2252	2608	Mix
02	Reshmigudu Markatte	0.2883	488	2069	2396	Mix
03	Bhagath Singh Nagar & Darga Mohalla	0.1091	620	2770	3208	Slum population
04	Prashanth Nagar	0.4402	1171	4871	5641	High
05	Police Quarters, Prashanth Nagar, Slum, Timmakka Layout	0.1103	561	2303	2667	High/Slum population
06	Municipal Layout & Dinnehosahalli road	0.732	973	4357	5045	Mix
07	Gangamidde & Nimalakalakunte	0.6793	604	2614	3027	Slum population
08	New District Hospital & TG Bank	0.1175	507	2357	2729	Mix
09	Newton Grammar School area, Beside Municipal College & Sweepers Colony	0.0348	458	2200	2548	Mix
10	Municipal Corporation & Doddamasudi	0.0669	262	1067	1236	Medium
11	Alaragadddа, Walasanna, Nagarthapete & kandwarapete	0.0306	314	1200	1390	Mix
12	A. K Colony & Al-Kalam School	0.1737	635	2729	3160	Slum population

Ward. No.	Name	Area (Sq. Km)	No. of Households	Population 2011	Population 2021	General Income status (Ex: Low, High, Mix, High Slum population etc.)
13	Bapuji Nagar	0.1203	372	1666	1929	Slum population
14	Kandawara	1.4196	558	2272	2631	Slum population
15	Nandi road & Quasar nagar	0.1212	409	1630	1888	Medium
16	Girls school & Basawanagudi	0.0554	317	1223	1416	Medium
17	Fort area	0.0661	417	1810	2096	Mix
18	Sir M Visvesvaraya Layout	0.0595	427	1769	2049	Medium
19	Karkanepete & dharmachatra road	0.035	283	1149	1331	Medium
20	Darga Mohalla & K.S.R.T.C road	1.5048	526	2254	2610	Medium
21	Shanti Nagar & H.S garden area	0.038	396	1786	2068	Slum population
22	Kelaginatotagalu area	0.7712	748	3144	3641	Medium
23	Chamrajpete & Nakkalakunte	0.0603	261	1149	1331	Medium
24	Wapasandra & Manchanabelle road	0.0589	280	1111	1287	Medium
25	DVT Pete & Karkanepete	0.0356	319	1343	1555	Medium
26	Garakarollu & DBM road	0.0378	242	1003	1161	Medium
27	Yelepete & Kurubara street	0.0299	317	1358	1573	Medium
28	Koracharapete & Venugopalaswamy temple	0.0436	403	1688	1955	Medium
29	Chamarajapete & Sunnakalu street	0.3183	472	2021	2340	Slum population
30	Ambedkar Nagar	0.3264	377	1881	2178	Slum population
31	Sunnakalu street, Indiranagar, Badavara sangha Colony Wapsandra	0.3843	647	2606	3018	Medium
TOTAL		**8.5**	**14902**	**63652**	**73709**	**-**

FIGURE 1.4
WARD WISE MAP CHIKKABALLAPUR

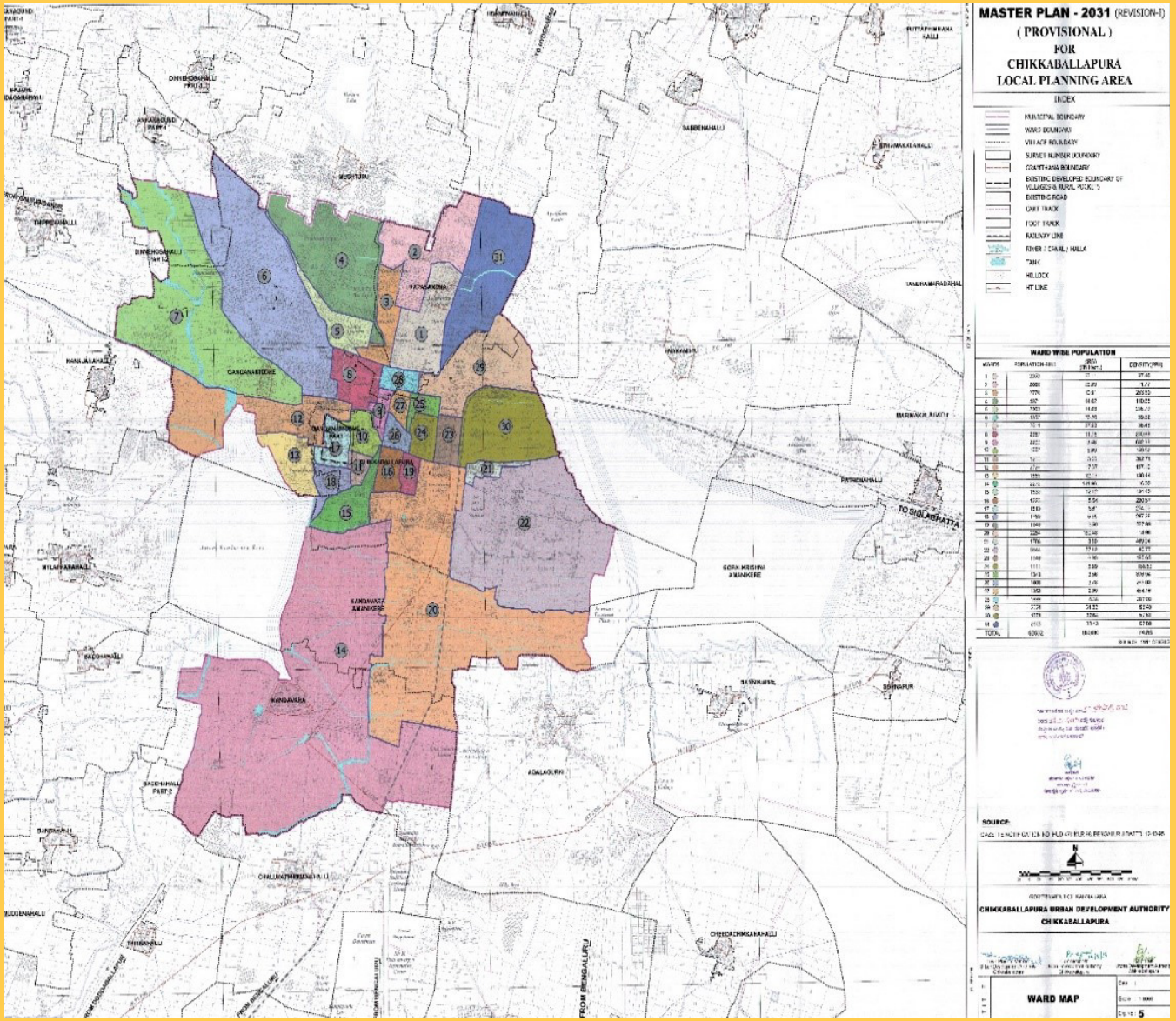
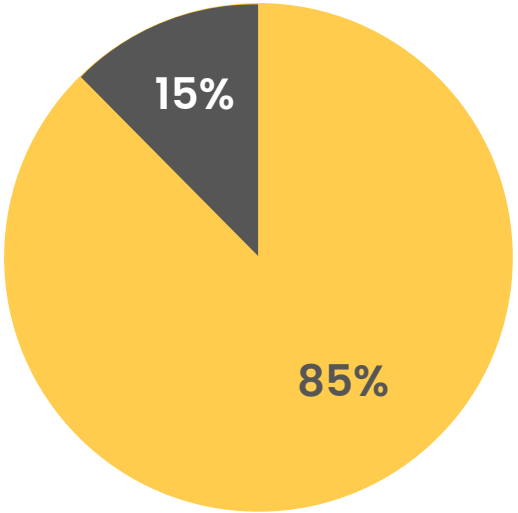


FIGURE 1.5
BUILDING TYPOLOGY IN CHIKKABALLAPUR



Building Typology in Chikkaballapur

RESIDENTIAL

COMMERCIAL

1.2.
Slum

Chikkaballapur city has 8 notified slums with a total population of 20,988 people residing in slums which accounts for 28.47% of the total population (Figure 1.6). There are total of 3,128 slum HHs in the city with an average HH size of 6.7 persons per household. All the slums identified in the city are notified and are registered under government records. Fewer small patches of poor settlements also exist within the municipal boundary however, these are not recognized by the municipality and the actual numbers of the same were unknown during the time of formulation of this report. During the physical survey it is observed that there is unhygienic environment in slum areas in terms of water stagnation, presence of vectors etc. which increases the vulnerability of the population towards diseases (Figure 1.7). Living conditions of the poor have deteriorated due to several factors like inadequate environmental infrastructure and basic services. The distribution of population across the slum area along with ward no. are as shown in Table 1.4.

FIGURE 1.6
LOCATION OF SLUMS, CHIKKABALLAPUR

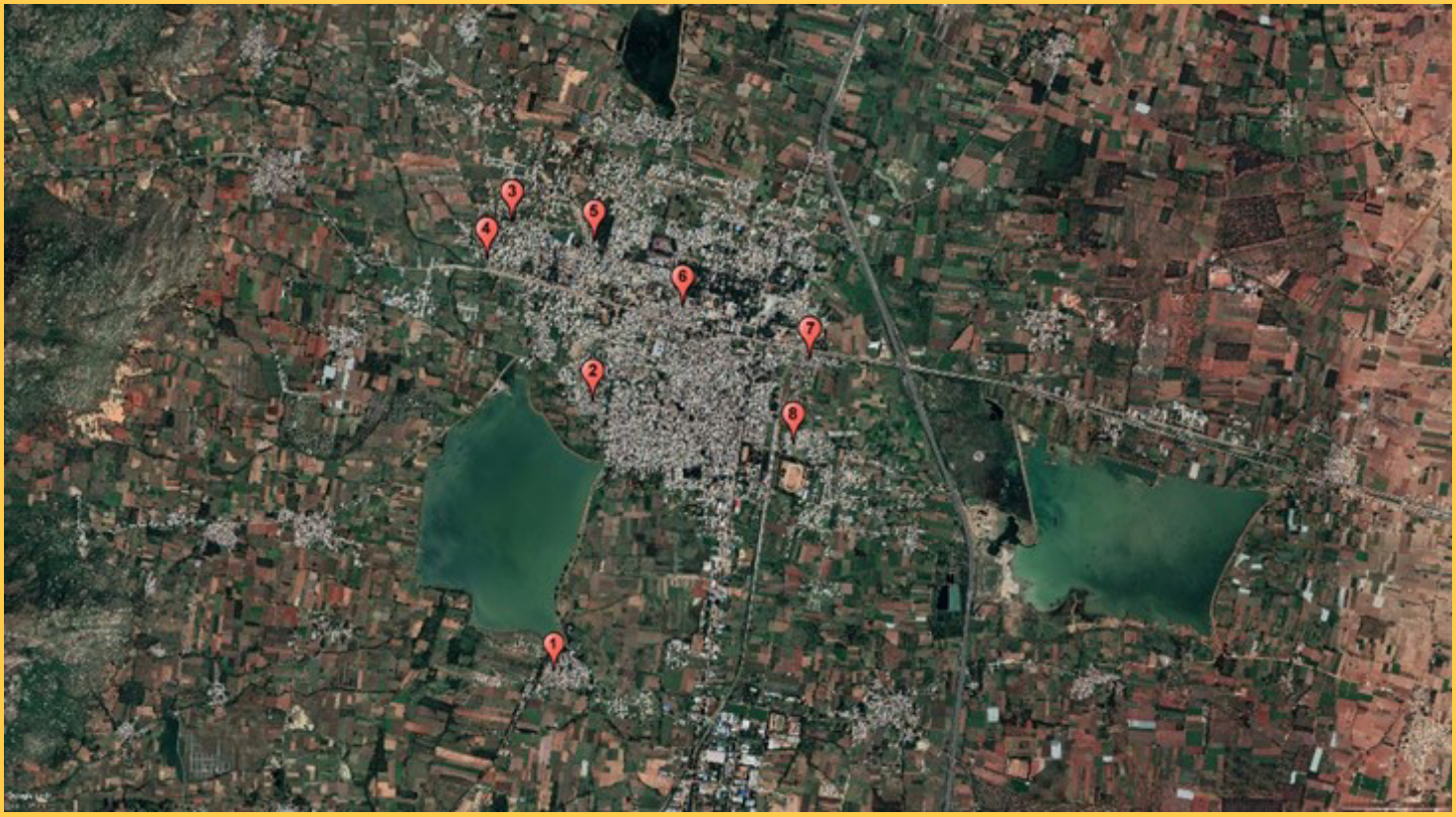


Figure 1.7
Living condition in Slum




Table 1.4 Slum details, Chikkaballapur

No.	Slum Name	Ward	Location	No. of Households	Population
01	Kandvara	14	13°24'57.14"N,77°42'58.10"E	900	4100
02	Bapujinagar	13	13°25'54.64"N,77°43'19.21"E	292	2678
03	Gaganamidde	7	13°26'32.97"N, 77°43'1.12"E	150	850
04	Nimkalkunte	7	13°26'24.91"N,77°45'12.53"E	155	890
05	Prashanthnager	5	13°26'28.65"N,77°43'18.80"E	331	2750
06	Dargamohalla	3	13°26'14.86"N,77°43'37.62"E	250	3800
07	Chamarajapete	29	13°26' 4.02"N,77°44'5.92"E	750	3220
08	Shantinagar	21	13°25' 46.14"N,77°44'1.79"E	300	2700
TOTAL				3128	20988

Source: Baseline Survey

02 Access to Toilet

2.1. Baseline Status

The city is certified as open defecation free (ODF), the accessibility to toilets comprising of individual toilets, shared toilets, community toilets and public toilets. The city is marching towards the ODF+ certification. To facilitate the public & address the floating population, public and community toilets are constructed by the municipality across the city (Table 2.1). Most of the households have latrines, latrines are constructed in two main structures, the toilet superstructure (including the pan and water closet) and the substructure.

Table 2.1
Community and Public toilet

No.	Name of Community /Public toilet	Location	Quantity of water supplied (liters)	Source of water supply
COMMUNITY TOILETS				Jakkalamadagu / Borewell/ water tanker
A	Bapuji Nagar	13°25' 54.9"N,77°43'15.80"E	2000	
B	Ambedkar Nagar	13°25' 57.8"N,77°44'2.060"E	2000	
PUBLIC TOILETS				
01	New Government Hospital	13°26' 8.69"N,77°43'31.58"E	5000	
02	Old Government Hospital	13°26' 14.15"N,77°43'44.99"E	3000	
03	Taluk Office Premises	13°26' 10.06"N,77°43'45.73"E	5000	
04	MG Road	13°26' 18.40"N,77°43'14.11"E	3000	
05	Opposite Ambedkar Bhavan	13°26' 12.46"N,77°43'45.74"E	2000	
06	Private Bus Stand	13°26' 11.31"N,77°43'49.87"E	5000	
07	KSRTC Bus Stand	13°26' 16.80"N,77°43'54.95"E	5000	
08	Junior College Stop	13°25' 42.70"N,77°43'49.73"E	5000	
09	Railway Station	13°25' 50.99"N,77°43'57.00"E	3000	
10	Market	13°25' 47.98"N,77°43'53.35"E	5000	
11	CMC Office	13°25' 54.5"N,77°43'35.00"E	3000	

Source: Baseline Survey

2.1.1. **Individual Toilets**

The city comprises 31 wards, 14902 households with a total toilet coverage of 98.95% & 97.53% sewer connection. The 356 HH's spread over a small pocket in ward no 8, 12, 13, 20, 22 & 31 are connected to single pits. There are 8 notified slums with 3128 HH's spread in ward no - 3, 5, 7, 13, 14, 29 & 21 connected to the four sewage zones.

2.1.2. **Community Toilets & Public Toilets**

Chikkaballapur city has two community toilets located at ward number 2 & 3 serving a population of 300 to 500 and to address the need at the public places, 11 public toilets have been constructed across the city with an average usage varying 50 to 400 persons per day depending upon their location. The geographical location of both public and community toilet is shown in Figure 2.1. Community and Public toilets (Figure 2.3) are in good condition with proper maintenance and with sufficient supply of water except at private bus stand & junior college public toilet, as these facilities face water scarcity during the summer. The scarcity of water during the summer season affects the functioning of the facility and the toilets are connected to the underground drainage/pit. The functional status of the community toilet is shown in Table 2.2. These toilets are maintained by Sulabh International Social Service Organization, City municipal council, and the private sectors, respectively. User fee collection varies from Rs 250 to Rs 1500 per day. Details of all public toilets are shown in Table 2.3.

•Usage charges per person in public toilets are as follows: Rs.2 for (Urinal), Rs.5 (Toilet)

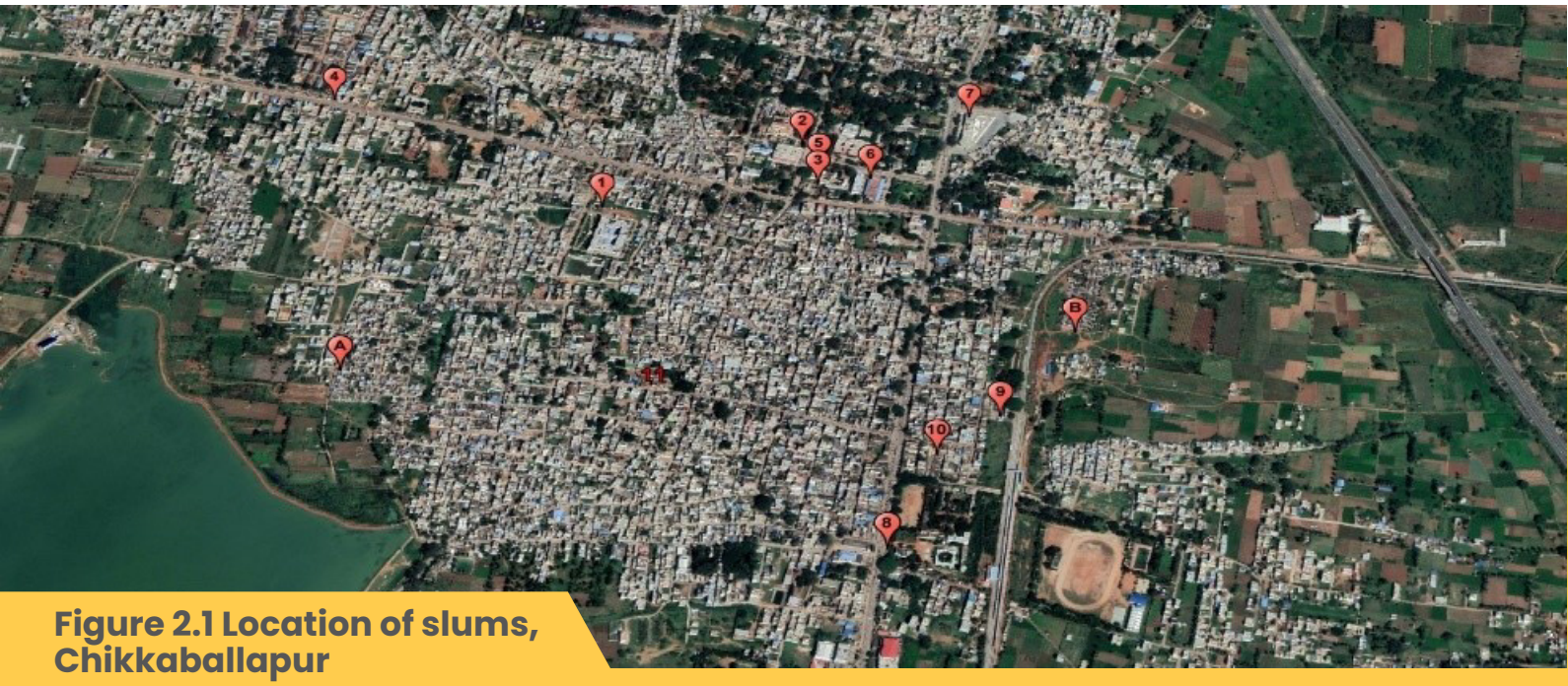


Figure 2.1 Location of slums, Chikkaballapur

Table 2.2
Status of Community toilet

			Bapuji Nagar (ward 2)	Ambedkar Nagar (ward 2)
01	No of population dependent		100	100
02	No of seats	Men	01	06
		Women	01	04
03	No of urinals	Men	02	02
		Women	02	0
04	Bathing units available		No	No
05	Waste disposal arrangement (sewered, septic tank, open drains, etc)		Sewered	Pit
06	Functional status		Yes	Yes
07	Owned by		CMC,Chikkaballapur	CMC,Chikkaballapur
08	Maintained by		CMC,Chikkaballapur	Venkatesh
09	Remarks		Good	Good

Source: Baseline Survey

Table 2.3
Status of Public toilet

No.	Location / ward	Avg. no of users per day	Men	Men Urinals	Women	Waste disposal arrangement (sewered, septic tank, open drains, etc.)	*Functional status (water, lighting, etc.)	Complaint redressal system available	Owned by CMC & Maintained by	User charges (Rs)	User fee (Rs)	Remarks
01	New Government Hospital, Chikkaballapur / Ward no-08	100- 150	6	2	2	UGD (Sewered)	Yes	No	Sulabh International Social Service Organization	Urinals-2 Rs Toilet-5 Rs	Rs 300-400 /day	Person In charge - Gaurav
02	Old Government Hospital, Chikkaballapur/ Ward no-08	Temporarily has been shut down since from 6 months as the hospital has been functioning as COVID-19 center										
03	Taluk Office premises/ Ward no-01	50	2	4	1	UGD (Sewered)	Yes	No	Sulabh International Social Service Organization	Urinals-2 Rs Toilet-5 Rs	Rs 250-500 /day	Person In charge - Manoj Kumar
04	MG road/ APMC Ward no-06	400	6 (5 normal + 1 Physically challenged)	2	3 (2 normal + 1 Physically challenged)	UGD (Sewered)	Yes	No	Sulabh International Social Service Organization	Urinals-2 Rs Toilet-5 Rs	Rs 1000-1200 /day	Person In charge - Sonu Kumar
05	Opp. Ambedkar Bhavan/ Ward no-01	400	6	4	3	UGD (Sewered)	Yes	No	Gangesh (Localite)	Urinals-3 Rs Toilet-6 Rs	Rs 800-1000 /day	Person In charge - Gangesh
06	Private Bus stand/ Ward no-01	300	3	4	3	UGD (Sewered)	Yes	No	Venkatesh (Localite)	Urinals-2 Rs Toilet-5 Rs	Rs 500-600 /day	Person In charge - Gopi
07	KSRTC Bus stand/ Ward no-31	300-400	10 (9 normal + 1 Physically challenged)	10	6 (5 normal + 1 Physically challenged)	UGD (Sewered)	Yes	No	Kishore (Localite)	Urinals-2 Rs Toilet-5 Rs	Rs 1000-1200 /day	Person In charge - Kishore
08	Junior College Stop/ Ward no-19	100-200	5	4	2	UGD (Sewered)	Yes	No	Gangesh (Localite)	Urinals-2 Rs Toilet-5 Rs	Rs 600-700 /day	Person In charge - Chandrappa
09	Railway station	200	5	5	3	UGD (Sewered)	Yes	Yes	Railway authority	Urinals-3 Rs Toilet-5 Rs	Rs 1000-1500 /day	Railway authority
10	Market Ward no -23	100-150	7	2	3	UGD (Sewered)	Yes	No	CMC	Urinals-1 Rs Toilet-5 Rs	Rs 800-1000 /day	Person In charge - Sachidananda Mishra
11	CMC office, (Ward 1)	150	6	0	4	UGD (Sewered)	Yes	No	CMC	-	-	Person In charge - Mallappa

Source: Baseline Survey

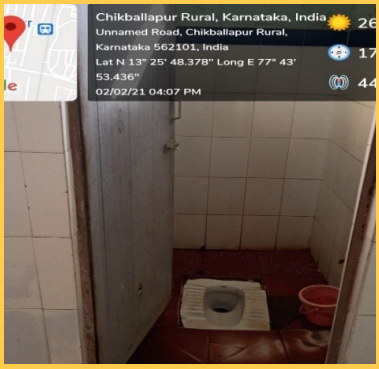
Figure 2.2
Public & Community toilets, Chikkaballapur

Public toilet, CMC Premises

Public toilet, Junior College stop

Public toilet, Junior College stop

Public toilet, Market



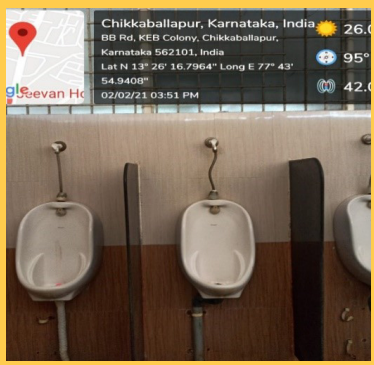
Public toilet, Market

Public toilet, APMC Market road

Public toilet, M.G. Road

Public toilet, Opposite Ambedkar Bhavan

Public toilet, Private Bus stand



Public toilet, Private Bus stand

Community Toilet, Bapuji Nagar

Community Toilet, Ambedkar Nagar

2.1. **Community Toilets & Public Toilets gaps & issues**

- No regular water supply at the private bus stand & junior college especially during the summer season
- He old Govt hospital public toilet has been temporarily shut down for the past six months as the hospital is being functioned as a COVID care center
- The willingness to pay by the community at MG road public toilet is limited
- The community toilet at Ambedkar nagar is functional only during peak hours (7:00 AM – 10:00 AM & 5:00 PM – 7:00 PM)

03 Water Supply & Management of Local Water Resources

3.1. **Baseline status**

The Local water resource present within the administrative boundary is Jakkalamadagu reservoir (Figure 3.1) spread over an extent of 51.25 Sq.km and the other source of water is 164 borewells. There is no surface water body within the city limit. The total water supply network is 120 km and the major source of water supply in the city is the Jakkalamadagu reservoir (Figure 3.2) situated about 12 km from the city on Goribidnur road. Besides, water is also obtained by borewells. A total of 114 borewells have been dug to supply water: most of them are hand pumps (Table 3.1). Though the city has both surface and groundwater sources, the city is largely dependent on surface water source (80%). City Municipal Council is responsible for planning, operation & maintenance, cost recovery & regulation of water supply delivery within the municipality.

Figure 3.1
Satellite image, Jakkalamadagu Reservoir

The total number of households with functional household tap connection (FHTC) and without FHTC are 7230 and 7672, respectively. However, the frequency of water supply is an intermittent type (2 hours of Peak and Lean periods of the day) due to which most of the households depends on borewells.

The water supply in the slum area is mainly through borewells and they hire water tankers (Table 3.2). The average groundwater depth is found to be 900 feet. Piped water is supplied by lifting water across 31 wards through a reservoir, 114 borewells (Figure 3.3) (Figure 3.4), five overhead tanks (Figure 3.5) (4 no's- 5 lakh litre capacity each and 01 no- 8 lakh capacity).

Figure 3.2
Jakkalamadagu reservoir

Figure 3.1
Water body status

Type of water resource	Approximate Area	Present condition	Quality of water	Current use
Jakkalamadagu	51.25 Sq Km	Good	Acceptable	Drinking & Domestic
Bore wells in working condition	101			
Dried up borewells	57			
Proposed Borewells	6			
Total number of Borewells	164			

Source: Baseline Survey

Table 3.2
Water tanker details

Details	Ward details
Total wards	31
Frequency of water supplied	
Daily	06
Alternate days	13
Once in three days	12

Source: Baseline Survey

Figure 3.3
Borewell status

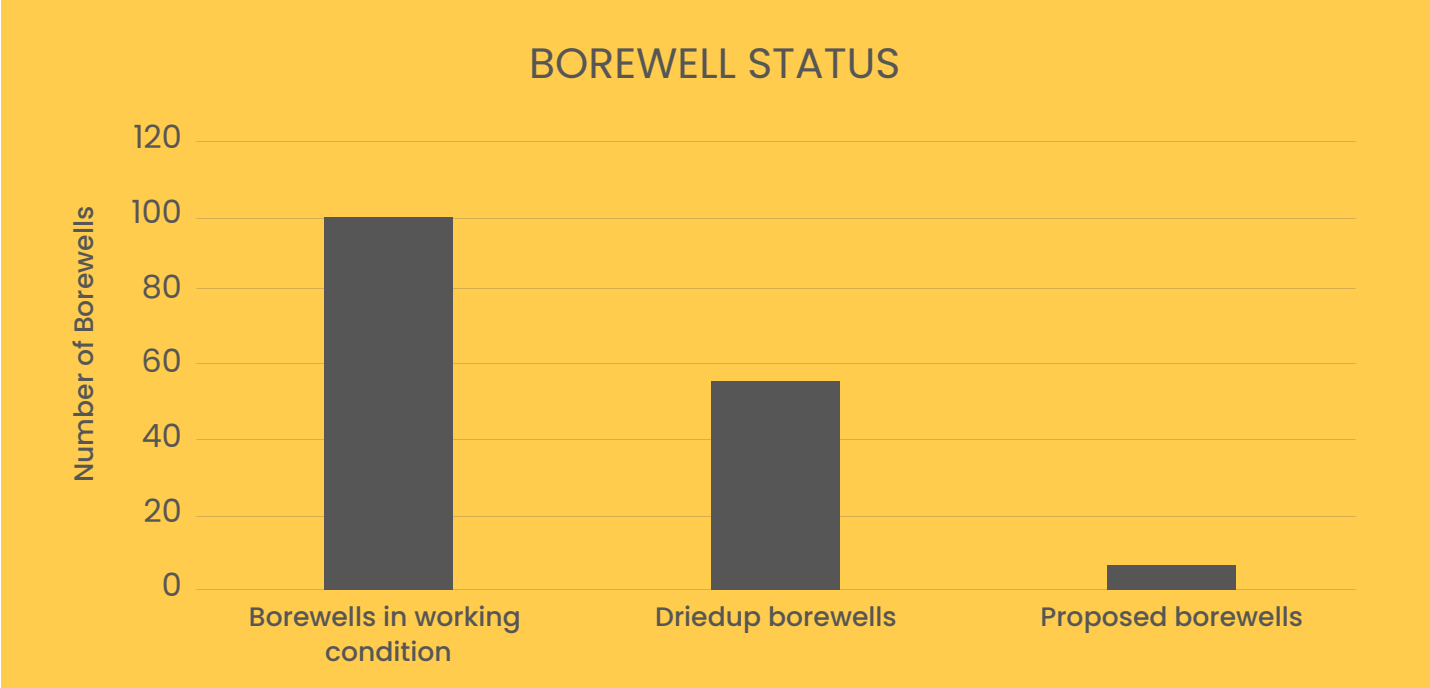


Figure 3.4
Ward wise borewells, Chikkaballapur

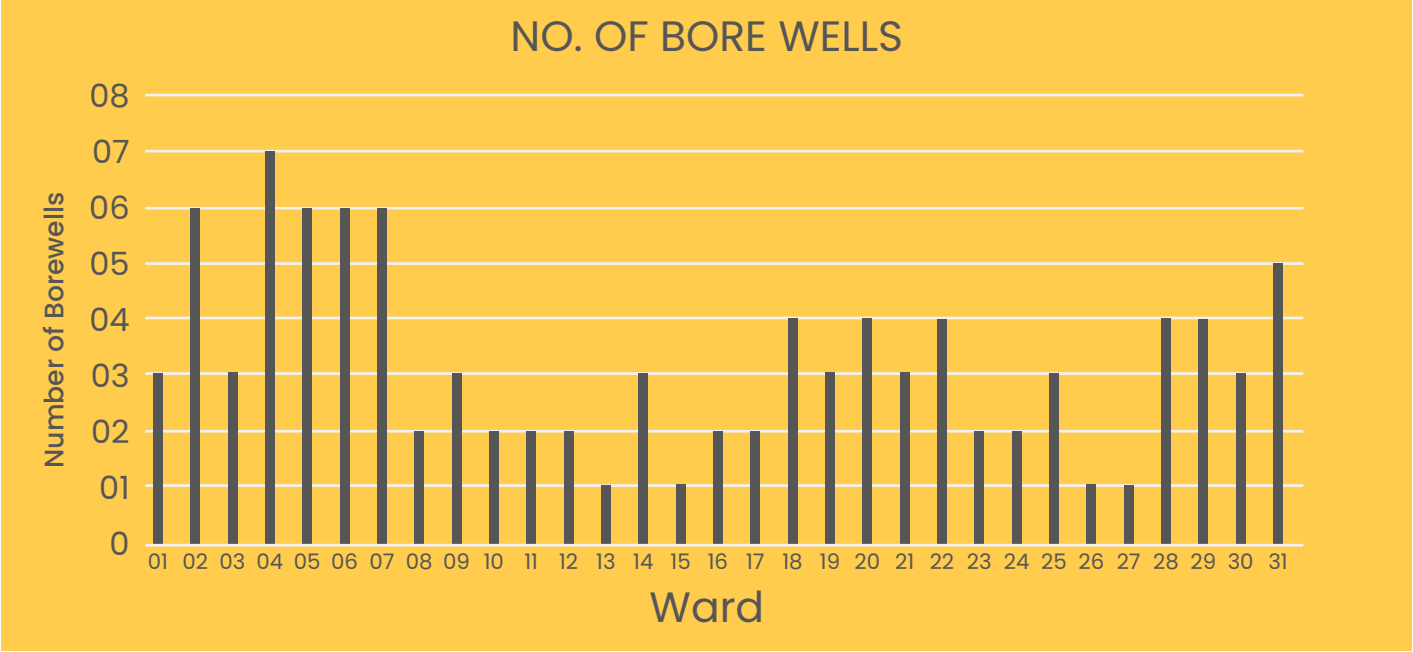


Figure 3.5
OHT, Chikkaballapur

3.2 Water supply & connections

The water treatment plant is commissioned at the Jakkalamadagu reservoir with a capacity of 5.0 million liters per day (Figure.3.6). The plant is of conventional type: - the treatment includes aeration, sedimentation, post clariflocculator and sand filtration along with backwash and disinfection unit. Chlorine is used for the disinfection of water (Figure 3.7). There is a jack well cum pump house by the side of WTP and two deep well turbine pumps of 20HP. Out of these two pumps one is a standby pump and raw water is pumped to WTP. Post-treatment the water is pumped to an intermediate pumping station (Booster pump) located at 6.1 km from WTP. There is a sump pit of 56781 litres capacity at IPS, wherein two pumps of 100 HP are installed to pump the potable water to GLSR of 7,57,082 litres capacity from where the filtered water is supplied by gravity to different storage tanks for distribution.

There are five overhead tanks in the city from where the water is distributed through the distribution network. The total capacity of OHT's is 28 lakh litres. The distribution network consists of 32.7kms pipes of different diameter1. The average per capita consumption in the town is estimated to be 70 litres per person per day.

Figure 3.6
Water treatment Plant

Figure 3.7
Chlorine dosing tube

3.3 Tap connection charges, Water tariff & status

The cess / user fee is collected by the Municipal council via cash mode, as they possess the tax collection wing. Most of the users pay the tariff once in year along with other taxes. The tariff structure of the water supply is shown in Table 3.3.

Table 3.3
Tariff structure of water supply

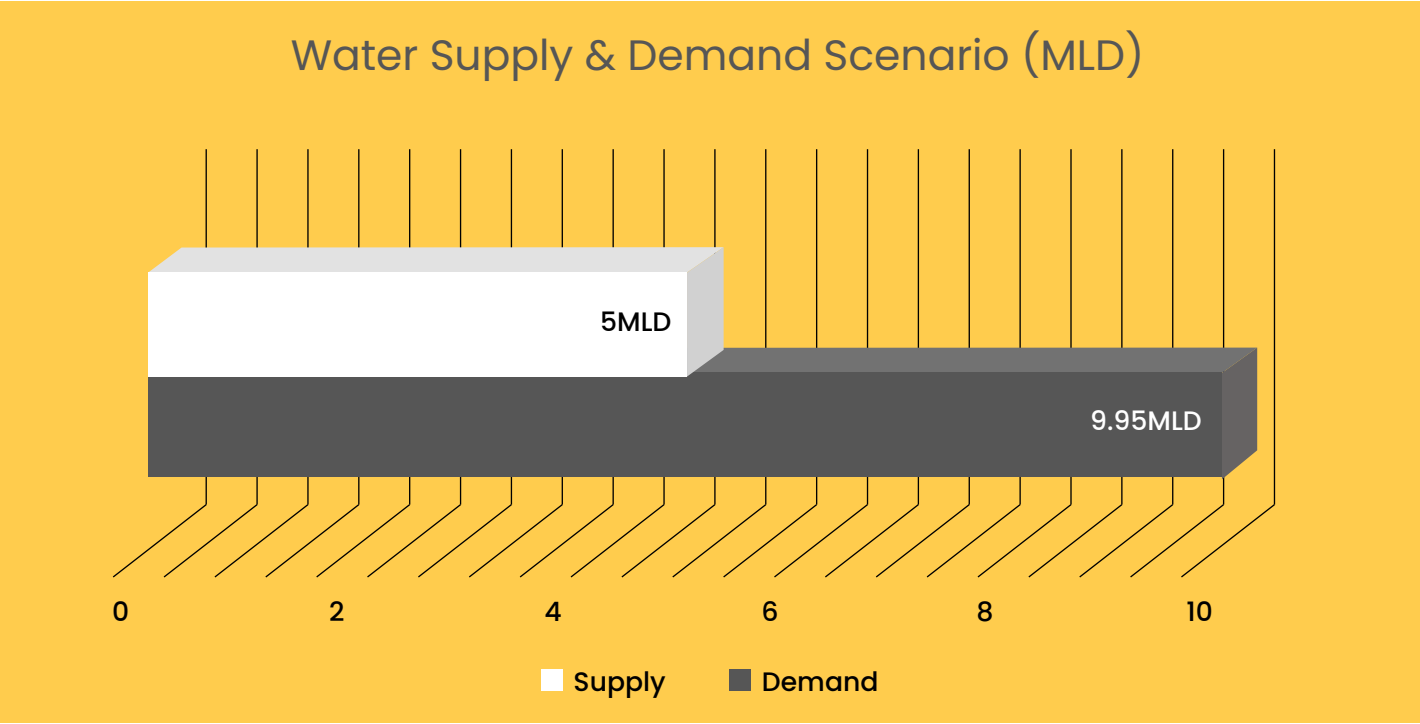
Category	Tariff (Rs)
One-time water connection charges	4680 per HH + road cutting charges for different types of roads
Water usage charges	Residential-160 Rs/month & Commercial-640 Rs/month
Water tankers in non-network area (The community mainly hires the water tankers during non-supply of water/festivals /functions)	Rs. 700-800 for 3000 liters capacity

Source: CMC, Chikkaballapur

3.4 **Water demand vs supply & Upcoming Water supply project**

The current population of the city is 73,709 (forecasted population as per Geometrical increase method, 2021). The water demand for the present population is of the order of 9.95 MLD @ 135 lpcd. However, at present, the supply is about 5 MLD @70 lpcd, which is not sufficient to meet the present water demand (Figure 3.8)

Figure 3.8
Water supply vs demand



3.4.1. **Upcoming Water Supply Project**

For the ease in the accessibility for public transport the retaining wall, bridge/barrier, and waste weir has been proposed nearby Jakkalamadagu reservoir and the tentative duration of completion is 3 months.

3.4.2. **Water losses**

Since the water is drawn from a source 12 km away from the city, it is estimated that approximately 10% of water is lost during transmission. Also, there is an estimated loss of about 15% of water due to leakages in the distribution network. These physical and commercial losses account is estimated at 25%.

The staff in position at Chikkaballapur CMC is shown in Table 3.4.

Table 3.4
Staff in-Position, Water supply section

Employees	No's
Assistant Executive Engineer, Water Supply	01
Supervisor	01
Pump Operator at pump house	02
WTP Operator	02
Water Men	12
Total	**18**

Source: Baseline Survey

3.5 **Water supply gaps & issues**

- The inadequate per capita water supply of 5 MLD which is not sufficient to meet the present water demand of 9.95 MLD.
- Infrequent water supply practice especially in slums where the intermittent type is been practiced, 2 hours of peak and lean periods of the day, area wise water is being supplied.
- Insufficient functional household tap connections (HH's without tap connection - 7672, 51.48%)
- No water metering across the city
- Improper functioning of chlorine dosing tube at WTP

04 Wastewater Management

4.1 Wastewater disposal arrangement (Network, Coverage, and connection)

The city comprises 31 wards with 14902 households including 8 notified slums (3128 households) and with four sewage zones. The underground drainage network coverage of the city is 91% (13461 HHs) and the remaining 9% (1341) HH's of ward no 14 and 30 are unsewered. In unsewered networked wards, the greywater is let into the stormwater drain and the septic tanks/pits are used for treating the blackwater.

The average per capita consumption of water in the city is estimated to be 70 lpcd out of which 80% will be the wastewater generation i.e., 56 lpcd. The total wastewater generation in the city is estimated to be 4.13 MLD. The wastewater disposal arrangements in the city mainly comprise of functional toilets, sewerage connections & single pit latrines.

4.2 Sewage management

The sewage from the 29 wards leads to the Sewage treatment plant by gravity located at Kelathota, near Gopal Krishna Amanikere, (Figure 4.1). The design load/total capacity of STP is 10 MLD and the current inflow upon discussion with CMC officials and STP operator is around 3 - 3.5 MLD. The technology used in this STP involves a nature-based Waste Stabilization Pond consisting of an anaerobic pond, facultative pond followed by maturation pond each of 2 units (Table 4.1). The UGD work in the remaining ward has been initiated by the CMC so that the whole city is sewered. The remaining amount of wastewater is contributing to the storm water drains.

Figure 4.1

Sewage Treatment plant, Kelathota
Gopal Krishna Amanikere

Table 4.1
Sewage Treatment Plant details

Sewage Treatment Plant, Chikkaballapur	
Location (Co-ordinates)	Kelathota, Gopal Krishna Amanikere, 13°25'18.8"N 77°44'36"E
Design Capacity	10 MLD (Sewers and all other components in the Rising main designed for 2036 population)
Area extent covered under STP	25 acres, Kelathota near Gopal Krishna Amanikere, Sy No 26 and 172
Year of commissioning	2013
No. Properties connected to Sewerage Network	The underground drainage network coverage of the city is 91% (13461 HHs) and the remaining 9% (1341) HH's of ward no 14 and 30 are not sewered.
Sewer Zones	The CMC area coverage is 18.25 sq.km with 31 wards. The city mainly has residential developments. It is divided into four sewer collection zones based on topography (Total length of sewer lines is 77km. zone I-31962m, zone II-22988m, zone III-18051m, zone IV-2736m and outfall-690m takes the sewage from all four zones discharging to the proposed STP). The minimum and maximum elevations are 900.63m & 930.93m respectively, the terrain slopes from north-western direction towards south-eastern direction which facilitates to bring the sewer line by gravity[1]
Technology Description	WSP consisting of an anaerobic pond, facultative pond followed by a maturation pond (two parallel streams of flow).
Wastewater generation in the city (MLD)	4.13
Current Sewage inflow into STP (MLD)	3-3.5
Current Status Of STP	The physical condition of the pond is satisfactory. Development of weeds in the STP premises along with the algal bloom in the ponds. Immediate surroundings-Amanikere lake, botanical garden, agricultural fields
O&M of STP	Operational Personnel – Mr Attaullah No O & M is carried out in the past three years. No desludging is carried out, since from 3 years. Two labours have been appointed by CMC for the maintenance of STP premises and for taking care of the ducks (92 Nos) which are employed as an aerating agent

Source: Baseline Survey

4.3
Septage management

Currently, the private sector and the CMC provides services for cleaning septic tanks using a desludging vehicle (Figure 4.2). The desludging price ranges between Rs.3000 to 5000 based on the capacity of septic tanks. There are approximately 7 such service providers in the municipal areas (ULB-2 and private operator-5) and there is no faecal sludge treatment plant in the city. The faecal sludge management status is shown in Table no 4.2.

Figure 4.2
Desludging machine, Chikkaballapur CMC

Table 4.2
Faecal sludge management status

Type of containment systems in town (Septic tank/Pit system/Lined tank without partition)	29 wards are covered with the UGD connection and in ward no 14 & 30 the single pit and septic tank containment systems			
Existing mechanism for emptying of containment unit	Chikkaballapur Municipal Council and Private operators			
No. of desludging trucks owned	By ULB	02	By Private Operator	05
Capacity of the Truck (litres)		1000		3000 - 5000
Average Number of desludging trips in a month		00		01

Source: Baseline Survey

4.4 **Gaps and Issues**

4.4.1 **Gaps in Wastewater disposal arrangement**

- No UGD coverage in wards 14 and 30
- Blockage of UGD network due to dumping of solids such as shampoo sachets, soap cover, Sanitary napkins etc.
- Separation of grey water and black water at the source is rare at unsewered areas.
- Some of the houses especially in the slums are constructed on the drain itself as it becomes tough to carry out O & M activities by the CMC (Figure 4.3)
- No proper gradient and connection between the primary, secondary, and tertiary drains, especially in slums leading to the choking.

Figure 4.3
Open drain, construction of pits on roads in slums

4.4.2 **Gaps in sewerage management**

- Dumping of solid waste in the drains and poor condition (breakage, blockage etc.) in slum areas (Figure 4.4)
- Poor complaint redressal system, as the issue is resolved post 48hours as per the survey conducted and upon community discussion.
- Some of the beneficiaries in low-income pockets of ward no's 14 & 30 are not willing to connect the greywater pipeline to the UGD network as it incurs cost.

Figure 4.4
Dumping of solid waste in open drains.

4.4.3 **Sewage Treatment Plants (STPs)**

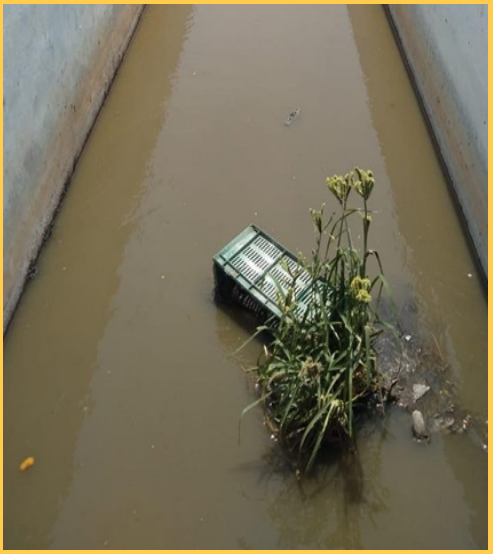
- No biocultural inoculation in the STP
- No bar screens in the chamber to carry out the screening process
- Improper functioning of the flow meter installed in Parshall flume, as a result, no inflow can be recorded
- No scraping of the algal boom and solid waste in the pond
- Sewage treatment not as per discharge norms
- Absence of sludge management facilities, as no desilting is carried out in the past 5 years
- No recycle / reuse of treated wastewater / sludge
- No proper channel for the effluent as the open flow channel is covered by the weeds / elephant grass
- No electricity to monitor the flow as there is no continuous power supply throughout the day

Figure 4.5
Dysfunctional flowmeter, Missing screen, Outlet flow and large solids entering the pond

Dysfunctional flowmeter

Outlet flow as not per the discharge norms

Missing screen



Large solids entering the pond

4.4.4 **Gaps and issues related to FSM**

- The private operators are not authorized and regulated as per the CMC (post discussion with CMC officials)
- The communities in the slums are using the pit tablets (biodigesters) in an unauthorised manner to address the desludging issues and not aware of the pros and cons
- The length of the pipe of the honey sucking machine of ULB is insufficient to carry out the desludging practises of the HHs located away from the main road (Figure 4.6), especially in slums (The HHs situated in the narrow roads cannot be addressed)

Figure 4.6
Narrow Road, Ambedkar nagar slum

05 Grey Water Management

5.1 Baseline Status

Out of the 31 wards, the grey water of 29 wards is disposed into the UGD network and for the remaining two wards, i.e., Ward 14 and Ward 30, into the open drains. The UGD network coverage is 91% in the city and the remaining 9% is readily disposed into the open drains (Figure 5.1). Greywater generated in the city is disposed of through UGD network and open drains, open grounds, or lake, without undergoing any treatment and there are no onsite facilities for treatment in non sewered areas.

The connection to the UGD network from the households is not present in the ward no 14 and 30, as it incurs a cost of Rs. 1000 - 2000 on the user, thus making them reluctant to comply. There are four greywater outlets: Vapasandra, Vakkaligara chaultry, Nakkalakunte & Kandavara across the city.

Figure 4.6
Narrow Road, Ambedkar nagar slum

5.2 **Gaps and Issue**

Following are the gaps and issue identified with respect to greywater management across the city on physical survey

- CMC is lacking in technical expertise in the management of greywater
- No onsite facility for greywater treatment in low-income pockets in ward no's 14 and 30
- The greywater connection to the UGD in ward no 14 and 30 is not connected and the community is reluctant to comply as it incurs cost to the user
- Some portion of the city disposes greywater in the open drains, reaching the lake without undergoing any treatment, thus polluting the lake water (Figure 5.2)

Figure 5.2
Greywater outlet, Vapasandra

06 Solid Waste Management

6.1 Baseline Status

The total waste generated in the city is 34.3 tonnes per day, of which about 22-26 tonnes of waste is collected and transported to the SWM processing unit. An average of 0.47 kg/ capita waste generated from the population of 73,709 per day. (Figure 6.1) The sweeping, collection and drain cleaning activity is handled by Pourakarmikas, contract labours and SHG's managed by Chikkaballapur CMC. Table 6.1 shows the current solid waste management status of the city.

Figure 6.1
Solid waste transportation mechanism

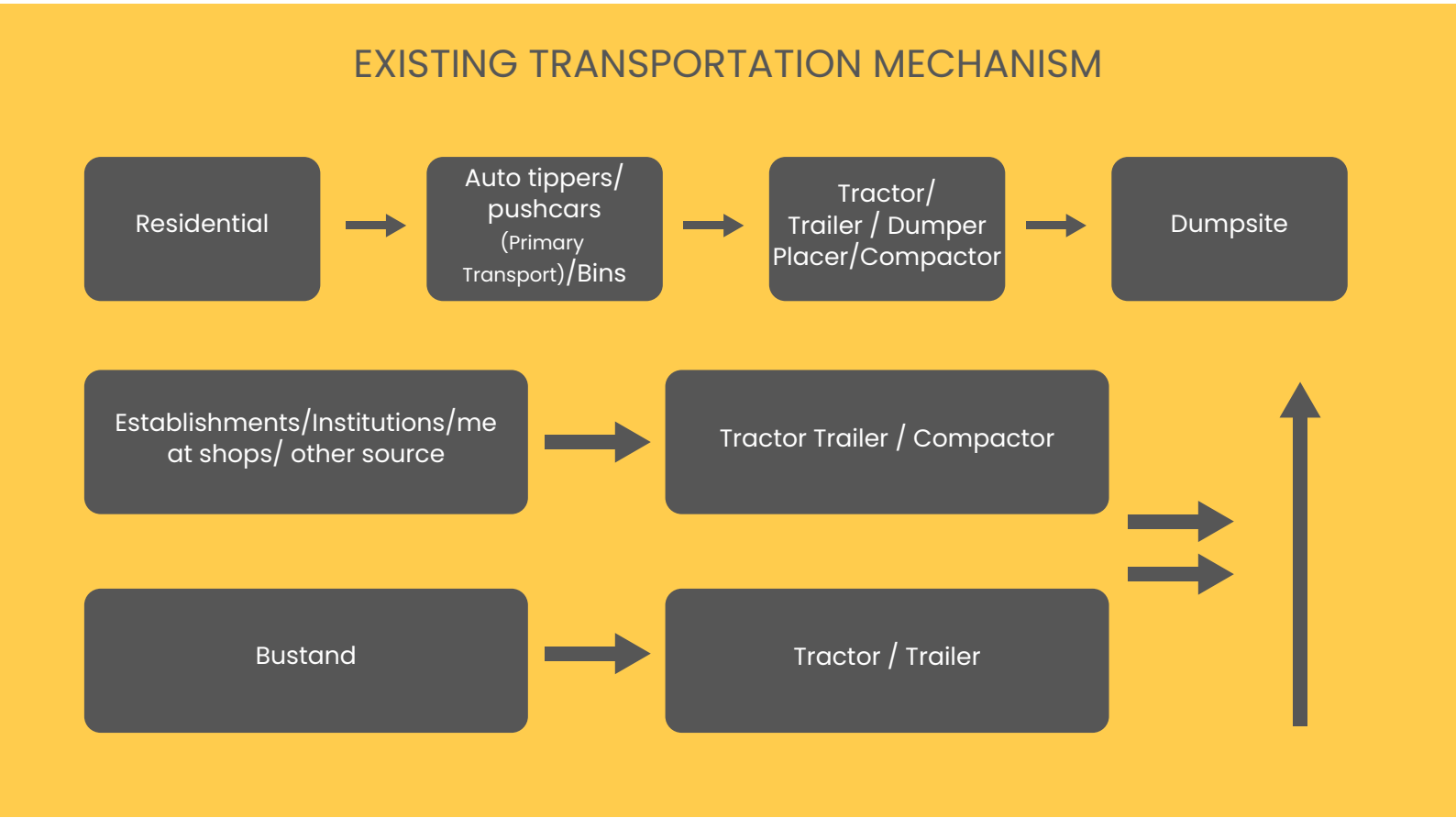


Table 6.1
Solid waste management status

Quantity of waste generated from the town (tonnes/day)	34.3
Coverage of Door-to-Door waste collection (%)	90%
D2D Waste collection frequency	Wet waste Collection is daily whereas dry waste once in three days
Number and Type of equipment present for Solid waste management	4 Nos (Tractor, Compactor, Auto tipper & pushcarts)
Number of community bins available for secondary collection	8
Number of community bins available for secondary collection	22-26
Waste management system in slums	Out of 8 slums, 6 slums have proper Door to Door collection facility

Source: Baseline Survey

The transportation of waste from all the sources across the city happens by using auto tippers, dumper placer compactor and a tractor-trailer (Figure 6.2). Dumper placer is used once a week for all collection of waste from community bins in different parts of the city. There are eight usable dumper placers bins & 8 compactor bins of 3m3 capacity placed across the city.

Primary collection is conducted door-to-door from both residential and commercial establishments in all wards except in ward no 14 and 30 as there is no distribution of dustbins by the CMC and the roads are narrow for the collection of waste by the vehicles, at these wards the auto tippers are stationed at the main road/road end and the limited community dispose waste by carrying in polyethene bags and by dustbins purchased by them.

Collection and transportation of waste are conducted in two phases. Firstly, push carts/ auto tippers collect waste from households/commercial establishments and secondly, it is transferred to the tractor-trailers and compactors and ultimately transported to the processing site at Puttatimmanahalli which is 10 km away from the city. The site has been allotted for the treatment and disposal of solid waste. Biomedical waste generated by hospital and clinics is transported and managed by Meera Envirotech. The agency collects waste from hospitals and clinics[2].

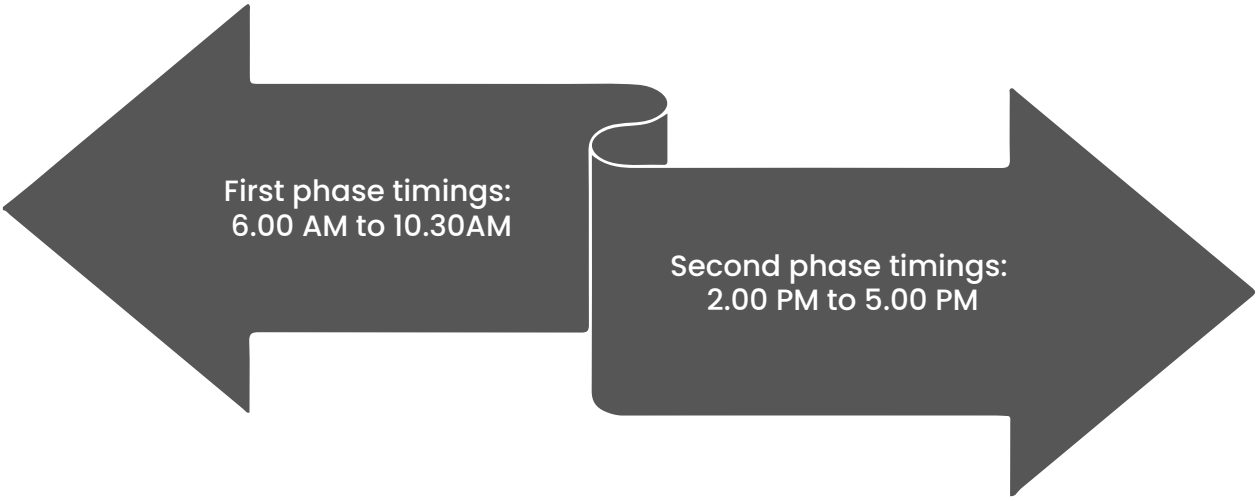


Figure 6.2
Collection of solid waste (Prashant Nagar)

6.2 **Primary / secondary collection & transportation of waste**

The quantity of municipal solid waste generated in the city from both primary and secondary sources. Primary sources include waste collected from the door-to-door households, doorstep collection from the commercial establishment and others (Table 6.2). Secondary source includes waste collected from secondary transportation vehicle and waste from the waste storage points across the city. The vehicles deputed for waste collection is shown in Table 6.3.

Table 6.2
Primary waste generations

Sl.No.	Waste Generator	No. of Generators	Avg. waste per day in Kg	Total waste in Kg	Total waste in Tonnes
01	Household	15050	0.93	13996.50	13.997
02	Shops less than 10sq.m	1500	1	1500	1.5
03	Shops more than 10sq.m	1100	1.14	1248.50	1.249
04	Hotels	57	6.39	364.23	0.364
05	Veg. Markets (APMC and Sante Market)	2	1500	3000	3
06	Meat shops	32	14.91	477.12	0.477
07	Chicken/fish outlets	27	3.6	97.2	0.097
08	Institutions	61	16.30	994.30	0.994
09	Street Sweeping				
	Type A	18	45	810	0.810
	Type B	27	34.90	942.30	0.942
	Type C	42	21.50	903.0	0.930
	Type D	50	13	650	0.650
10	Miscellaneous waste	7%	-	1703.32	1.7
Total				**26686.47**	**26.69**
C & D Waste				5092.16	5.09

Source: SWM-DPR, CMC, Chikkaballapur

Table 6.3
Vehicle used for waste collection

Sl.No.	Type of vehicle	No. of vehicles	Source of collection	Disposal
01	Tractor trailer	5	Open points/ street Sweepings	Disposal site
02	Dumper placer (3m^3)	1	From bins	
03	Compactor	1		
04	Auto tippers (0.6 tonnes)	10 (3 auto tippers not in working condition)	Household/ Commercial	Tractor trailer
05	Tata Ace	4		
06	Push carts (6 bins)	31	Door to door	Into auto tippers
07	Loader	1		
TOTAL		**50**		

Source: SWM-DPR, CMC, Chikkaballapur

6.3 **Legacy waste.**

On physical survey it is found that the dumpsite has accumulated a legacy waste roughly estimated to be 50,000 tonnes (Figure 6.3)

Figure 6.3
Legacy waste at dump site, Chikkaballapur

6.4 **Street sweeping**

Street sweeping and drain cleaning are the major components of total MSW generated in the city. The quantum of street sweeping details are shown in Table 6.4 below.

Table 6.4
Street sweeping

Street sweeping carried out by	Pourakarmikas
Total road length	137 km
Type A – Sweeped daily	21km (city centres, near bus stand commercial areas)
Type B – Once in 2 -3 days	(semi resident, school areas, not so densely populated)
Type C- Once in 2 -3 days	(purely residential areas)
Total no of Pourakarmikas	110

Source: SWM-DPR, CMC, Chikkaballapur

6.5 **Solid waste processing & disposal waste**

The Solid waste management facility in Chikkaballapur city is located at Puttatimmanahalli, which is 10 km away from the city and spread over an area of 15 acres. The site has a compound wall and has a single entry with a security building, windrow pan, vermicompost tanks, biogas plant, incinerator, bailing machine and screens of 35 & 4mm, respectively (Figure 6.4). The details of facilities at disposal site are listed in Table 6.5.

Figure 6.4
Facilities at SWM Processing unit

Vermi Compost Pits

Bailing machine

Screens 35mm

Screens 4mm

Incinerator

Biogas plant

Table 6.5
Facilities at disposal site

No	List of Facilities	Size
01	Weigh Bridge	3m x 9m
02	Weigh bridge cabin	4m x 4m
03	Shed -1 Vermi compost shed	21m x 30m
04	Shed -1 Vermi compost shed	24.3m x 15m
05	Concrete slab (without roof covering)	35m x 35m
06	Concrete slab (without roof covering)	24.3m x 35m
07	Leachate Tank next to concrete slab	6.3m x 5m
08	Secured landfill facility	17m x 56.5m
09	Length of the mud road	653m
10	Length of the Bituminous Road	241m
11	Length of Drain	137.5m
12	Park	10.3m x 15.3m
13	Area of processing site	57328 Sq.m

Source: SWM-DPR, CMC, Chikkaballapur

6.5 **SWM finance**

The total capital investment of Rs.97,08,035 had incurred in setting up the solid waste management facility including the collection, conveyance, safe processing, and the total of 16.60% O & M expenditure is met (Revenue: Rs 16,12,320, Year:2020-21)[2]. The user charge is collected from the residential, commercial establishment and the revenue is also being generated from the sale of the compost which benefits the local farmers and the municipal council respectively.

6.6 **Gaps & Issues**

- Dumping of solid waste in the open drains and nearby roads due to lack of awareness especially in slums, negligence, and community engagement in managing waste(Figure 6.5)
- Though the telephonic and physical complaint redressal system is available, the CMC is, not responding to common people immediately on cleaning issues.
- No following of Health & safety standards by the sanitation workers
- No distribution of dustbins in the ward no 30 and 14 for the primary waste collection
- No legacy waste management at the dump site

Figure 6.5
Dumping of solid waste in drains and open fields.

07 Health and Hygiene of Sanitation Workers (Limited data availability)

The sanitation workers in the city are those behind the provision and maintenance of sanitation systems (Figure 7.1). The sanitation workers lack awareness of safe working procedure even after conducting various training programs by CMC. They mainly reside in wards 12, 13 & 9 and even the extent of the area allocated to the workers is insufficient to meet their basic needs.

Figure 7.1
Sanitation workers, CMC Chikkaballapur

7.1 Staffing Details of Chikkaballapur

Table 7.1
staffing details, Chikkaballapur

Total number of sanitation workers working in the town	
Under SWM	84 (Permanent and direct pay)
Under wastewater management	12
Operators under water supply	04
Others	25 (Including drivers, cleaners and STP maintenance)
TOTAL	**125**

Source: CMC, Chikkaballapur

• Use of Personal Protection equipment Kits: The sanitation workers under SWM and wastewater management regularly use the PPE kits (Figure 7.2) Gumboots, Hand Gloves, Jacket, Masks, sanitiser etc.

Figure 7.2
PPE kits, CMC Chikkaballapur

• Training on safety: The training and workshops conducted to address safety conditions of CMC staff/sanitation workers are as follows.

Table 7.2
Training on health and safety

Date	Activity
03-09-2020	Solid Waste Management, safety, and Sanitation
20-11-2020	Health checkup for Pourakarmikas and staff
23-12-2020	Health Awareness Program, organized by LIONS Club (distribution of masks)
20-02-2021	Health camp

Source: CMC, Chikkaballapur

Health services/Benefits provided to sanitation workers.

• Health camps ((Figure 7.3)
• Employees State Insurance Corporation (ESIC)
• SBI life insurance
• Pradhan Mantri Awas Yojana (PMAY)

Figure 7.3
Health checkup of Sanitation workers, CMC Chikkaballapur

7.2 **Gaps and issues**

- The sanitary workers have taken up the job as a family profession, where the interchanging of family members mainly forcing their children's rather than educating them is observed
- Alcohol in the Workplace: The workers consume alcohol during work, which impacts health and safety, work performance and working relationships among the sanitary workers
- Superstitious belief: If the sanitation workers are unwell, they pay a visit to the Mattha's/ temples rather than consulting a doctor
- Lack of awareness on the safe working procedure despite various training on health and sanitation

08 Institutional Arrangement

8.1 Baseline status

This chapter includes information regarding the existing institutional roles & responsibilities at CMC for managing urban infrastructure services and municipal governance. The Institutional arrangement, Organogram of ULB and department wise staff in-position for each category is listed in Table no 8.1. The organizational structure is shown below in Figure 8.1.

Figure 8.1
Organizational structure, Chikkaballapur

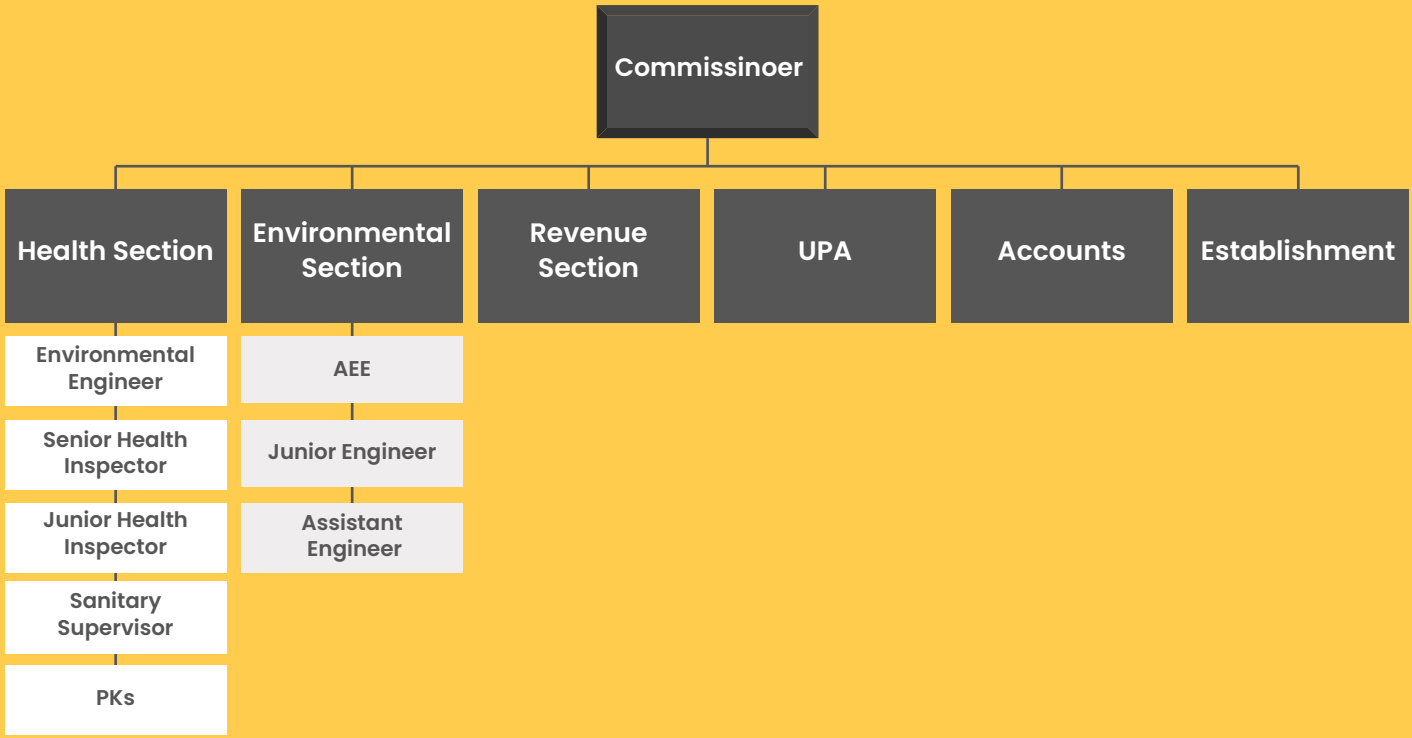


Table 8.1
Institutional roles and responsibility under WASH

Urban Services	Institutions in charge of planning	Institutions in charge of implementation	Institutions in charge of O&M	Institutions in charge of collecting user charges
Septage management	Municipal Council, Assistant Executive Engineer (Civil/Water supply/ Environmental Engineer)	Municipal Council	Municipal Council/ Private operator	Municipal Council
Water Supply/ Storm Water Drainage		Karnataka Urban Water Supply and Drainage board (KUWS&DB)	Municipal Council	
Solid waste management		Municipal Council		Organization In charge
Public Toilets				

Source : Based on Survey

8.2 **Gaps & Issues**

This section will identify gaps and issues related to Institution and Governance with relevance to sanitation-related sector:

- Lack of Sufficient staff in various categories: Vacant posts related to the sanitation sector in the ULB (Pourakarmikas and Supervisors)

09 Municipal Finance

9.1 Baseline Status

The municipal finances and revenue break-up on water and sanitation-related services mainly solid waste capital, O&M expenditures, Capital / Revenue Income are listed in table 9.1.The budget sheet (20-21) is attached in annexure II

Table 9.1
Municipal Budget under WASH

Particulars		Amount (Rs. in Lakhs)		
		2017-18	2018-19	2019-20
Revenue Income				
01	Income from Taxes	269.03	265.19	291.14
02	Income from Non-Taxes	407.03	417.27	512.36
03	Income from Assigned Revenue	9.23	6.53	0
	Total Revenue Income (1+2+3)	685.29	688.99	803.5
Capital Income				
04	Grants and Loans	2464.32	1704.95	2377.77
	Total Capital Income (4)	2464.32	1704.95	2377.77
	Total Income (1+2+3+4)	3149.61	2393.94	3181.27
Revenue Expenditure				
05	General, Establishment and Other Revenue Expenditure	277.51	337.18	488.36
06	O&M of Sanitation including SWM	684.76	704.88	723.63
	Total Revenue Expenditure (5+6)	962.27	1042.06	1211.99
Capital Expenditure				
07	Capital Expenditure	903.07	155.33	712.92
	Total Capital Expenditure (7)	903.07	155.33	712.92
	Total Expenditure (5+6+7)	1865.34	1197.39	1924.91
	Revenue Surplus/Deficit (1+2+3-5-6)	-276.98	-353.07	-408.49
	Capital Surplus/Deficit (4-7)	1561.25	1549.62	1664.85
	Overall Surplus/Deficit (1+2+3+4-5-6-7)	1284.27	1196.55	1256.36

Source: Account Section CMC, Chikkaballapur

9.2 Gaps & Issues

- Poor cost recovery & efficiency for the cost of services. The community fails to pay the cess /user fee regularly implemented by the municipal council
- Lack of budget for efficient O&M of existing assets especially in the sanitation section

10 Capacity Enhancement

10.1 Baseline status

The CMC, Chikkaballapur is involved in providing skill, capacity building and organizing exposure visits to the officials including high and mid-level professionals working in the sector. The trainings are given to the Pourakarmikas for ensuring sustainable sanitation & hygiene and to sensitize sanitary workers on health/safety, waste management and safe handling. The detail of training is listed in Table 10.1.

Table 10.1
Training under WASH

Trainings received by ULB officials/sanitation workers/ operators under WASH		
Participants	**Place of visit**	**Purpose**
Pourakarmikas	Singapore	Cleanliness of the Sanitation workers
	Madhugiri, Tumkur	Best Solid Waste Management Practice
	Bashatihalli, Doddaballapur	

Source: CMC, Chikkaballapur

10.2 Gaps & Issues

This section will identify gaps and issues related to the capacity Enhancement of Institution / Human resources for improving the WASH services.

Lack of:

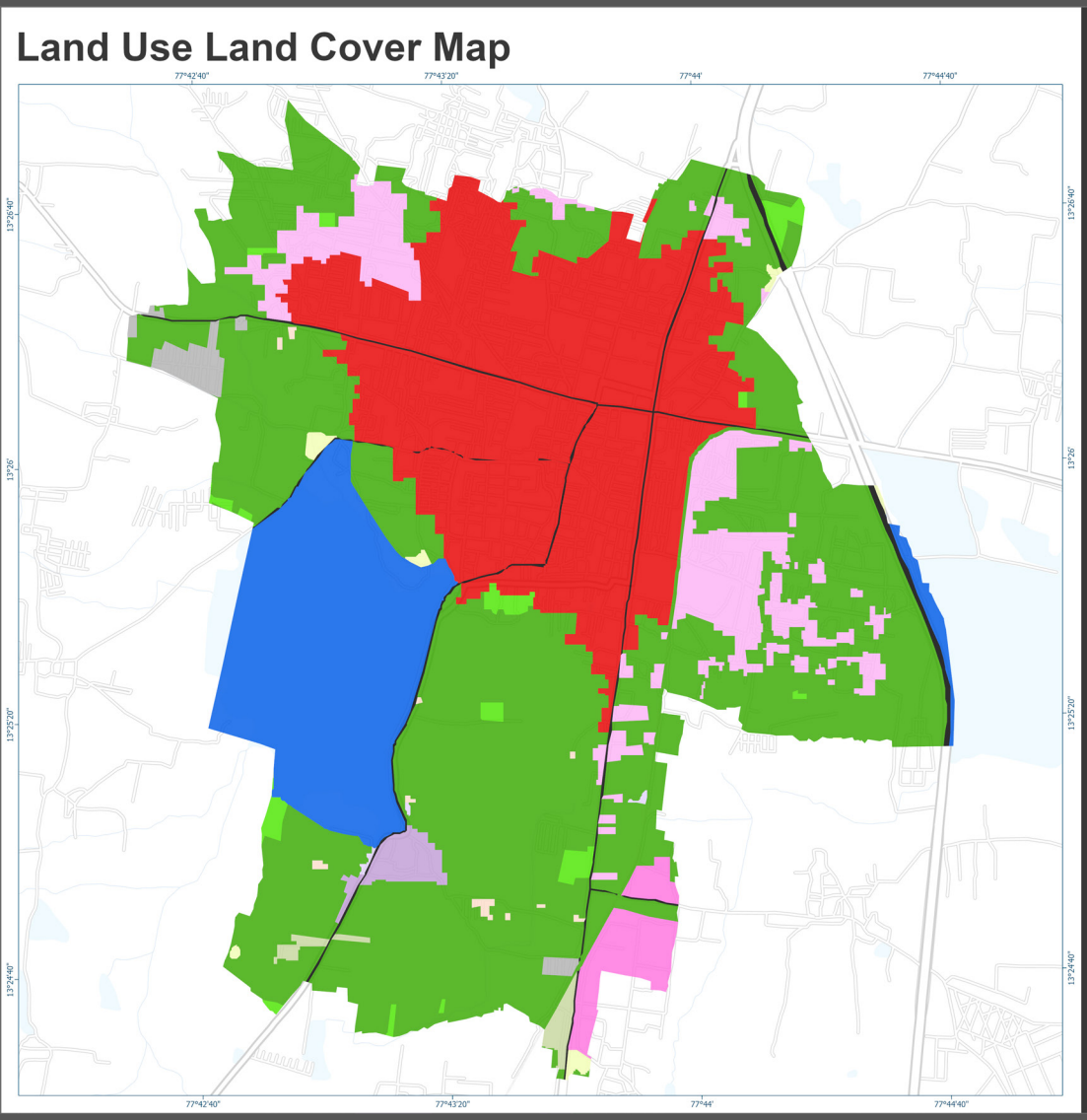
- Capacities (technical & managerial) in CMC Chikkaballapur
- Capacities for new technologies and innovative projects
- Planned capacity-building strategy for improving sanitation services

REFERENCES

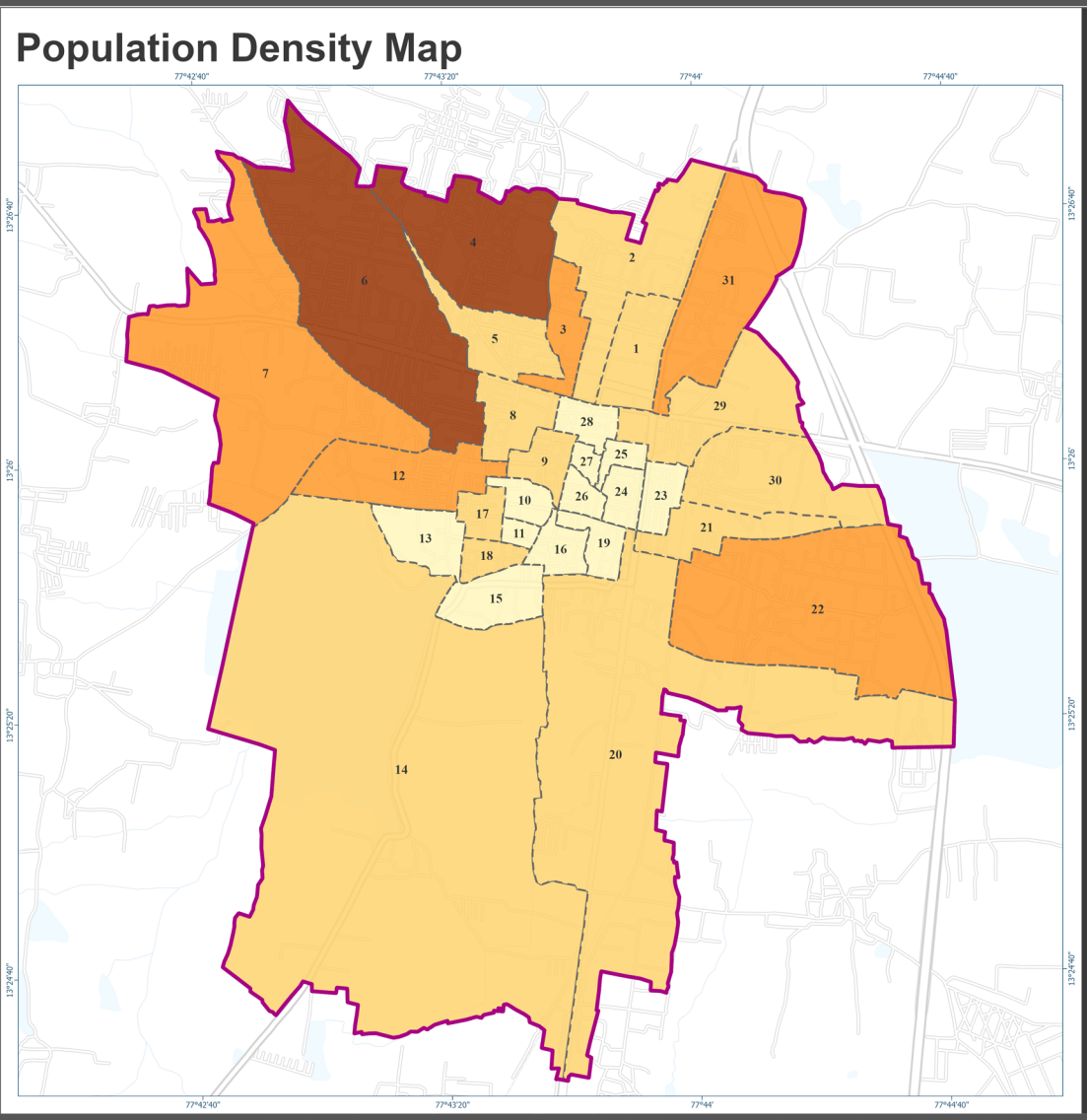
1. Karnataka Urban Water Supply and Drainage Board Report, Chikkaballapur.
2. Solid Waste Management, Detailed Project Report, CMC Chikkaballapur.

ANNEXURE I: BASE MAPS

LAND USE LAND COVER MAP



Population Density Map



Legend

City Boundary

Ward-wise Population Density

- 1000 - 2000
- 2001 - 3000
- 3001 - 4000
- 4001 - 5000
- 5001 - 6000

Ward Wise Population Details

1	Vapasandra	2252
2	Reshmigudu Markatte	2069
3	Bhagath Singh Nagar	2770
4	Prashanth Nagar	4871
5	Police Quarters	2303
6	Municipal Layout & Dinnehosahalli road	4357
7	Gangamidde & Nimalakalakunte	2614
8	New District Hospital & TG Bank	2357
9	Newton Grammar School area	2200
10	Municipal Corp	1067
11	Alaragaddda,	1200
12	A. K Colony and Al-Kalam School	2729
13	Bapuji Nagar	1666
14	Kandawara	2272
15	Quasar nagar	1630
16	Basawanagudi	1223
17	Fort area	1810
18	Sir M Visvesvaraya Layout	1769
19	Karkanepete road	1149
20	Darga Mohalla & K.S.R.T.C road	2254
21	Shanti Nagar	1786
22	Kelaginatotagalu area	3144
23	Chamrajpete	1149
24	Wapasandra road	1111
25	DVT Pete	1343
26	Garakarollu road	1003
27	Yelepete street	1358
28	Koracharapete temple	1688
29	Chamarajapete	2021
30	Ambedkar Nagar	1881
31	Sunnakalu street, Indiranagar	2606

City Municipal Council, Chikkaballapur

TIDE 25 @ 2018 BORDA SOUTH ASIA

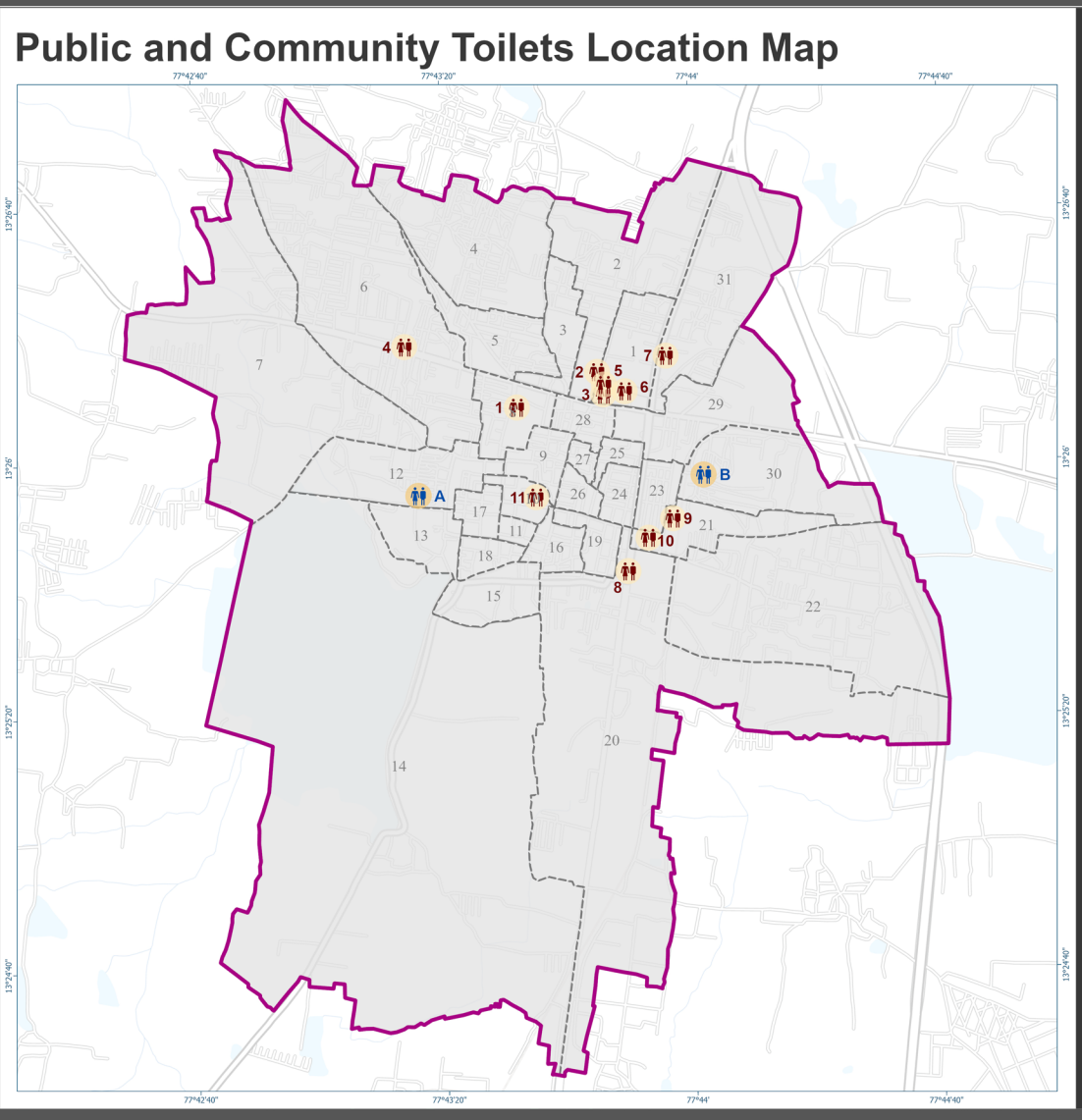
Developed by TIDE under IUWM project in collaboration with Chikkaballapur Municipality, Oct 2021

Scale:

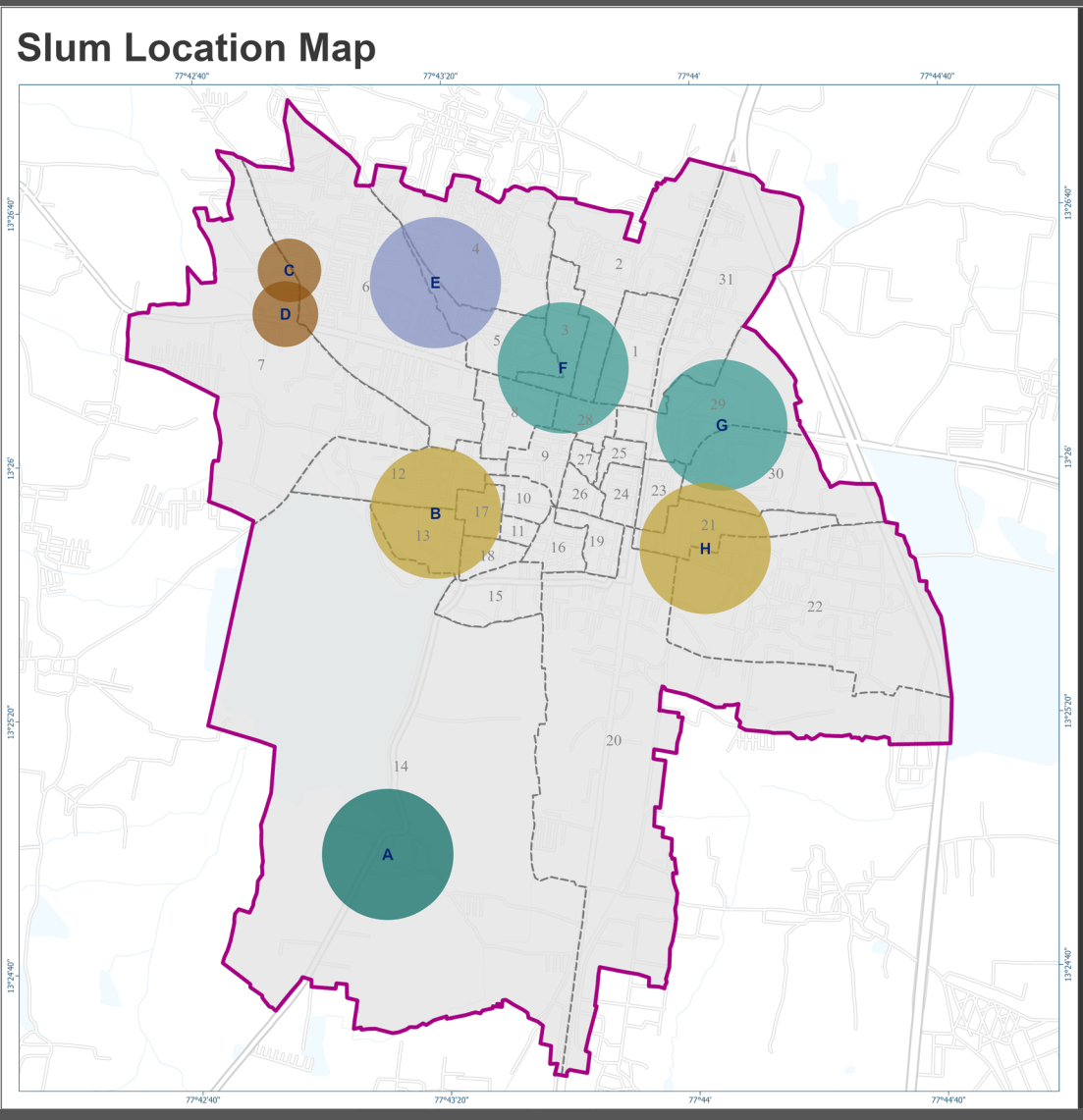
0 0.25 0.5 1 1.5 km

N

Public & Community Toilets Location Map



Slum Location Map



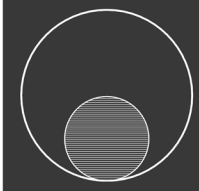
Legend

City Boundary

Wards

Slum Population

- 850 - 1000
- 1001 - 2700
- 2701 - 3200
- 3201 - 3800
- 3801 - 4100



Slum Details

ID	Slum Name	Ward	Population
A	Kandvara	14	4100
B	Bapujinagar	13	2678
C	Gaganamidde	7	850
D	Nimkalkunte	7	890
E	Prashanthnager	5	2750
F	Dargamohalla	3	3800
G	Chamarajapete	29	3220
H	Shantinagar	21	2700

City Municipal Council, Chikkaballapur

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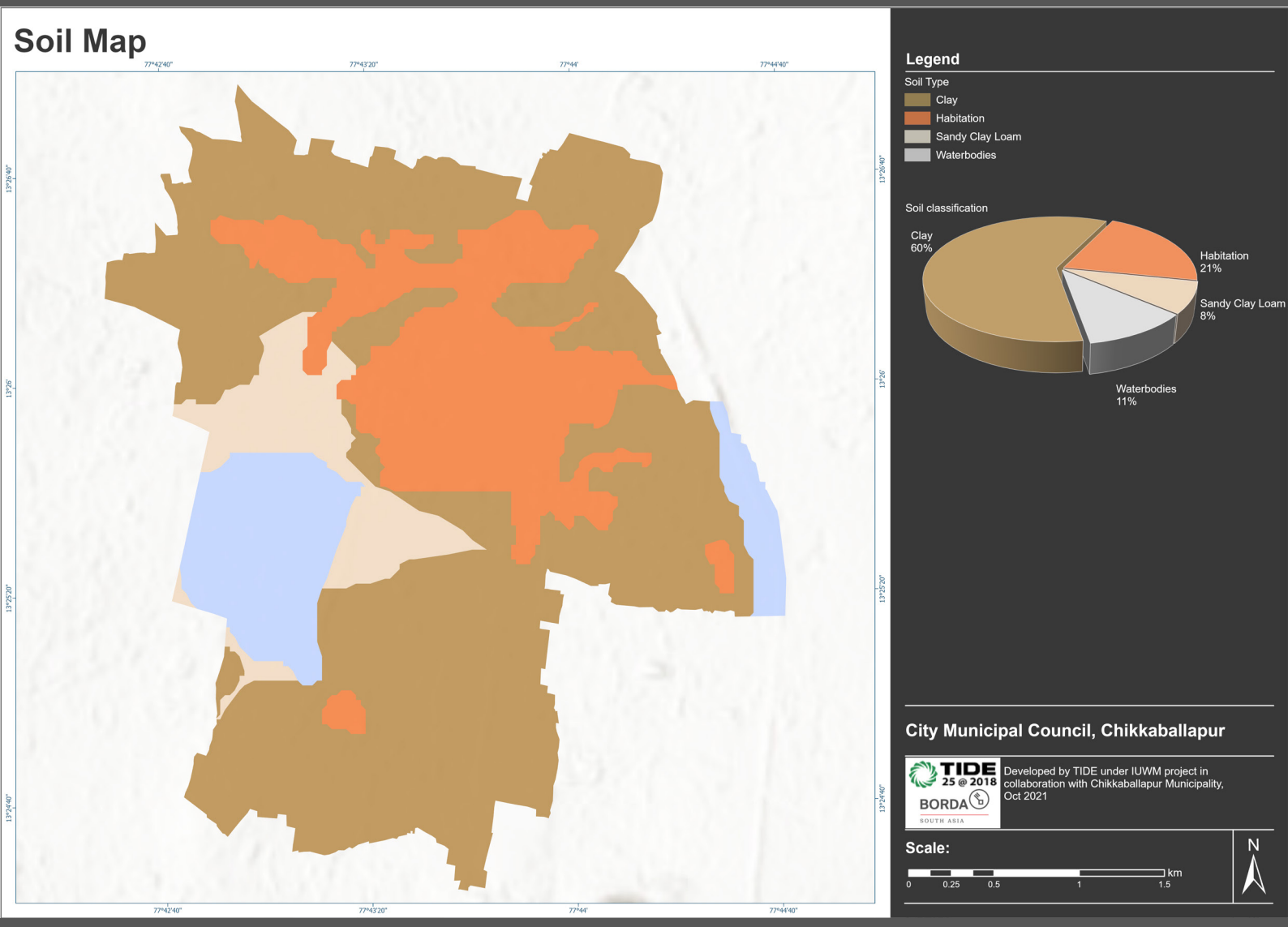
Scale:

0 0.25 0.5 1 1.5 km

N

Soil Map


Soil Map
77°42'40"
77°43'20"
77°44'
77°44'40"
13°26'40"
13°26'
13°25'20"
13°24'40"
Legend
Soil Type
Clay
Habitation
Sandy Clay Loam
Waterbodies
Soil classification
Clay
60%
Habitation
21%
Sandy Clay Loam
8%
Waterbodies
11%
City Municipal Council, Chikkaballapur
TIDE
25 @ 2018
BORDA
SOUTH ASIA
Developed by TIDE under IUWM project in collaboration with Chikkaballapur Municipality, Oct 2021
Scale:
0
0.25
0.5
1
1.5
km
N

WASH Infrastructure Location Map