

Bird view of the ULB

Name of the ULB : City Municipal Council , Doddaballapur.

Type of Municipal Body : City Municipal Council

Population (2001) :

0	0	7	1	6	0	6
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Present Population :

0	0	9	5	0	0	0
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Area : 15.5 Sq. km

Number of wards : 31number

Number of houses : 17,720 number

Total road length : 137kms

Waste generated : 38 tones per day

Data used for Action Plan

is updated as on :

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1. Introduction

Dodballapur is Taluk Head Quarters of Bangalore Rural District.It is located to the north east of B'lore city at a distance of 40 Kms.The city is on the state Highway B'lore –Hindupur Road.The city has Railway station and is on broad guage Train route from B'lore to Delhi.The city is in the jurisdiction of B'lore international Airport Devolopment authority.The airport is at a distance of 25 Km from the city.The city is popularly called as Silk City as lot of textile and small scale Silk industries are there in the city. It is considered as one of the Nirmal nagar town out of 57 towns in the state.KUIDFC has recommended this town to be developed under KMSF Project .

2. Objectives

1. To consolidate the information on the existing system of solid waste management.
2. To detail the action plan for solid waste management in conformity with the Integrated State Policy on solid waste management and the MSW rules 2000.
3. To provide a document, which would be used for, procurement of equipment and services for implementation of the integrated solid waste management system and provide a baseline for all future plans for solid waste management for the city.

3. Project Methodology

1 A template for the data collection from Doddaballapur CMC was prepared. the data was collected from the health, administrative, Engineering and accounts section. A study was done to know the perception of the staff working in health department. Frequent field visits were done to check the present status of SWM.

2.Preparation of Action Plan involved following steps.

- a) Study of MSW rules 2000.
- b) Referred SWM State Policy prepared by DMA & KUIDFC for preparing the action Plan.
- c) Proposed a feasible SWM system including finance and institutional arrangements for Doddaballapur CMC.

3. Discussion has been held with the self groups to assess their interest and acceptability to the proposals.

4. This document gives details plans for the Solid Waste Management in Doddaballapur CMC. The understanding and knowledge in the Municipality has been used to draw up the details.

4. Profile of Doddaballapur

Date of formation of the Municipal Body:

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Action Plan for solid Waste Management City Municipal Council ,Doddaballapur

Doddaballapur CMC has formed on 22nd jan 1996 under section 9 of the Karnataka Municipality Act 1964, by clubbing Doddaballapur with surrounding villages. Under section 9 of the Karnataka Municipalities Act 1964 (Karnataka Municipality Act 22) the Town Municipal Council Doddaballapur is Converted to City Municipal Council on 1st April 1996. The CMC has 31 wards among which 31 Councilors are elected.

Table1: Salient feature of the City Municipal Council, Doddaballapur. 

Population (Present)	95,000 Number
Area spread	15.5 Sq.Km
Connectivity from nearest major center	Road: 40km (Bangalore to Hindupur Road) Rail: 35 km(appoximately) Doddaballapur Air : 32 km Sea: 400km
Growth potential	* Garments Industries. * Small-scale industries.
Main tourist spot	1) Sri.Ghati Subramanya Temple, 14 km from Doddaballapur 2) Devanahalli International Air Port , 20 km from Doddaballapur 3) Nandi Hill Station 18 km, from Doddaballapur
Annual Rainfall	849.mm (Average)
Temperature	Min : 12°C Max: 37°C

Action Plan for solid Waste Management City Municipal Council ,Doddaballapur

Ward No	Ward Name	Population (a)	Area (Ha) (b)	Households		Density of population (persons per Ha) (a/b)	Shop	Choultry	Hotel	Market		Hospital and Clinics	Temple	Drain length (Km)	Road length	Dustbins		
				Non Slum	Slum /BP /L					Veg	Non veg					A	B	C
1	Someswara Extension	3103	132.82	855	----	23	13	4	1	1	--	2	19.00	10.00	2	1	---	
2	Gangadhara pura	5455	50.76	1192	96	107	17	--	2	--	--	3	24.50	12.79	4	1	---	
3	D'Cross (Muthsandra)	1804	179.94	448	31	10	41	1	5	--	7	3	15.40	8.00	4	1	---	
4	Vinayakanagara	1028	21.95	277	181	47	20	--	4	--	2	3	5.90	3.00	2	1	---	
5	Siddanayakana halli	2501	182.68	473	128	14	32	1	---	--	--	5	10.00	5.27	3	1	---	
6	Khasbagh (Muttur)	4747	226.30	741	485	21	45	2	1	--	2	6	26.00	13.80	2	1	--	
7	Darga Pura	1138	157.42	156	155	7	10	--	4	--	1	2	12.00	6.12	2	1	--	
8	Venkatarama naswamy Temple	1899	56.82	480	--	33	15	--	---	--	--	3	5.00	2.60	3	1	--	
9	Sanjayanagara	4747	32.32	650	565	147	20	3	---	--	--	1	19.00	9.77	3	1	--	
10	Veerabhadra napalya	4092	7.80	442	585	524	10	--	---	--	2	2	6.00	3.20	4	1	--	
11	Karenahalli	5180	77.01	1292	89	67	30	1	---	--	8	3	18.00	10.00	3	1	--	
12	Kanakadasa nagara	2621	10.74	647	---	244	15	1	---	--	--	3	10.10	5.32	5	1	1	

Table 3: List of declared and undeclared slums in the ULB.

Ward Number	Name of the slum	Type	House holds	Population
2	Roojipura	Declared	96	470
4	Vinayakanagar	---"---	85	415
5	Siddenayakanahally	---"---	128	623
6	Muttur	---"---	485	2425
7	Darghapura	---"---	155	765
9	Sanjayanagar	---"---	565	2725
10	Veerabhadranapalya	---"---	585	2430
22	Sweeper colony	---"---	55	260
26	Sweeper colony	---"---	25	126
29	Kacheripalya	---"---	450	2130
31	Kacheripalya	---"---	285	1380
3	Mutsandra	Identified	31	170
11	Karenahalli	identified	89	425
		Total	3032	13,919

5. Population Growth and Density

Total Area of the city or town : 15.5 Sq. km

Total population residing in the city or town: 95,000 no's

Floating population: 10000 no's (Approximately)

Doddaballapur CMC area mainly is an Small Scale industrial area with Commercial establishments. The city has many number of silk looms.

Table 4: Population growth

in the ULB 

Census year	Population (numbers) (a)	Area (sq.Km) (b)	Gross Density (Persons / sq.Km) (a/b)
1991	54609		
2001	71501	15.5	4931
Present year's population	95000	15.5	5862
2010	1,12,860	15.5	7281
2014	1,34,078	15.5	8650

6. Socio Economic Characteristic

Doddaballapur is generally a residential area with low industrial and commercial activities. This CMC has gained importance due to upcoming Big garments industries and international airport at Devanahalli. This CMC has Major educational institutes like R.L.Jalappa institution of technology. The famous temple Ghati Subramanya is at a distance of 20 km from DBpur and the famous Nandi Hill station is 18 kms from this town. Most of the pilgrimates and tourists visit this place to get transport facilities. People of this town were mainly depends on manufacturing silk and other garments using power looms. There is lot of

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Source for the data: CMC

small villages closely surrounding the town .people of this villages come to this town regularly for their commercial activities leads to more crowd in vegetable market and other commercial places

Table 5: Land use pattern

Total Households	17,720nos.
Commercial Establishment	1149 nos
Choultries	23
Temples	76
Slums	Declared: 11 Undeclared: 2.

7. Credibility Building phase of Nirmala Nagara Yojane

Under Credibility building phase of Nirmala Nagara Yojane,

- Number of Awareness programme conducted for general community:2 number
- Number of Trainings programmes/workshops conducted for internal municipal Staff :1
- Number of workshops conducted for elected representatives

Table 6: Number of groups identified under SJSRY Scheme.

Number of					
NGOs	RWA	Stree Shakthi	TCG	RGYSS	If any other (please specify)
10	--	20	54	--	No

In Doddaballapur CMC Complaint Register is maintained to record the complaints of SWM. As soon as the complaint is received, the concerned health staff will be informed through the wireless or phone and the complaints will be attended with in 24 hours.

Details I: Present Solid Waste Management System

8. Present scenario of Solid Waste Management Status

The Major components of Solid Waste Management are:

1. Composition of municipal solid waste
2. Participation of stakeholders
3. Source Segregation
4. Primary Collection
5. Secondary Storage
6. Secondary Transportation
7. Processing and Disposal
8. Problems faced by the ULB during implementation of present SWM system in the city.

o Type of Waste generated

Total quantity of waste generated in a day : 25 tonnes per day.

Table 7: Quantification of solid waste transported in the city or town – based on atleast one week cycle

Vehicle type	Vehicle numbers	Number of trips in a day							Average Quantity of Waste Carried Per trip in tons	Total waste Transported by the vehicle	
		Sun	Mon	Tue	Wed	Thur	Fri	Sat			
Tractor-Trailer 1	KA 04 – 7347	2	3	3	3	2	3	3	2	38	
Tractor-Trailer 2	KA-04-1905	2	3	3	3	2	3	3	2	38	
Tractor-Trailer 3	KA-04-8030	2	3	3	3	2	3	3	2	38	
Tractor-Trailer 4	KA-04-3433	2	3	3	3	2	3	3	2	38	
<i>Total</i>		152									
<i>Average waste transported per day</i>		(152 / 7) =21.70 tons									

Estimation of source wise Waste generation per day

Table 8: Estimation of source wise waste generation in a day

Sno	Type of Waste Generator	Total number	Unit quantity of waste generated by type of waste generators	Total quantity of waste generated per day in kgs
1	Non-Slum Households	14688	1.2	17626
2	Slum/BPL Households	3032	0.8	2,426
3	Commercial shops	1149	1.5	1,724
4	Major hotels and resorts	4	50	200
5	Small Hotels	24	10	240
6	Markets	02	2,000	4,000
7	Choultries	24	$[24 * 150 * 300 * 5 * 0.25] / 365 = 3,700$	
8	Hostels	03	100	300
9	Institutions	24	1	24
10	Boarding and lodging centers	---	---	---
11	Vegetable shops	Included in	Commercial	shops
12	Meat shops/ slaughter houses	30	7	210
13	Wet waste from medical centers	13	6	78
14	Municipal waste from industries	--	--	--
15	Theatres	7	10	70
16	Religious places.	76	2	152
17	Apartments	--	--	--
Total				30373
Construction waste		1	1.0	1,000
Waste from floating population		10,000	0.1	1,000
street sweeping waste		56	100	5,600
Total Waste Generated				38,349

Calculation of waste as per generation rate

Present population of the city/ town (a)	Waste generation/ day/capita (b)	Total waste generated per day in TPD (a * b)
95000	0.4	34 tonnes

Composition of waste generated:

Organic Waste: 24.92 tonnes per day *

Inorganic Waste: 10.2 tonnes per day *

Recyclables: 2.5 tonnes per day *

Household hazardous waste: 0.7 tonnes per day (Considering 20 gms per household per day)

* The waste generation from industries & hospitals is not included as most of them have their own system of Solid waste handling.

o Participation of Contractors & their Performance

Total number of wards: 31 number

Number of wards outsourced: Nil

Number of wards managed by the ULB: 31 number

List of SWM activities that are outsourced: Nil.

o Segregation

Segregation is not followed in Doddaballapur CMC, as there is no separate collection of segregated waste.

o Primary collection

Total quantity of waste collected in each day appx. 1 tonnes per day in one ward (ward no:13) .The collection is done by cmc itself .no user fee is collected.

Type of primary collection vehicle available:

Type: Auto tipper Number: Nil

Type: Pushcart Number: Nil

Type: Tricycle Number: 1 no.

Type (if any other, then specify the type and its number) Number : Nil

User charges collected per month: Nil

Community Bin System for Primary collection of Waste

Presently the waste is dumped in a identified place by generators, as most of the bins have been removed, which is transported by the vehicles to the dumping area. The left over brick wall/concrete bins are cleaned regularly.

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Source for the data: CMC

Total number of bins that were located in the CMC area : 145

Type A: 86no's

Type B: 40no's

Type C: 09no's

In Doddaballapur CMC the Primary collection earlier was done mainly through community bin system. One RCC bin is located per point (uncovered) with 60-80kgs carrying capacity: at every 200m in highly populated area and 400 m in medium and low populated areas however placement of the bins in all the wards are not exactly to the specifications given above. In some places, the bins are placed randomly according to the convenience of the residents.

Bins were classified as

Type A- Daily cleaning frequency.

Type B- Cleaning frequency is 4 times per week

Type C- cleaning frequency is once in a week.

Under Nirmala nagara Yojane, all the bins were labeled with their type and clearance days, Bins that area located in highly populated areas with high commercial activities were cleaned daily. In other low activity areas, the bins were cleared as they are filled. There is no separate waste storage system at bulk generating areas like choultries, hotels and canteens, and apartments. Some of the Hotels and restaurants have their own arrangements for the transportation of their wastes, since they give their waste to the piggeries.

○ Street Sweeping

Street sweeping activity is done presently by the CMC staff.

The road details are attached in the Annexure I.

▪ Desiltation of Roadside drains

Frequency of desilting the road side drains: 1 time per month

Frequency of desilting major storm water drain. 1 time per year

1. Sewers: 250 kms

Process adopted for desilting: The Road side drains are cleaned regularly in the CMC limits. Raw sewage is flowing in most of the roadside drains in most of the wards, which are cleaned every day as in the city. The silt removed from the drains is cleared next day. The silt is carried to dumping along with other waste.

2. Major storm water drains: 12kms

Process adopted of desilting : The Storm water drains and sewage drains are combined. Huge drains are cleaned once in a year by engineering section.

(The silt removed from the drains is cleared after 2-3 days. The silt is carried to dumping along with other waste.

o Secondary Storage

There is no secondary storage containers. The waste from primary collection/ dumped temporary locations/ brick/concrete bins is directly carried to the dumping site by the CMC's vehicles.

o Transportation

Quantity of waste transported per day : 21.7 Tonnes per day.

Average lead to the landfill site : 10 Kms

Types of vehicular fleet available with the ULB:

Sl. No.	Type of vehicle & Regn.No.	Year of purchase / contract vehicle	Carrying capacity (Tons)	No.of Trips (No.)	Total quantity transported (Tons)	Condition of the vehicle
01	Tractor trailer KA-04- 7347	Feb- 1996	2	2/3	6	good
02	Tractor trailer KA-04- 1905	May-1999	2	2/3	6	good
03	Tractor trailer KA-04- 3433	Dec-2000	2	2/3	6	good
04	Tractor trailer KA-04 – 8030	Sep-2003	2	2/3	6	good
Total					24	

Number of trips each vehicles does to the disposal site daily : 2/3 . 24 tonnes of waste is transported to the disposal point by the CMC (tractor for SWM with covered mesh) .The CMC has deputed 4 labours as loaders to the each tractor ..

○ Processing and Disposal of waste

Disposal method for waste collected from residential area: The primary waste collected in some places is dumped to the designated locations from where it is lifted by tractor / lorries to the dumping area, where in it is pushed to the low lying area of quarry pit & soil is covered every now & then.

Disposal Method for waste collected from street sweeping :Waste is carried along with residential waste & disposed in the same manner as above.

Disposal Method for desilted waste : The waste is carried separately if quantity is more & disposed in the same manner as above.

Number of sites used for the disposal of waste in the ULB : 01

Location of the site: Near Mallathahalli Village located on Doddaballapur- Chikballapur road.

All the wastes such as waste from residential area, waste from street sweeping, and desilted materials, are collected together and transported to the dumping site with out any processing.

Disposal site: The wastes from the CMC area are dumped disposal site at vaddarapalya village on Doddaballapur -Chikkaballapur road, out side CMC limits.According to the MSW Rules 2000, Bio medical waste should not be mixed with Municipal solid waste and the processing and disposal of healthcare waste should be taken care by hospital itself. Only the treated waste can be handed over to the landfill site. In Doddaballapur CMC area the hospital waste is taken care by hospital itself..

○ Problems faced by the ULB during the implementation of SWM

The problems faced by the CMC while executing the current solid waste management system are;

- 1) Poor performance of the Contractors in the area, which were out sourced.
- 2) Lack of supervisory staff from ULB.
- 3) Lack of awareness among the community.
- 4) Staff requires proper training on the solid waste handling.
- 5) Lack of residents' interest and support in some areas.
- 6) Lack of planning.

Table9: Deficit Analysis of present SWM System

Action	MSW Rules 2000	Present Status of SWM	Proposed SWM System
Segregation	<ul style="list-style-type: none"> Organizing awareness programmes Extent of segregation Promoting recycling or reuse of segregated materials. Phased programme to ensure community participation in waste segregation 	* Segregation is not followed	<ul style="list-style-type: none"> * Segregation of waste into wet, dry/ recyclables and household hazardous waste. ☐ Conducting awareness campaigns every month. ☐ Familiarizing people about the solid waste management system adopted in their ULB. ☐ Training program for retrievers regarding importance of segregation, proper handling of waste and its hazards due to improper handling. ☐ Littering of waste to be banned ☐ Levying fine who doesn't follow segregation. ☐ Houses should be levied fine for throwing the garbage in open space. ☐ conducting awareness campaigns for schools, colleges and institutes.
Primary collection	<ul style="list-style-type: none"> Door to door waste collection. Slums, bulk generators, Commercial and agricultural waste should have separate collection system. MSW should not mix with hospital and industrial waste No burning of waste Recycling biodegradable waste 	<i>Done by CMC in one ward.</i>	<ul style="list-style-type: none"> ☐ Door to door waste collection system by SHGs , contractors & ULB staff. ☐ Programmatic street sweeping ☐ Collection system for bulk generators through primary collection and construction waste by street sweeping contractors. ☐ User charges will be levied for households, commercial establishment and other waste generators as per the directions of UDD.
Secondary storage	<ul style="list-style-type: none"> Adequate number of covered storage bins Colorization of the bins: Bio-degradable wastes - green Recyclable wastes - white Other wastes – black. Avoid manual handling of waste 	☐ No secondary storage system	<ul style="list-style-type: none"> ☐ Closed metal secondary storage containers ☐ Manual handling of waste is minimized
Transportation	<ul style="list-style-type: none"> Covered transportation vehicles Avoid multiple handling of waste 	☐ 4 CMC tractor	<ul style="list-style-type: none"> *Fully covered transportation vehicles not there *Open dumping practice *Multiple handling done *Regular Clearance frequency not there

	<ul style="list-style-type: none"> No open dumping Regular clearance frequency 		
Processing:	<p>Recyclables should be recycled. Biodegradable waste has to be inertised and preferably reused after processing like compost etc. Inert should be land filled in a scientific manner.</p>	<p>☐ The waste is not treated.</p>	<p>The wet waste, dry waste & recyclables are dumped in temporary landfill site as against</p> <ul style="list-style-type: none"> ☐ The wet waste for preparing compost. ☐ The Dry waste for landfill and the recyclables to be sold by the pourakarmikas in the market.
Disposal	Sanitary landfill	Open dump.)	<p>The waste generated is dumped in to quarry pit as against the</p> <ul style="list-style-type: none"> ☐ Dry waste: sanitary landfill ☐ wet waste: composting ☐ Recyclables: sold in market.
Financial arrangement	-----	☐ No separate accounting for SWM.	☐ The expenditure under SWM head should be maintained separately.
Institutional arrangement	-----	☐ The supervising is done by the Health department of the CMC.	☐ Monitoring and management: Ward Committees, RWAs and SHGs, which all together will be monitored by the CMC.

Details II: Proposed Solid Waste Management Action Plan

Activity	Proposed Action Plan	Activities that ULB can take up	Activities that has to be privatized
Creating awareness among the community and training to the SHGs	Lead NGO has to be identified for awareness creation	Tender has to be called Design of the activities Periodical review Monitoring.	IEC activity is to be out sourced.
Street Sweeping includes <ul style="list-style-type: none"> • clearance of dry waste • clearance of waste from litterbins Street sweeping along with roadside drain cleaning	Total Road length: 137 kms Type A: 34 kms Type B: 39.06 kms Type C: 40 kms Type D: 24.23 To be maintained by ULB- 21 wards To be Contracted out in 1 packages (10 wards).	Supervision of contracted work and maintenance of wards 2, 8, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31. Type A : 24.8 kms Type B: 23.4 kms Type C: 12.29 kms.	Total Road length: 50 kms Type A: 8.2kms Type B: 15.55 kms Type C: 27.6kms Number of packages to be outsourced: 1 no. Street sweeping Contract Doc -1
Debris clearance	The Debris will be collected by the contractor.	Supervision of contracted work	Sweeping of street footpath and pavements cleaning of road drains, collections of construction debris from its sources and transportation of same to the designated location and removal of dead animals and transportation of designated location.
Door to door waste collection in non slum households	Total number of non-slum households: 14638. Number of Auto Tipper required: 03 nos Number of tricycle required: 15 nos Number of Pushcarts required: 46 nos.	Supervision of contracted work / work carried out by SHGs' and maintenance of the work carried by CMC	Contractors & self help group primary collection Doc-3 & Primary collection Doc -1
Waste Collection In Bulk Generating Area	As it is scattered done along with Primary collection. Hotels and choultry wastes are collected by CMC. One tractor trailer will be deployed to the work.	Supervision of contracted work & also work carried out by SHGs.	Contractors & self help group primary collection Doc-3 & Primary collection Doc -1
Waste Collection in Slum Area	Collection Plan: To be done by ULB PKs' Total number of slum households: 3032 nos. Number of Pushcarts required: 5 nos. Number of 40 ltrs. : HDPE bins required: 160 nos. Number of groups required for slum waste collection = 10 nos.	All the slum & BPL families are maintained by ULB PKs'	Nil

Secondary Storage Container	Total wet waste generated =21.4TPD Total number of secondary storage containers required: 3.5 m ³ : 10 no's. 4 m ³ : 9 no's. 7 m ³ :Nil	-	-
Secondary Transportation of Wet Waste	The transportation is through Dumper placers Average lead = 18 kms No. of dumper placer required : 2 no. Number of hydraulic trailer required: Nil	The vehicle will be provided by ULB	Operation & maintenance of dumper placer as to be out sourced (Secondary collection & transportation of MSW ,tools equipment & vehicle provided by ULB) Secondary Collection Doc-1
Transportation of Street Sweeping Waste and Debris	To be contracted one package that will be maintained by contractor. Details of ULBs vehicular fleet for the work ; Tractors: 2 If others, specify the type and numbers:Nil	supervision of contracted work and Maintenance of the rest of the ward..	Street sweeping Doc -
Processing and disposal	Area for landfill unit: 15.2 Acres. Type of treatment proposed for wet waste: aerobic composting/ anaerobic composting / vermicomposting Type of landfill site = Engineered land fill site.	<ul style="list-style-type: none"> • Demarcation of boundary • Purchase of land • Estimation for laying the approach road • Sanitary landfill Action to be taken	Construction and operation of processing of landfill site on BOT basis

1. Conducting awareness among the community

The ULB's action to conduct awareness among the following target groups which is being explained below:

General Community: Creating awareness in the community by circulating hand outs, street plays, door to door canvassing, processions, audio visual programmes, lectures etc. through the NGO appointed for the Information, Education & Communication activity of SWM.

Schools: Creating awareness by educating the children, Audio visual programmes, lectures, taking processions etc through the NGO appointed for the Information, Education & Communication activity of SWM.

Institutions: Creating awareness by educating through Audio visual programmes, lectures etc through the NGO appointed for the Information, Education & Communication activity of SWM.

Pourakarmikas: Training/ educating the personnel through the NGO appointed for the Information, Education & Communication activity of SWM.

SWM Health Staff: Training/ educating the personnel through the NGO appointed for the Information, Education & Communication activity of SWM.

Contractors: Training/ educating the contractors/personnel through the NGO appointed for the Information, Education & Communication activity of SWM.

Elected representatives: Training/ educating the personnel through the NGO appointed for the Information, Education & Communication activity of SWM.

Any other specific targets: Industries/Hospitals/Commercial shops: Training/ educating the contractors/personnel through the NGO appointed for the Information, Education & Communication activity of SWM.

2. Segregation

The waste has to be segregated into two types:

Wet waste: food waste, decomposable waste, other organic waste etc.

Dry waste includes recyclables: paper, plastics, rubber, wood, other inorganic waste etc.

3. Primary collection

The primary waste collection is to be taken under two heads:

1. Street sweeping
2. Door to door waste collection

Table 11: Classification of waste generators and primary collection strategy.

Sl. no.	Waste generator	Number	Primary waste collection strategy
1	Residential households		
a	Slum / BPL households	3032 Households	By using HDPE Bins of 40 ltrs capacity & using 5 push carts Collection by ULB PKs' in 5 groups.
b	Non slum households	14688 Households	SHG : 14688 Households Number of Pushcarts required: 46 nos. Number of AT-03 Number of Tricycle-15
2	Small waste generators		
a	Commercial establishment	Shops: 1149 Vegetable shops: Included in shops	To be collected along with primary collection by SHGs'/ Contractors
3	Bulk waste generators		
a	Major Hotels, markets, Choultryes .	Major Hotels/Restaurants: 4 Small Hotels:24 Choultryes: 23 Markets:2 Slaughter houses: Nil	To be collected by the CMC one vehicle will be deployed for the market waste and bulk generators.
4	Road side waste		
a	Street Sweeping	Total road length = 137kms A type = 34 kms B type =39.06 kms C type = 40 kms D type = 24.23kms	To be contracted in 1 packages and rest to be taken up by the CMC.
b	Debris clearance	Along with street sweeping maintained by ULB /contract .	
c	Carcass / dead animal removal	To be carried out by ULB Tractor .	
d	Open area cleaning	Done by ULB staff.	
5	Waste generators having their own facility for SWM		
a	Municipal solid waste from Institutions and companies	Number of institutions & companies : 24	Collected along with the primary Collection.
b	Municipal Solid Waste from medical centers	Number of Medical centres = 13	---

4. Street Sweeping details

Street Sweeping activity will include:

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Source for the data: CMC

- Cleaning of silt accumulation along kerbs, mesh and shoulder drain.
- Sweeping of roads, streets and foot path
- Uprooting of vegetation
- Cleaning and desilting open drains
- Clearance of litterbins

Table no 12: Zone Wise Street sweeping and roadside drain cleaning frequency as per the State Policy.

Type	Road length	DAYS						
		Sun	Mon	Tue	Wed	Thu	Fri	Sat
A	34							
B	39.06							
C	40	AC						
D	24.23	Once in fortnight						
Total	137.62							

AC – Area Cleaning as a task work

Table 13: Distribution of sewers in the City Municipal Council, Doddaballapur

Frequency of cleaning	Drain length to be cleaned (in Kms)
Cleaned along with the street sweeping schedule (Road side drain with or without sewage flow)	250.
Once a year (to be outsourced) (Huge Sewers and storm water drains)	12.

Requirement of workers for street sweeping:

Wards maintained by ULB

A type Road:

Total road length to be covered under Type A: 24.81 kms

Number of workers required for A type Roads =

$$\frac{\text{Total road length in Kms}}{0.75} = 34 \text{ workers}$$

B Type Roads:

Total road length to be covered under Type B: 24.51 kms

Number of workers required for B type Roads =

$$\frac{\text{Total road length in Kms} * 2}{6 * 0.75} = 11 \text{ workers}$$

C Type Roads:

Total road length to be covered under Type C: 13.29 kms

Number of workers required for C type Roads=

$$\frac{\text{Total road length in Kms} * 1}{6 * 1} = 3 \text{ workers}$$

Total workers requirement = 47 workers

Wards to be maintained by the contractors:

A type Road:

Total road length to be covered under Type A: 8.2 kms

Number of workers required for A type Roads =

$$\frac{\text{Total road length in Kms}}{0.75} = 11 \text{ workers}$$

B Type Roads:

Total road length to be covered under Type B: 15.55 kms

Number of workers required for B type Roads =

$$\frac{\text{Total road length in Kms} * 2}{7 * 0.75} = 6 \text{ workers}$$

2	5	0	7	0	6
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C Type Roads:

Total road length to be covered under Type C: 27.6 kms

Number of workers required for C type Roads=

$$\frac{\text{Total road length in Kms} * 1}{7 * 1} = 4 \text{ workers}$$

Total workers requirement = 21 workers

Total workers required= 47+21= 68

Slicing and Packing

Table 14: Package wise road distribution

Packages	Scope of work	Wards covered	Road Type	Road length (kms)	Workers requirement	Drain length (kms)
Block 1	<ul style="list-style-type: none"> ▪ Sweeping of roads, streets and path ▪ Cleaning of silt accumulation along kerbs, mesh and shoulder drain. ▪ Uprooting of vegetation ▪ Cleaning open drains ▪ Clearance of litterbins <p>Collections of construction debris from its sources and transportation of same to the designated location.</p>	2,8,22, 23,24,25, 26,27,28, 29,31	A type	12	16	50.00
			B type	7.6	04	
			C type	8.45	02	
			Total		22	
				28.05		
Block 2	--do--	10,12,14, 15,16,17, 18,19,20, 21	A type	12.81	17	58
			B type	13.50	07	
			C type	3.84	01	
			Total	30.15	25	
Package 3	--do--	1,3,4,5,6, 7,9,11,13 , 30	A type	8.2	11	101
			B type	15.55	6	
			C type	27.6	4	
			Total	51.35	21	

Annexure 2 is enclosed for road wise street sweeping schedules for each package or block.

Requirement of equipments for street sweeping

Equipments to be procured by the ULB for street sweeping. –Sweeping is carried out by ULB Staff only in Slum areas along with primary collection.

Table15: Requirement of tools and equipment.

Sno	Type of tools	Annual requirement of equipments			
		Actual (a)	Extra stock (b)	Frequency of replacement	Total (a) + (b)
1	Long Handle Broom	$(44 * 4)=176$	$(176 * 0.1)=18$	Once in 3 months	194
2	Metal Tray	$(44 * 2)=88$	$(88 * 0.1)=9$	Once in 6 months	97
3	Metal plate	$(44 * 2)=88$	$(88 * 0.1)=9$	Once in 6 months	97
4	Ghamela	$(44 * 1)=44$	$((44 * 0.1)=5$	Once in 5 years	49
5	Pushcarts	$(44 * 1)/2$	Nil	Once in 5 years	22

5. Door to door waste collection

Table 16: Boundaries demarcating the clusters for door to door waste collection by the SHGs.

Zones	Number of households/ commercial shops	
	Households	Shops
Zone 1 (Areas where door to door waste collection can be done through Auto Tipper)	3380	176
Zone 2 (Areas where door to door waste collection can be done through pushcart)	3402	206
Zone 3 (Areas where door to door waste collection can be done through tricycles)	7856	767

o Non-slum Households management

Number of non-slum households in the city = 14,688 households

Total number of command areas¹ = number of non-slum households/ 1000² = 14 nos.

Classification of households in 25: 75 ratio for auto tippers and pushcart/ tricycles:

Number of households to be served by the Auto tipper

$$= \text{total number of non-slum households} * 0.25$$

$$= 3672 \text{ households} *$$

Total number of households that has to be served by tricycle or pushcart or both in combination

$$= \text{total non-slum households} - \text{number of households to be served by the auto tippers}$$

$$= 11,016 \text{ households}$$

a) Auto tipper :

Number of households to be served by the Auto tipper = 3000

Number of auto tipper required = 3

b) Tricycle³/pushcart

Number of households to be served by tricycle = 3402

Number of tricycles required = number of households to be served by tricycles / 240
= 15 tricycles.

c) Pushcart⁴

Number of households to be served by pushcarts = 7856+380 households

Number of pushcarts required = number of households to be served by tricycles / 200
= 43+3=46 pushcarts

Number of SHGs who have come forward to manage the door to door waste collection using tricycles and pushcarts = 05 nos.

Total number of SHGs required for managing and monitoring waste collection from non-slum households = 13 nos

¹ Each command area requires one SHG as per the state policy.

² One command area can consist of 800 to 1200 households depending upon the ground situation.

³ As per the state policy, one tricycle can serve 240 households per day.

⁴ As per the state policy, one pushcart can serve 160-200 households per day.

Total SHGs identified for this task = 25 nos.

o Slum and BPL households management

Number of slum and BPL households in the city or town = 3032 households

a) Bring in system using HDPE bins¹

Number of slum households to be served by bring in system = 3032 households

Number of HDPE bins required = number of slum households/ 20
= 160 HDPE bins

Number of pushcarts required = (total number of HDPE bins/ 50)
= 5 pushcarts .

Number of ULB Pks/workers required = (total number of pushcarts required * 2)
= 10 workers

Table 17: Collection groups for slum households

Collection group number	Ward number	Name of the slum	Number of Households	HDPE bins required	No. of Collection Vehicle required	No. of Workers required	Remarks
1	2,4,2	BPL	261	13	1 P /C	2 PK	Isolated Area
2	5	BPL	250	12	1 P /C	2PK	Isolated Area
3	6,7	BPL	650	32	1 P /C	2 PK	Isolated Area
4	9 & 10	BPL	1150	58	1 P /C	2 PK	-----
5	29,31	Slum BPL	818	18	1 P /C	2 PK	-----
Total			3032	160	5 P/C	10 PKs	

Collection Group no. 1 & 2 Workers will be deployed for road cleaning , drainage cleaning .

¹ capacity of one HDPE bin is 40 lits (approximate can carry 15 kgs of waste)

Command area number	Ward No. (write the ward numbers included in command areas)	Primary collection of waste in		Type of primary collection vehicle	Management system
		Houses	Shops		
1	1	855	13	1AT	--
2	2	1068	17	5T	---
3	3,4,5	1198	93	AT+1P	--
4	6,7,8	1377	70	AT+2P	--
5	9,10	1092	30	4T	--
6	11	1209	30	6P	--
7	12,13	1264	60	7 P	--
8	14,15,16	1134	60	6 P	--
9	17,18,19	1123	111	6P	-
10	20,21	1242	159	6T	--
11	22,23,24,25	1418	204	8P	--
12	26,27,28,29	914	235	6 P	---
13	30,31	794	67	4 P	---
Total		14,688	1149	3AT, 15T, 46P	

Table 18: Command area wise details for door to door waste collection in non slum area through SHGs/RWAs/TCGs

6. Collection Plan

Table 19: Chart showing the collection plan for segregated Waste.

Type of waste	Frequency of Collection						
	Sun	Mon	Tue	Wed	Thur	Fri	Sat
Wet waste collection from residential area 7 am to 12 noon							
waste collection from the bulk generators 9am to 2pm							

7. Waste Collection from bulk generators

Number of markets = 2 nos.

Number of major hotels/ restaurants = 4 nos..

Number of hostels = 24 nos.

Number of commercial complex = NA nos.

Number of choultryies = 24nos.

Number of slaughter houses = Nil nos.

ULB collects bulk waste generators. one tractor is deployed for the collection. One Tractor will be deployed to collect the market waste .After Unloading the market waste tractor collects bulk waste. From the above mentioned generators.

8. Collection of construction and demolition waste

The debris are collected through ULB & contractor vehicles .

9. Contingency Plan for waste collection and dead animals/ carcass

The dead animals/carcass carrying will be done by ULB workers and vehicles.

10.Placement of Litterbins

Total number of litterbins required = 12 nos.

.

Table 20: The details of the litterbins are given in the table below

Number of litterbins	Locations details	Clearance method
01	City old Bus stop	Along with the street sweeping waste collection.
02	City new bus stop	Along with the street sweeping waste collection.
03	Taluk office circle.	Along with the street sweeping waste collection.
04	CMC office.	Along with the street sweeping waste collection.
05	D'cross circle.	Along with the street sweeping waste collection.
06	Railway station.	Along with the street sweeping waste collection.
07	Town hall	Along with the street sweeping waste collection.
08	City old bus stop circle.	Along with the street sweeping waste collection.
09	IBcircle	Along with the street sweeping waste collection.
10	Rangappa circle	Along with the street sweeping waste collection.
11	school	Along with the street sweeping waste collection.
12	Temple	Along with the street sweeping waste collection.

11. Secondary Storage

Estimation of source wise wet waste¹ generation that has to be stored in the secondary storage containers

Table 21: Estimation of wet waste generation in a day

Sno	Type of Waste Generator	Total number	Quantity of waste generated per unit in kgs	Total quantity of wet waste generated per day in kg
1	Non-Slum Households	14,688	1.2	17,626
2	Slum Households	3032	0.8	2,426
3	Commercial shops	1149	1.5	1,724
4	Major hotels and resorts	4	50	200
5	Small Hotels	24	10	240
7	Choultries	24	[24 * 150 * 300 * 5 * 0.25] / 365 = 3,700	
8	Hostels	03	100	300
9	Institutions	24	1	25
10	Meat shops/ slaughter houses	30	7	210
11	Wet waste from medical centers	13	6	78
12	Municipal waste from industries	--	--	--
13	Theatres	7	10	70
14	Religious places.	76	2	152
Total				26,751

Total waste generated = 26751 tonnes

Total quantity of wet waste generated = 26751 * 0.65 = 17.38 tonnes per day

If 25% extra is added to the total wet waste

$$= (\text{Quantity of wet waste} * 1.25) \\ = 21.72 \text{ tonnes per day (say value is A)}$$

3 and 4.5 cum containers is calculated in 40:60 ratio

Total number of 3 m³ containers required for wet waste storage = A / 1.5
= 8 nos

Total number of 4.5 m³ containers required for wet waste storage = A / (3)
= 7.nos

¹ Include all the sources from which door to door waste collection is being proposed. Delete the bulk waste generators if the collection is proposed for outsourcing.

12. Transportation of waste

Total number of containers to be carried by the secondary transportation vehicles
= containers

i.e.

3 m³: 10nos.

4.5 m³: 09nos.

Average lead¹ = 10 kms

Number of trips ² each vehicle can do = 4 trips

Number of Dumper placer= total containers / number of trips done by each vehicle
= 2 nos

Total requirement of workers³ for the transportation of waste = 4 number.

Table 22: Transport plan for vehicles

Type of Vehicles	Type of Waste carried	Number of containers cleared	No of Trips / Day	Requirement Of Workers
Dumper placer	Wet waste	16	4	4
Total vehicles required	Dumper Placer: 2 numbers			

¹ Average distance between the city/town and landfill area

² Each secondary transportation vehicle has to do a minimum of 5 trips in a day for an average of 15 kms lead.

³ Two workers are required in case of dumper placer and one for tractor-Placer

Deployment of existing ULB's vehicular fleet				
Type of Vehicle	Vehicle Number	Works assigned presently	Works allotted as per the proposed Action Plan	Requirement of workers (inclusive of driver)
Tractor trailer	KA-04- 7347	Collection of waste from bins.	Street sweeping waste collection.	--
Tractor trailer	KA-04- 1905	Collection of waste from bins	Street sweeping waste collection.	--
Tractor trailer	KA-04- 3433	Collection of waste from bins	Collection from market and bulk waste collection.	--
Tractor trailer	KA-04 - 8030	Collection of waste from bins	Door to door collection in ward 1,3,4,5,6,7	---

13. Processing and Disposal of waste

Details of landfill site:

- Name of the location : Near Mallathahalli Village
- Type of land (govt./forest/private) : Private.
- Extent : 15.2acres
- Survey number(s) : 49,51/1,52,54/2,61/2,62,63/1
- Minimum distance from the city : 7 kms
- Maximum distance from the city : 13 kms
- Average lead : 10 kms
- Type of landfill (Engineering/sanitary) : Engineering
- Present status (procured/approved/taken possession) : Taken possession

Wet waste: Land Fill Area for composting

Dry Waste: To Land Fill Area for Land filling

Recyclables: To be sold in the market.

Silt from drains : To Land Fill Area

Street Sweeping waste: To Land Fill Area

Constructional Waste To Land Fill Area .

Agricultural Waste: To Land Fill Area.

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Source for the data: CMC

Table 23: Daily Activity chart for SWM

Activities	6.30	7.30	8.30	9.30	11.30	12.30	2.30	4.30
	to 7.30	to 8.30	to 9.30	to 11.30	to 12.30	to 2.30	to 4.30	to 6.30
Part A – Collection and Transportation								
Street Sweeping								
Door to Door Collection from Residents								
Waste collection from slums								
Collection from Bulk Generators								
Transportation of wet waste								
Transportation of street sweeping waste								
Collection and transportation of constructional waste								
Cleaning of drains								
Part B – Processing and Disposal								
Processing and Disposal								

14. Institutional Arrangement

Presently the following staff is working under SWM. The table below gives the details of the work that they were allotted presently.

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Source for the data: CMC

Table 24: present working details of the SWM staff

Present staff for SWM	Number	Work allotted presently
Workers	87	Maintenance of ward CMC Office cleaning, Dead animal disposal & Gang work, Spraying.
Drivers	5	4Tractor and 1 tiller
Cleaners	nil	
Supervisors	0	--
Inspector	2	Supervision of SWM works, Death & birth certification, Trade & power licences.
Engineer	1	SWM woks monitoring

Table 25: Redeployment plan for ULB's manpower as per the proposed SWM plan.

Sno.	Sector	Workers	Driver
1	Absentees (<i>10% is considered as absentees</i>)	09	nil
2	Waste collection from slum and BPL households	10	
3	Task work 1		
	Peons	nil	
	Drivers	nil	01
	Supervisors	03	
	Aged and physically challenged(Acting as supervisors)	02	
	Any others (<i>Market</i>)	01	
	Sub Total	06	
4	Additional works		
	Maintenance of public toilets	02	
	Spraying	03	
	Sub Total	05	

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Source for the data: CMC

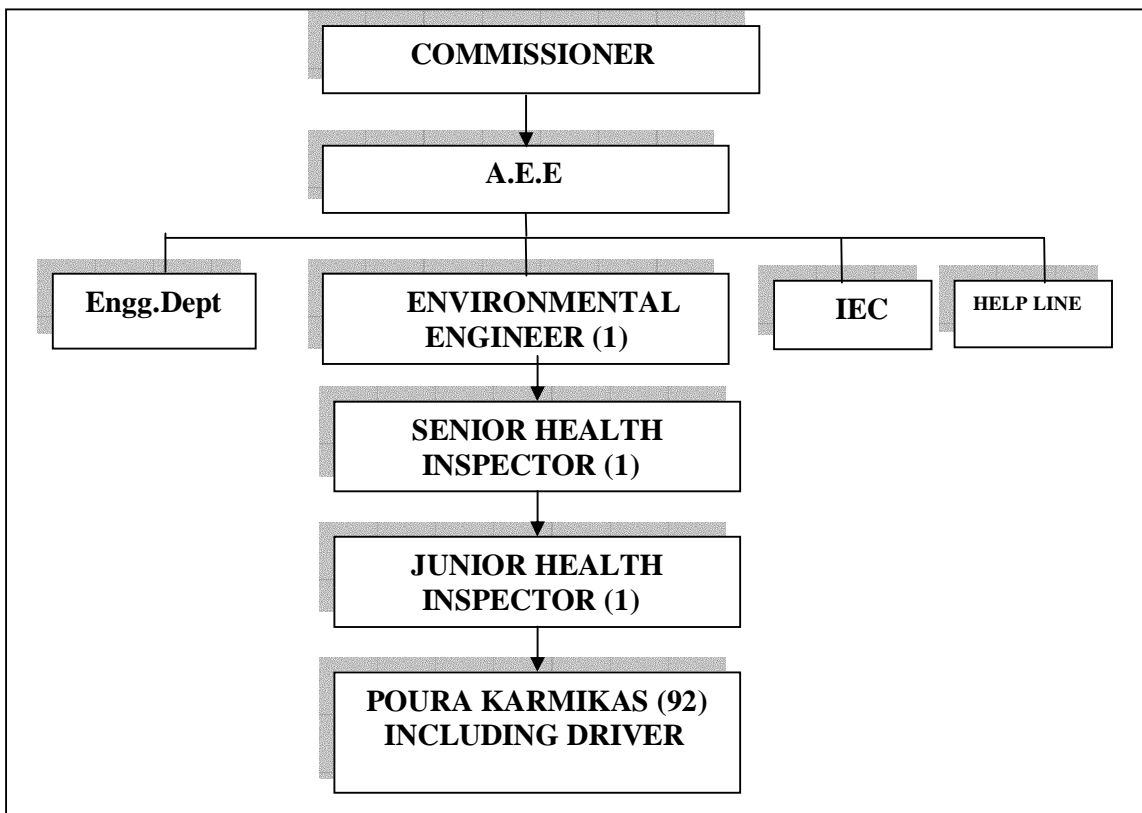
Sl.No	Sector	Workers	Drivers
5	Street sweeping	44	
6	Transportation of street sweeping waste	06	02
7	Collection of waste from bulk generators	03	01
8	Collection of waste from door to door.	02	01
9	Land fill site	02	
Total		87	05

Note: The above given details are for the ULB's staff

o Organisational Structure (SWM)

The Organization details and the flow of order is shown in the flow chart below.

Flow chart showing the hierarchy of solid waste management division:



Work allocation of the supervising team for swm:

Table 26: Allocation of work for the supervising staff.

SWM Staff in charge	Role
Environmental Engineer 1 number	Supervising the overall SWM activity
Health Inspectors: 2numbers	
Health Inspector- 1	Supervising works in 15 wards.(1 to 15)
Health Inspector -2	Supervising works in 16 wards(16 to 31).
Mestri:5 numbers	
Mestri-1	Supervision of street sweeping of block1
Mestri-2	Supervision of street sweeping in block 2
Mestri-3	Supervision of primary collection
Mestri-4	Supervision of transportation of waste.
Mestri-5	Supervision of transportation of waste

Arrangement of holidays for ULB's SWM staff:

For primary collection : Weekly two half days

For transportation and landfill unit : Weekly one day off on rotation basis.

In case of absence : Prior intimation leave – Alternate arrange ments

Common holidays for all the sectors : Alternative arrangement shall be planned well in advance for holidays.

15. Financial Arrangement

The financial requirements are proposed to be worked under two components.

1. Capital cost
2. Recurring cost.

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Source for the data: CMC

○ **Present expenditure on SWM Activities**

Table 27: Briefing the annual expenditure of the ULB from past 3 years for SWM.

Particulars	Expenditure on SWM head in Rupees					
	2003 -2004		2004-2005		2005-2006	
Salaries for SWM staff		5556109		6245630		8089000
Contracts		-----		----		----
Purchase of tools and equipments		4201060		300000		825000
O and M of the existing vehicles		723919		775000		875000
Total		6700188		7320630		9789000

Average recurring cost born by the ULB from past 3 years = 79,36,606

○ **Estimates of Capital cost for the proposed SWM Action Plan**

Table 28: The estimated capital cost as per the proposed SWM action Plan for CMC, Doddaballapur.

Sno	Particulars	Quantity	Rate (in Rs)	Amount (in Rs)
A	Street sweeping			
1	Pushcart	22	6500	1,43,000/-
	Sub Total			1,43,000/-
B	Primary collection			
1	Auto tipper (Subsidy)	3	1,05,000	3,15,000/-
2	Pushcarts	10	6,500	65,000/-
3	Pushcart (Subsidy)	46	3,250	1,49,500/-
4	Tricycles	--	14,700	---
5	Tricycle (Subsidy)	15	7,350	1,02,900/-

6	40 lit HDPE bins	160	450	72,000/-
	Sub Total			7,04,400/-
C	Litter bins of 100 lt capacity	12	3320	39,840/-
	Sub Total			
D	Secondary storage			
1	Containers of 3 cubic meter capacity	10	49,500	4,95,000/-
2	Containers of 4.5 cubic meter capacity	10	58,000	5,80,000/-
3	Containers of 7 cubic meter capacity	--	69,000	---
4	Construction of PCC platform, for placing containers on it	16	7,000	1,12,000/-
	Sub Total			11,87,000
E	Transportation			
1	Twin container Dumper Placer	2	10,40,000	20,80,000/-
2	Tractor placer	--	5,50,000	---
Grand Total				41,54,240/-

o **Estimates of Annual O and M Cost**

Table 29: The proposed annual recurring cost of SWM for the ULB.

Sno.	Particulars	Total amount (in Rupees)
Part A – O and M cost for collection and transportation of waste		
1	Salaries of the SWM staff	
A	Pourkarmikas/workers	78,00,000/-
B	Sanitary Inspectors	2,64,000/-
C	Environmental Engineer	1,44,000/-
2	Maintenance cost for equipments and vehicles owned by ULB	
A	Existing vehicles	9,60,000/-
B	Pushcarts @ Rs. 1000/year/pushcart	32,000/-
C	Tricycle @ Rs. 2000/tricycle/year	-----
3	Contracts	
A	O and M of secondary storage containers	25,000/-
B	Street Sweeping	12,00,000/-
4	Uniforms and badges for permanent workers @ Rs. 1000/year/worker	58,000/-
5	Purchase of phenol, brooms etc.	1,25,000/-
Sub Total 1		1,06,08,000
Part B – O and M cost for Processing and Disposal		
1	Tipping fee or cost incurred by ULB for processing and disposal of solid waste .	----
Sub Total 2		
Part C – purchase of tools and equipments		

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Source for the data: CMC

A	Long handle broom	29,100/-
B	Metal tray	19,400/-
C	Metal plate	5,820/-
D	Ghamela	7,350/-
Sub Total 3		61,570/-

16. Collection of User Charges

The user charges will be collected as per the Government Order.

Resolution letter of the Council meeting on SWM State Policy, Action Plan, user charges and Tender documents are attached.

Name of the Health Officer /
Environmental Engineer
/ Health Inspector

.....

Name of the Commissioner

.....

Signature

Signature with Seal

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Source for the data: CMC

Annexure I - Road wise details for street sweeping

Table 30 : Road wise details for street sweeping

Road Name	Road Length in m		
	Road ID	Sl. No	60-40ft and below 40ft

A-Type Road-Roads swept daily.

Kote road	A1	1	600M
Market road	A1 &A2	2	400M
Taluk Office road	A2&A3	3	900M
Dr.B.R.Ambedkar road	A3	4	300M
Dharga road	A4	5	600M
Vivekanadha road	A4 & A5	6	1000M
Kongadiyappa road	A6 &A7	7	1000M
Anjaneya Temple road	A7	8	500M
Dr. Venkatareddy House road	A8	9	300M
Court Front road		10	200M
B.M.Sri road	A8&A9 &A10	11	1200M
A.N.K road	A10	12	500M
Kithuru Rani Channamma road	A11	13	750M
Kankadasa road	A12	14	600M
Chaithanya Nagar Main road	A12& A13	15	500M
Kuchappa road	A13 & A14	16	950M
Therinabeedi road	A14&A15 & A16	17	1500M
Vittal Swamy Temple road	A16 & A17	18	500M
Hungy House road	A17	19	200M
Cinema road	A17	20	200M
K.P.T.C.L. to B.M. Sri road	A18	22	200M
B.M.Sri East road	A18	25	200M
Ward No.8 Old Karagada Temple Sow rounding road	A18 & A19	29	1000M
Surendrappa School road	A19 &A20	33	400M
Vishwaraiah Circle to Veerabhadra Hebbagilu , Pinjarabeedu road	A20 & A21	34	700M
Ward No.14 Old Karagada Temple road	A21	36	300M
Raghaveendra Temple road	A21	37	150M

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Source for the data: CMC

G.Sathyanarayan House road	A22	38	150M
Tubagerepet and others road	A22	39	250M
Puthuru Circle road	A22	40	125M
Veerabhadrapaper road	A22	41	250M
Advocate Sathyanarayan shasthri House road	A23	42	200M
Ward No.15 Other roads	A23	43	425M
Tank Road	A23 & A24	44	325M
Ward No.16 Gandhi Nagar main road	A24	45	225M
Gopal Cinema road	A24	46	200M
Dr: Murthy house road	A24	47	250M
Ward No.18 Smt. Prameela Mahadev House road	A25	48	160M
Hotel Raju House road	A25	49	200M
Kallupet main road	A25	50	200M
Ward No.18 Prathibha School Surroundings 6Nos roads	A25 & A26	51	610M
Ward No.20 Kamma Temple surroundings road	A26	52	500M
Ward No.21 Prathibha School roads	A27	53	500M
Ward No.22 Nagarhapet roads	A27 & A28 & A29	54	1200M
Ward No.23 Chikkapet roads	A29 & A30	55	1300M
Ward No.24 Ysharabedi roads	A31 & A32	56	1000M
Ward No.25 Yalepet roads	A32 & A33 & A34	57	1500M
Ward No.26 Kumbarapet roads	A34 & A35 & A36	58	1500M
Ward No.27 Maruthi nagar road	A36	59	250M
Ward No.28 Ganigarpet main road	A36	60	300M
Ward No.29 Vaddarapet main road	A37	61	300M
Ward No.29 Kacheripalya surroundings	A37 & A38	62	1300M

B-Type roads-Roads swept once in 3 days.

Lorry Manjunath House road	B1	1	450M
Sri.J.Rajeendra House road		2	350M
Smt.S.Rajalakshmi House road	B2	3	500M
Smt. Manjula putani House road	B2 &B3	4	350M
Ex-President Jagannath House road	B3	5	500M
Contractor Babu House road	B3	6	200M
P.S.I. crime House road	B4	7	350M
Health Inspector House road	B4	8	250M
Ward No.3			
Urdu School road	B5	9	500M
Arkavathi Badavane roads	B5 & B6	10	300M
Petrol bunk behind roads	B6	11	500M
Muthsandra old roads	B7	12	300M
Ward No.4			
Bhadranna House road	B7	13	250M
Sri.Venkateshwara Lodge road	B7	14	250M
Palav Ramu house road	B8	15	200M
Ward No.5			
Siddenayakanahalli & Colony road	B8 & B9	16	1000M
Thigaleebhagaythu roads	B9 & B10	17	1000M
Ward No.6			
Andradevangamandli Kalyanamantapa road	B11	18	300M
Maramma Temple road	B11	19	175M
Khasbhag roads	B11	20	425M
Contractor Babu House road	B12	21	100M
B.M. Sri road (Railway track Ashwath katte)	B12	22	200M
Ward No.7			
Annathi Vasathi gruha road	B12	23	175M
Chandrashekarapura main road	B12 & B13	24	700M
Dharghapura Colony surroundings road	B13	25	200M
Ward No.8			
Sri.Venkararamana swamy Temple street behind roads	B13 & B14	26	700M
Thippapura roads Ward No.13	B14	27	300M
Ward No.9			
Chiythanya nagar main North road	B15 & B16	28	1200M
Ward No.10			
Thimashetty gally surroundings road	B17 & B18	29	1200M
Lakshmi Temple Surrounding roads	B19 & B20	30	1200M
Ward No.11			
Ishlampura surrounding roads	B20.,B21,B22	31	1500M

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Source for the data: CMC

Raju Complex behind roads	B22	32	500M
Saraswathi surroundings roads	B23	33	500M
Ward No.12			
Mylaralingeswara Temple surrounding road	B23	34	200M
Peekala Narayanappa (Gummaghtta) House North road	B24	35	400M
Padmashali chathra surrounding road	B24 & B25	36	1300M
Ward No.13			
Ex-President Sri.B.G.L. Kanth's old house surrounding roads	B26	37	500M
Bhuvaneshwari nagar roads	B26 & B27	38	500M
Terinabeedi surrounding roads.	B27	39	300M
Ward No.16			
Anjaneya Temple Street and Gandhi nagar surroundings roads	B27	40	350M
Keshava Kut pice House roads	B28	41	250M
Dr: Murthy House roads	B28	42	100M
Ward No.17			
Lakshmi theater Surroundings 17 roads	B28 & B29	43	1100M
Ward No.19			
K.C. Nagarajappa House surroundings roads	B30	44	350M
Sahajananda Matta surroundings road	B30	45	550M
Ashwatha katte surroundings roads	B31	46	750M
Vidyanagar surroundings roads	B32	47	250M
Lakshmi Temple roads	B32	48	250M
Ward No.20			
K.C. Gowramma house surrounding roads	B32 & B33	49	950M
Hotel Shekarappa surroundings roads	B33 & B34	50	900M
Telephone Exchange Office surroundings roads	B34 & B35	51	1000M
Ward No.27			
Maruthi surrounding roads & sweepers colony roads.	B36 & B37	52	1100M
Ward No.28			
Deshadapet roads	B37	53	250M
Hulikallu Nataraju House surroundings roads	B37 & B38	54	600M
N. Nanjundaiiah road	B38	55	350M
Park South road	B39	56	250M
Ward No.29			
Ganigarapet surroundings roads	B39 & B40	57	900M

Vaddrapet surroundings roads	B40,B41,B42	58	900M
Ward No.30			
Shanthinagar surroundings roads	B42 & B43	59	1300M
Ward No.31			
Shanthinagar in block roads	B44 & B45	60	1300

C Type road-Roads swept once in a week

Sri.Kongadiyappa North road	C1	1	1000M
Ward No.1			
City Municipal Quarters roads	C2	2	700M
Taluk Panchayathi Office and Hostel roads	C2	3	300M
Arrack Contractor Rangaswamy House roads	C3	4	400M
Smt. Manjulaputani's House road	C3	5	600M
Engineer Muniraju House surroundings roads	C4	6	400M
Contractor Babu House surroundings roads	C4	7	300M
Lecturer Shashidhar House surroundings roads	C4	8	400M
Ward No.2			
Namini Councilor Shanthamma's House surroundings road	C5	9	550M
Ex-Vice President Narayanaswamy House surroundings roads	C5	10	600M
Mylaralingeswara swmy Temple surroundings roads	C6	11	1100M
City Municipal Street roads	C7 & C8	12	2000M
Councilor Mallikarjuna's House surroundings roads	C9	13	1100M
Ward No.3			
Pig matten Stalls roads	C10	14	200M
Jayaramaiah House surrounding road	C10	15	400M
P.W.D Contractor Ramaiah House surrounding roads	C10	16	400M
Remaining Streets of ward	C11	17	1000M
Ward No.4			
Mahaveer School near roads	C12	18	300M
Venkateshwara Lodge surrounding road	C12	19	500M
Palav Ramu House surrounding roads	C13	20	300M
Ward No.5			
Government School roads	C13	21	600M
Colony roads	C14	22	1000M
Ward No.:6			

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Source for the data: CMC

Sri,. Ramachandra's House roads-3 no's	C15	23	800M
Anganawadi School surrounding roads	C15 & C16	24	600M
Rest of roads in the ward.	C17-to C20	25	4000M
Ward No.7			
Ganapathi Temple Surrounding roads	C16 & C21	26	700M
Kempegowdanagar roads	C21 & C22	27	400M
Ward no:9			
Main road South surrounding road	C22 & C23	28	1200M
Sri.Venkataram Councilor's House surrounding road	C23& C24	29	1300M
Sanjainagarada colony surrounding road	C24 & C25	30	1200M
Ward No.11			
Sri.Kongadiyappa back side roads	C26	31	1000M
Surrounding roads of raju complex.	C27	32	500M
Saraswathi school surrounding roads.	C27	33	500M
Ward No.12			
Peekal Narayanappa Cross road	C28	34	900M
Mylaralinga swamy temple road	C29	35	800M
Ward No:13			
Bhuvanewari nagar roads	C30	36	600M
Kuchappa pet surrounding roads	C30	37	400M
Remaining roads of ward .	C31	38	1000M
Ward No.19			
Vidyanagar surroundings roads	C32	39	900M
Nagarajappa (Raj kamal Theater manager) House raod.	C32	40	250
Ward No.28			
Ganigarapet surrounding roads.	C33	41	1500

Annexure II – Road wise schedules for street sweeping

Road Id	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
A1	x	x	x	x	x	x
A2	x	x	x	x	x	x
A3	x	x	x	x	x	x
A4	x	x	x	x	x	x
A5	x	x	x	x	x	x
A6	x	x	x	x	x	x

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Source for the data: CMC

A7	x	x	x	x	x	x
A8	x	x	x	x	x	x
A9	x	x	x	x	x	x
A10	x	x	x	x	x	x
A11	x	x	x	x	x	x
A12	x	x	x	x	x	x
A13	x	x	x	x	x	x
A14	x	x	x	x	x	x
A15	x	x	x	x	x	x
A16	x	x	x	x	x	x
A17	x	x	x	x	x	x
A18	x	x	x	x	x	x
A19	x	x	x	x	x	x
A20	x	x	x	x	x	x
A21	x	x	x	x	x	x
A22	x	x	x	x	x	x
A23	x	x	x	x	x	x
A24	x	x	x	x	x	x
A25	x	x	x	x	x	x
A26	x	x	x	x	x	x
A27	x	x	x	x	x	x
A28	x	x	x	x	x	x
A28	x	x	x	x	x	x
A29	x	x	x	x	x	x
A30	x	x	x	x	x	x
A31	x	x	x	x	x	x
A32	x	x	x	x	x	x
A33	x	x	x	x	x	x
A34	x	x	x	x	x	x
A35	x	x	x	x	x	x
A36	x	x	x	x	x	x
A37	x	x	x	x	x	x
A38	x	x	x	x	x	x
B Type Road						
B1	x			x		
B2		x			x	
B3			x			x
B4	x			x		
B5		x			x	
B6			x			x
B7	x			x		
B8		x			x	
B9			x			x
B10	x			x		
B11		x			x	
B12			x			x

B13	x			x		
B14		x			x	
B15			x			x
B16	x			x		
B17		x			x	
B18			x			x
B19	x			x		
B20		x			x	
B21			x			x
B22	x			x		
B23		x			x	
B24			x			x
B25	x			x		
B26		x			x	
B27			x			x
B28	x			x		
B29		x			x	
B30			x			x
B31	x			x		
B32		x			x	
B33			x			x
B34	x			x		
B35		x			x	
B36			x			x
B37	x			x		
B38		x			x	
B39			x			x
B40	x			x		
B41		x			x	
B42			x			x
B43	x			x		
B44		x			x	
B45			x			x
C Type Road						
C1	x					
C2		x				
C3			x			
C4				x		
C5					x	
C6						x
C7	x					
C8		x				
C9			x			
C10				x		
C11					x	
C12						x

C13	x					
C14		x				
C15			x			
C16				x		
C17					x	
C18						x
C19	x					
C20		x				
C21			x			
C22				x		
C23					x	
C24						x
C25	x					
C26		x				
C27			x			
C28				x		
C29					x	
C30						x
C31	x					
C32		x				
C33			x			

Annexure IV – Estimation of all contractual works

Estimate for Outsourcing Street Sweeping activity.

Details of the ward :

Ward Number	Ward Name	Length of road to be swept daily : in Km	Length of the road to be swept 3 days once. :in Kms	Length of the road to be swept once in 7 days. :in Kms	Total length of the roads in the ward.:in kms.
01	Someshwara Extention.	0.00	2.00	3.00	5.00
03	Mutsandra	1.20	2.00	3.00	6.20
04	Rojipura	0.5	1.15	1.35	3.00
05	Siddanayakanahalli	0.75	2.00	0.00	2.75

06	Muttur	0.00	1.20	7.60	8.80
07	Dargapura	1.00	1.00	2.00	4.00
09	Sanjayanagar	1.5	1.2	7.00	9.7
11	Karenahalli	1.50	2.5	3.00	7.00
13	Negebeedi	0.75	1.50	2.50	4.75
30	ShantiNagar	0.60	2.00	0.00	2.60
	Total Length of Road :in Km	8.2	14.55	27.6	50.35

Details of the cost of the package.

Sl. no	Details of the work	Cost/month
01	Labour Requirement(22):	62,133/-
02	Convey Charges and loading and unloading charges	.11,550/-
03	Disposal of Debris	2,888/-
04	10% profit on Labour charge	6,213/-
05	5% Overhead Charges	4,140
	Total	86,924/-
06	2.1% IT on Over all cost	1826/-
	Over all cost of the package.	Rs.88,750