

## 1. Introduction:

Hospet City Municipal council is one of the Nirmal Nagar town situated in Bellary district and it is very near to Hampi World heritage Centre. Under Nirmal Nagar for Solid waste Management, the CMC has to prepare the Action plan as per SWM state policy prepared by GoK. Hospet city is one of mining Center in Karnataka. Mining activity is continuously going on surrounding the city. 40 % of the population is Slum population, most of population depending upon agricultural activity and mining activity. floating population is more due to world heritage centre Hampi and Tungabhadra reservoir. The town has both UDA development sites and revenue sites .

## 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 state policy on solid waste management and the MSW rules 2000.
3. To provide a document which would be used for immediate procurement of equipment and services for implementation of the solid waste management system and provide a baseline for all future plans for solid waste management for the city.

## 3. Project Methodology

The project Methodologies are

1. A template for the data Collection from Hospet CMC is prepared and the data is collected from health, administrative and accounts section, A study was done to know the perception of the staff working hearth department frequent field visit were done to check the present status of SWM.
2. Preparation of action plan involved following stage
  - 1 Study of SWM Rules 2000
  - 2 Referred SWM state policy prepared by DMA and KUIDFC for preparing the action plan.
  3. Prepared the rough action plan by Environmental Engineer of Hospet CMC.
  - 4 Proposed a feasible solid waste management system including finance and institutional arrangements for Hospet CMC.

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**4. Profile of**

**Hospet CMC**

**Year of formation of the Municipal Body:**

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Type of City or town: City Municipal Council

**Table 1:** Salient feature of the Hospet CMC



<b>Population(Present)</b>	164431 Number
<b>Area spread</b>	50.92 Sq.Km
<b>Connectivity</b>	Road: NH13 4.kms, NH63 1KM Rail: 3 kms Air: Bangalore.- 350.kms Sea: Mangalore:- 400 .kms
<b>Growth potential</b>	1) Private business 2) mining activity 3)Tourism Place 4) Industrial activity
<b>Main tourist spot</b>	1) Hampi 2) Tunga bhadra Reservoir
<b>Annual Rainfall</b>	604.2 .mm
<b>Temperature</b>	Min:...15 °C Max:...40 °C

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**Table 2: Ward wise details**

Ward No.	Population(a)	Area (sq km)	households		Density of population (persons per Ha) (a/b)	Shop	Choultry	Hotel	Industry	Market	Hospital and Clinics	Temple	Drain length (Km)	Road length	Dustbins		
			Non slum	Slum											A	B	C
1	4236	1.2	-	848	3530	29	-	5	1	4	5	4	8.0	6	6	2	9
2	4406	1.8	-	881	2447	21	1	-	-	-	-	3	2.0	3	2	3	3
3	3400	1	560	70	3400	29	1	5	-	1	3	3	8.0	4	6	12	5
4	4967	1.2	993	-	4139	281	2	4	-	-	3	2	6.3	7.9	8	8	4
5	5478	1.8	400	695	3043	37	3	4	-	-	5	5	9.0	3.3	8	5	6
6	5178	1.6	581	454	3236	36	4	-	-	-	3	2	10.0	2	4	7	2
7	6564	1.5	-	1312	4376	16	-	2	-	-	-	3	2.0	2	3	2	2
8	5214	2	-	1043	2607	12	-	8	01	-	-	3	2.0	2	4	8	6
9	4923	1.5	770	215	3282	28	1	-	-	-	-	5	10.0	8.6	5	4	2
10	3369	1	-	674	3369	61	-	2	-	-	-	4	2.6	2.25	8	5	6
11	3004	1.3	476	125	2310	22	1	3	-	-	-	5	3.0	3	7	7	6
12	4145	1.1	396	433	3768	25	-	8	-	-	3	2	4.0	3	6	4	4
13	4020	1	-	804	4020	26	-	10	-	-	1	1	2.0	3	4	3	2
14	5279	1.9	-	1056	2778	17	1	8	-	-	-	4	1.9	2	3	4	8
15	4861	0.9	912	50	5401	21	-	3	-	1	1	2	3.6	6.2	5	4	6
16	4912	1.0	870	112	4912	27	-	10	-	-	1	3	2.0	8	6	9	10
17	4129	0.7	253	573	5898	25	-	8	-	3	-	1	3.9	3	5	2	1
18	5474	0.7	707	388	7820	25	-	15	-	-	-	1	4.4	2	4	3	5

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Source for the data : CMC Hospet.

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Action Plan for Solid Waste Management *Hospet*

Ward No.	Populat ion(a)	Area (sq km)	households		Density of population (persons per Ha) (a/b)	Shop	Choul -tary	Hotel & Restaurant	Industry	Market	Hospital and Clinics	Temple	Drain length (Km)	Road length (Km)	Dustbins		
			Non slum	Slum											A	B	C
19	4720	0.5	944	-	9440	23	-	5	-	-	-	5	3.0	2.5	2	5	1
20	4591	0.8	582	516	5738	28	-	10	-	-	3	5	2.0	2.5	3	1	2
21	4605	0.9	501	420	5116	31	-	12	1	-	3	3	5.75	4	4	3	5
22	5756	2.8	1025	127	2055	33	-	20	-	-	-	4	4.0	11	4	3	2
23	4781	2.5	-	956	1912	15	-	10	-	-	2	2	3.0	2.5	5	3	5
24	4574	3	753	162	1524	40	-	30	6	-	-	5	8.0	3	3	3	4
25	6021	2.4	943	261	2508	20	-	6	1	-	-	4	5.2	3.5	4	4	2
26	3842	0.9	770	-	4268	18	-	10	-	-	1	6	4.0	4.25	10	5	6
27	5118	1.0	537	486	5118	35	-	15	1	-	-	6	2.5	3	8	7	5
28	5589	1.1	583	534	5080	45	1	20	5	-	-	3	3.5	9	10	10	5
29	7231	1.5	1446	-	4820	70	-	28	19	-	3	6	1.5	12	13	8	10
30	5068	2.5	1014	-	2027	28	-	8	-	-	-	4	2.9	5	3	1	2
31	5786	2.6	1000	158	2225	67	01	8	5	-	3	2	1.0	15	2	16	5
32	3125	1	481	144	3125	16	-	8	-	-	-	6	2.5	2	4	3	4
33	1435	0.5	287	-	2870	19	-	5	-	-	-	5	3.0	2.5	6	4	1
34	2808	0.9	467	96	3120	19	-	8	-	-	3	4	3.5	2	6	2	1
35	5822	2.5	493	671	2328	29	-	15	2	-	1	5	4.0	4	5	3	9
<b>Total</b>	<b>164431</b>	<b>50.92</b>	<b>19809</b>	<b>13078</b>	<b>133610</b>	<b>1281</b>	<b>16</b>	<b>336</b>	<b>42</b>	<b>9</b>	<b>46</b>	<b>150</b>	<b>144</b>	<b>160</b>	<b>146</b>	<b>173</b>	<b>156</b>

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Source for the data : CMC Hospet.

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**Table 3:** List of declared slums in the ULB

Ward number	Name of the slum	Type	Households	Population
1	Santhe bayalu	Declared	76	380
2	Mudlapur road	Declared	86	430
3	Gandhi nagar	Declared	70	350
5	Sri Ramulu park	Declared	91	455
6	Theosophical lodge North side, Theosophical lodge west side, Hampi Road, Sunnad Batti Area	Declared	600	3000
10	Prema Nagar, siddalingappa chowki, Gutti Tothappa	Declared	698	3490
11	Jabbal area	Declared	125	625
12	varakere, Pinjara honi, kajanagar	Declared	593	2965
16	Indira nagar	Declared	112	560
17	Cheluvadi keru	Declared	80	400
18	Rama Theater beside	Declared	48	240
21	Moorugi, Jagalakatti raya, Kumbar geri matta	Declared	522	2610
24	Mehaboob Nagar	Declared	162	810
25	Ambedkar Nagar	Declared	261	1305
26	Kotturwamy math area	Declared	142	710
28	chapparadalli (Slater hours )	Declared	191	955
32	Talavar keru	Declared	144	720
34	Dasara honi	Declared	96	480
<b>Sub Total 1</b>			4097	20485

**Table 3.1:** List of undeclared slums in the ULB

Ward number	Name of the slum	Type	Population	Houses
1	Govinda nagar, kurubara Oni, Kakara Oni, Gulera Oni	Undeclared	44905 population from undeclared slum houses	Around 8981 households are undeclared slums
2	88 mudlapura	Undeclared		
4	Kariyamma temple	Undeclared		
5	Railway station area, Sriramulu park area, Ranipet area	Undeclared		
6	Theosophical lodge, Theosophical lodge north part	Undeclared		
7	Vaddara Oni, Society area, Mastanamma colony, Harijana colony	Undeclared		
8	kondanayakanahalli	undeclared		
9	Mallamma gudi area	Undeclared		
10	Goulera hatti	Undeclared		
11	Vaddara Oni	Undeclared		
12	Banagar Oni	Undeclared		
13	Ganesha Temple infront, EV camp	Undeclared		
14	Dresses Camp	Undeclared		
15	Bhagat singh nagar, Harijankere	Undeclared		
16	Edga darga back side	Undeclared		
17	17 <sup>th</sup> ward	Undeclared		
18	Amaravathi road masjid backside, Navasandesh patrike office right side	Undeclared		
19	Goulere hatti	Undeclared		
22	Sanklapura village, Sanklapura tanda, Azad nagar, Panduranga colony, RTSNN colony, Ashraya colony	Undeclared		
23	23 <sup>rd</sup> ward	Undeclared		
24	Sirsinakallu area, Mehaboob nagar part II	Undeclared		
25	Jambunath kere, kanchigar pet.	Undeclared		
27	Chapparadalli area, koravara Oni, Anjaneya temple backside, petrol bunk backside	Undeclared		
28	Krishna lodge area	Undeclared		
29	Vaddra Oni, Markandeshwar temple back side	Undeclared		
30	Vankai camp	Undeclared		
31	Iltangi batte, prashanth nagar, BTR nagar, Ambedkar nagar	Undeclared		
32	Talvarkere garadi mane sourrounding, koravara Oni, Aravara Oni, Iddalimane Oni, Durgamma temple area	Undeclared		
33	Myasakere, Valmikimath area	Undeclared		
35	Eshwar nagar, lalbahadur shastri school area, Ukkadakere garadimane	Undeclared		
<b>Sub Total 2</b>			<b>44905</b>	<b>8981</b>
<b>Grand total</b>			<b>65390</b>	<b>13078</b>

### 5. Population Growth and Density

Total Area of the city or town: 50.92 Sq. km

Total population residing in the city or town: 1,64,431..no's

Floating population: 1000/day no's

Hospet CMC is very near to the Hampi and has Tungabhadra reservoir. So that Hospet is main tourist spot in Karnataka. So Floating population is more, Hospet CMC has 40 % Slum population.

**Table 4:** Population growth in the ULB



Census year	Population (numbers) (a)	Area (sq.Km) (b)	Gross Density (Persons / sq.Km) (a/b)
1981	96,864	28.00	3459
1991	1,17,329	30.00	3910
2001	164,431	50.92	3229
2005	1,90,741	50.92	3745
2011	2,30,203	50.92	4520

### 6. Socio Economic Characteristic

Hospet CMC is generally is resident area with low industrial activities. surrounding the city Iron ore mining Activity is more as compare to the others cities. Hampi is near to Hospet city and Tungabhadra reservoir are the main tourist spots,which are attracting the tourists from other part of the country. This CMC has some major Institution like, Vijay Nagar College, Theosophical College, and Engineering college, ITI collages. city has one sugar mill with in its area. Jindal, kirlosker and kalyani are three major industries, which are located 30, 15 and 8 kms away from the city respectively. Hospet city is center for all these industries.

**Table 5:** Land use pattern



(Attach a land use map demarcating

households	32887
Industries	42
Choultries	16
Temples	150
Slums	Declared: 28 nos. Undeclared: 35 nos.

### 7. Credibility Building phase of Nirmala Nagara Yojane

- Under Credibility building phase of Nirmala Nagara Yojane,
- Number of Awareness programme conducted for schools: 10 numbers
  - Number of Awareness programme conducted for general community: 2 numbers
  - Cleanliness programme has been conducted, some Jathas organized through school children.

A complaint register is maintained with in the CMC, usually complaints regarding fogging, spraying, drainage cleaning, and sanitation are registered. These complaints are attending as soon as possible with in 24 hours timing. Help line facility and wireless sets are distributed to health staff for better communication between staffs and to attend the registered complaints

**Table 6:** Number of groups identified under SJSRY Scheme.



Number of						
NGOs	RWA	Stree Shakthi	TCG	City Sakshartha	RGYSS	Any other
05	30	120 + 200(by NGO's)	26	40	-	

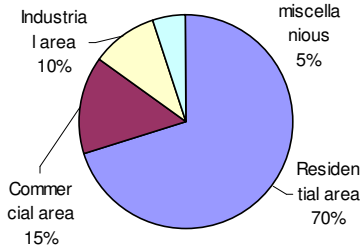
### 8. Present scenario of Solid Waste Management Status

The Major components of Solid Waste Management are:

1. Type of waste generated
2. Participation of stakeholders
3. Source Segregation
4. Primary Collection
5. Secondary Storage
6. Secondary Transportation
7. Processing and Disposal
8. Problems faced by Hospet CMC

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### 8.1 Type of Waste generated



Total quantity of waste generated in a day **60** tonnes per day

**Composition of waste generated:**

Organic Waste: 42000 .kg per day  
 Inorganic Waste: 12000 kg per day  
 Recyclables: 6000 kg per day

Source of waste generation	Quantity of waste
House holds	32.8
Commercial establishments	4
Vegetable and fruit markets	6
Construction waste	3
Hospital waste	2
Hotel waste	9.6
Floating population	0.6
Agricultural waste	2

### 8.2 Participation of stakeholders & their Performance

Total number of wards: 35 numbers.

Number of wards managed by the ULB: 35 numbers.

**SWM Activities that is outsourced are:** There are 167 CMC pourakarmikas and 10 malaria staff working in CMC, these workers need maintain cleanliness through out city, due do the Shortage in labors CMC has given contract for supply of 80 task force labors up to june-2005. Now task force labors are discontinued as per the action plan. About 36 no's of garbage loaders are engaged for vehicles(4 no's loader per each vehicle total 9 vehicles). There are 5 drivers are working under contract basis, they will transport the garbage to outskirts designated place.

### 8.3 Segregation

In Hospet city segregation is not been followed, no separate collection of segregated waste.

**Table 7:** Composition of Waste generated in the city or town.



Organic waste (% of total waste)	Combustible waste (% of total waste)	Recyclable (% of total waste)	others (% of total waste)
70	5	10	15

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## 8.4 Primary collection

Present mode of litter Collection from roadsides is done through street sweeping and for collection of household, commercial and industrial waste, community storage bin system is adopted to increase the cleaning efficiency of the workers, tools like long broom, baskets, short brooms, gloves to be provided with uniforms and badges. Nevertheless, very few wear uniforms and countable workers use long broom (as the long brooms are heavy). The pourakarmikas should be trained on the usage of protection gear and should be educated on the various hazards caused due to improper handling and disposal of waste etc.

### 8.4.1 Community Bin System for Primary collection of Waste

Primary collection of waste is through community bin system. one RCC bin are located per point (uncovered) at 100m in highly population area and 200 m in medium and low population area, however the placement of the bins in all the ward are not exactly to the specification given above, In some places, the bins are placed randomly according to the convenience of the residents.

Bins are classified as

Type –A- Daily cleaning frequency

Type –B- Clearing frequency is 4 times / week.

Type –C- Cleaning frequency is once in 3-4 days.

Under Nirmal Nagar yojana, all the bins are labeled with their type and clearance days bin are located in highly population area with high commercial and industrial activities are cleaned daily (ward no 4,5,10,17,18,11,20,21,26,27,28,32,33 and all main roads)

Some 8-10 points are clearing twice a day In other low activity area bins are cleared as they are filled. There are no separate waste storage systems at bulk generating areas like choultries, hotels, canteens, apartments and resorts.

Total number of community bins located in the city 475 No's

Type A : 146 No's

Type B : 173 No.s

Type C : 156 No.s

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### 8.4.2 Street Sweeping

Hospet city has about 160 Kms of road length. About 32 Kms of Less than 20 ft road, 0.8 km of 80 ft road, 5.4 kms of 60 ft road, 11.2 kms of 40 ft road and pukka road is about 110 kms. All the main roads are cleaned daily, some small roads inside the wards are cleaned twice a week and extension area like JP nagar, MJ nagar, Nehru colony, Outskirt area like karignoor are cleaned weekly once, some places are left uncleaned .

**Table 8:** Road wise details for street sweeping.

Road Name	Road Length in m			Drain Length in m		
	100 - 80ft	80- 60ft	60- 40ft and below 40 ft	Masonry drain	Slab drain	L-shaped drain
<b>A Type Road – roads to be swept daily</b>						
Main post office to uttaradi math		1000	0	-	-	-
Uttaradi math to railway station			500			
Chittwadigeppa temple to H.L.Canal via (chittwadigi, rama talkies, ukkadakeri)			4000	1000		
Veterinary hospital to Hampi road shankar petrol bank			1000			
Udyog petrol bank to kanakadas circle via shanbog circle		1600	0		1500	
Veterinary hospital to uttaradi math via venkateshwar talkies			800		1500	
Hampi road to R.P circle via K.S.R.T.C depot			1250	1000		
Valmiki circle to K.S.R.T.C depot old medar road via kotturuswami math and vijaya talkies road			1250	500		
Bayalu			700	500		

hanumanthappa temple circle						
1 <sup>st</sup> ward chittawadgi			2000	500	1000	
patelnagar roads			4000		1500	
Uchugara Oni			2500			
Ranipet roads			3300		1500	
Vijay talkies road			2000	500		
SR nagar roads			2000			
Jaler Oni roads			2500		1000	
Raith bhavan roads			3000	500		
Markadeshwar temple to municipal high school Road			1200		500	
<b>Total</b>		2600	32000			
<b>B Type Road-roads to be swept twice in a week</b>						
Masjid to veterinary hospital			500		500	
2 <sup>nd</sup> ward 88 mudlapur			3000	1000		
4th ward station road left side			2500		1500	
6 <sup>th</sup> ward sunnada batti area			2000	1000		
chelavadikere road			3000		1500	
Bellary durgamma temple area			3000	1500		
chapparadalli roads			9000	1000	1500	
Basavalingappa compound banadakere road			2500		1000	
Myasakere roads			2500		1000	
Naregal area road			3000		1000	
Vijaya talkies, vinayaka nagar and JP nagar roads			11000	1000	3000	
Amaravathi and bharathi nagar road			5000		500	
Devangapete			2000	1000	1800	
<b>Total</b>			49000			
<b>C type Road - Roads to be swept once in a week</b>						
Ananthashayana gudi roads			2000		500	
kondanayakanahalli			2000		500	
MP prakash nagar, teachers colony, panduranga colony			8600		1500	

13 <sup>th</sup> ward dam road			3000		500	
Dressing camp			2000		300	
Basaveshwar nagar layout roads			8000		1000	
Urammanabayalu roads			4000	1000	800	
kariganur roads			2500		500	
Jambunatha roads, Eshwar nagar roads			3500		500	
Pallekatte area roads			2200		1600	
MJ nagar, Rajeev nagar roads			12000	500		
Vankai roads			5000	500		
Nehru colony, jain colony, Gandhi colony roads			15000	1000	1000	
Aakashvani area roads			4000	1000	2000	
sirisanakallu, patel high school area roads			3000		500	
<b>Total</b>			76800			

**NOTE:** City GIS survey is in progress and yet to be completed. So road details (road length and breadth of each road) can be furnished after the property survey is completed.

### 8.4.3 Desiltation of Roadside drains

[Observation: Most of the area in Hospet CMC donot have under ground drainage facility therefore, the sewage flows openly is the road side drains.]

Frequency of desilting the road side drains: one times per week

Frequency of desilting major storm water drain. one times per 6 Months

1. Sewers: 53.0 kms

Process adopted of desalting:...Cleaning of UGD system Special works are allotted, they will do the sewer cleaning. When blockage of UGD system they will rectify the system with stick and water pouring, and now CMC has purchased one UGD sucking machine to clean sewer line.

2. Major storm water drains: 32.5 kms

Process adopted of desilting: Presently daily wage labors are cleaning storm water drains, but the cleaning was taken up when required.

3.Road side drains with sewage flow: 25 kms

Process adopted of desilting, While cleaning the drainage PK's and labors are desilting these type of drainages.

The road side drains one not cleared regularly in CMC. In some wards raw sewage is flowing in the road side drain. There are big drains in ward No 2, 5, 10, 27, 28, which has not yet cleaned once. Both CMC and contractor are suffering from Shortage workers. The silt removed from the drainage is cleared in the next day. The silt is carried to dumping site along with other waste.

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## 8.5 Secondary Storage

There are no secondary containers the waste from community bins is directly carried to the dumping site by the CMC's and contractor labors

## 8.6 Transportation

Quantity of waste transported per day 45 to 48 Tones Per Day.

### Types of vehicular fleet available with the ULB:

1. Tractor trailer:
  - a. Number 7 number
  - b. Carrying capacity: 1.6 tones
  - c. Condition of the vehicle
    - 1) 4 tractors are in good condition
    - 2) 3 tractors are old vehicles
2. Truck:( Mini)
  - a. Number : one number
  - b. Carrying capacity: 1.8 .tones
  - c. Condition of the vehicle good conditionNumber of trips each vehicle does to the disposal site: 3 to 4 no.
3. Tipper – 01 number  
Carrying capacity – 2 tones  
Condition of vehicle :pathic condition, undergone frequent repairs.

The vehicles using for transportation process are uncovered top the waste was visible to out side while transporting the waste. waste from the bins is manually loaded to these tractors by 5 pk's transporting the waste to dumping site.

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## 8.7 Processing and Disposal of waste

*Disposal method for waste collected from residential area.*

*waste collected from bins are transported to dumping sites, residential wastes are not separately transporting, during the transportation all type of waste get mixed-up.*

Disposal Method for waste collected from street sweeping is Just dump outskirts of the city at low-lying areas.

Disposal Method for desilted waste is same as that of waste from the residential waste and street sweeping waste.

Disposal method practiced by the contractor: Carry the waste to outskirts of the city and dumped at low laying area.

Number of sites used for the disposal of the waste in the ULB presently four sites available

1) Jumbunathahalli area Ranipet area .  
Amaravathi area, Kariganoor area.

Location of the sites are away from the city area around 3-4 kms.

The waste is transported directly to the dumping site without any processing, Street sweeping waste and municipal waste gets Mixed at the time of transportation to the dumping site.

According to the MSW rules 2000, Bio medical waste should not get mix with municipal waste and processing and disposal of healthcare waste should be taken care by hospital itself , only the treated waste can be handled over to the landfill site. the constructional waste should be stored with in the site premises and later should be transported to the notified disposal site by the builders themselves.

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### 8.8 Problems faced by the CMC

The problems faced by the CMC while executing the current solid waste management systems.

1. Lack of awareness among the community.
2. Staff requires Proper training on solid waste management.
3. Lack of man power and infrastructure is one of the main reasons for lagging of solid waste management service.
4. Lack of residents support and interest in maintaining the cleanliness.
5. Lack of planning
6. Lack of tools and equipment required for sanitation.
7. Lack of skilled supervision staff and Health inspectors availability.

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<b>Gap Analysis</b>			
<b>Action</b>	<b>MSW Rules 2000</b>	<b>Present Status of SWM</b>	<b>Proposed SWM</b>
<b>Segregation</b>	Organizing awareness programmes Promoting recycling or reuse of segregated materials Phased programme to ensure community participation in waste segregation	segregation not followed Awareness programmers in 10 school 2 Awareness programmers were conducted for general community	Segregation of waste into wet, dry, recyclable and hazardous waste Conducting awareness programmes every month Training programme for retrievers regarding SWM rule 2000 Littering of waste to be banned Levying fine who doesn't follow segregation
<b>Primary collection</b>	Door to door waste collection. Slums, bulk generators, agricultural waste should have separate collection system. MSW should not mix with hospital and industrial waste No burning of waste Recycling biodegradable waste	For 700-houses door to door waste collected by RWA Waste collected from community bin.	Door to door collection system Programmatic street sweeping. Separate collection system for bulk generators and construction waste.
<b>Secondary storage</b>	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.	Closed metal secondary storage containers Manual handling of waste is minimized.
<b>Transportation</b>	Covered transportation vehicles Avoid multiple handling of waste No open dumping Regular clearance frequency	No coverage Transported Open dumping Regular clearance frequency is maintained.	Twin container dumper placer for transportation Waste will be transported to landfill site.
<b>Processing:</b>	Recycling of biodegradable wastes Inert for landfill	Waste is not treated	Wet waste is proposed for preparing compost. The Dry waste to be land filled and the recyclables will be sold by the workers.
<b>Disposal</b>	Sanitary landfill	Open dumping	Dry waste sanitary landfill. Wet waste: composting Recyclable sold in market
<b>Financial arrangement</b>		No separate amounting for SWM.	The expenditure under solid waste management head to be maintained separately.
<b>Institutional arrangement</b>		The supervising is done by health department of CMC	Monitoring and management ward community: RWA and SHG all together will be managed by CMC.

### Overview of the Proposed Action Plan

Activity	Proposed Action Plan	ULB's role	Private Sector Partnership
<b>Creating awareness among the community and training to the SHGs</b>	NGO is appointing for IEC campaign activity	Monitoring the activity conducted by the NGO's.	IEC activity is out sourced. Tender is invited to appoint NGO to under take the IEC activity. PRAZWALA chitradurga has been approved by KUIDFC and is working in the city.
<b>Street Sweeping and clearance of dry waste and clearance of litterbins</b>	Total Road length: 160 kms A type: 35 kms B Type: 48 kms C type: 77 kms	Total road length to be maintained by the ULB: 160 kms A type: 35 kms B Type: 48 kms C type: 77 kms	NO private sector participation
<b>Debris clearance</b>	Debris clearance activity can be done by the ULB along with street sweeping waste removal.	Monitoring the activity	No Private sector participation.
<b>Door to door waste collection in residential area</b>	Number of tippers required: -05 no's Number of Pushcarts required: -67 no's Number of tricycle required: -05 no's	Number of households: 19000. Number of tipper: 05 nos. Number of pushcarts: 67 nos. Number of tricycle : 15nos.	Primary collection of waste to be outsourced to SHG Groups.
<b>Waste collection in bulk generating area</b>	SHG's Primary collection vehicle will collect the waste from the Hotels and choultries in their respective command areas.	ULB will monitor the waste collection activity from the bulk generators.	

<b>Waste collection in slum area</b>	Number of Slum households =13078 Number of Low income house holds-809 no's  Number of Pushcarts required: 14.nos Number of HDPE bin required = 695	Number of Workers required = 28	No private party participation.
<b>Secondary storage container</b>	Total number of secondary storage containers required: 3 m3 : 15 no's.  4.5 m3 : 15 no's.  Containers for replacement : 6 no's.		
<b>Transportation of waste</b>	Number of dumper placer required: 3 no's.	Vehicle will be procured by the CMC.	Operation and maintenance of dumper Placer has to be outsourced.
<b>Landfill unit</b>	Area required for compost unit: 20 .Acres  Area required for landfill unit: 15 Acres  10.3 Acres private land in Jambunathahalli village is proposed, but proposal is dropped due shortage in area and difficulty in getting adjacent land.  Beside to this 40 acres <b>Government land</b> is identified and proposal is sent to DC office and Tahsildar office for approval and handover the land .	ULB will be procured the land required.	Operation and maintenance will be outsourced.
<b>Procurement tender for Equipments</b>	ULB call for quotation from private party for procurement of equipments	ULB is invited tender for procurement of equipment.	ULB have to outsource for procurement equipment <b>Equipments</b> <b>1.</b> Auto tippers <b>2.</b> tricycles <b>3.</b> push carts <b>4.</b> Dumper places <b>5.</b> Dumper bins <b>6.</b> litter bins <b>7.</b> brooms <b>8.</b> metal plates <b>9.</b> tray <b>10.</b> Ghamela

## 1. Formation of Management and monitoring Committee for Primary Collection in residential areas.

### a) Involving Self Help Groups (SHGs)

Total number of SHGs available in the City/ town: 320.nos.

Total number of DWCUA groups available in the City/ town: 6 nos.

The role of SHGs is given in the instruction sheets.

### b) Involving Resident Welfare Association (RWA)

Number of RWA functioning in the city or town 30.nos.

Decentralized system for Solid Waste Management managed by RWAs/ SHGs:

Ward number: 29 ward M.J.Nagar

Managed by Mruthunjaya Nagar Residential Welfare Association.

Number of households covered: 700 nos

Type of primary collection vehicle available:

Type: Tricycle Number: 03 nos.

Type: Not to the specification given under nirmal nagar.

User charges collected per month:

From Households Rs 5-10user charges collected.

Ward number: 31 Nehru colony managed by Nehru colony welfare association Number of households covered:500 no's

Type of primary collection vehicles:tricycle-3no's

Type is not to the specification given under nirmal nagar.

user charges collected per month Rs 10 per Houses

Ward number: 11 Shanti Nagar is managed by Shanti Nagar welfare association

Number of households covered:200 no's

Type of primary collection vehicles:tricycle-1no's

Type is not to the specification given by DMA.

user charges collected per month Rs 10 per Houses

**2. Conducting Awareness among the community**

General Community: waste minimization segregation, storage reduction, reuse , recycle concept.

School : Recycling of plastic waste compost preparation in school area.

Institutions: Awareness on segregation of waste into wet and dry, storage

*Health Staff* :Awareness among segregation, Primary collection, Secondary storage, reuse.

For IEC Activity tender is called **PRAZWAL Chitradurga** NGO has been selected and is working.

**3. 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, metal, glass , leather other inorganic waste etc.

The phase wise programs to attain segregation are given in the instruction sheet.

**4. Primary collection**

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

1. Street sweeping
2. Door to door waste collection

**Table 9:** Classification of waste generators and primary collection strategy.



Sl.	Waste generator	Number	Primary waste collection strategy
<b>1</b>	<b>Residential households</b>		
a	Households that can pay the user charge	19003	RWA and SHG group will collect the waste using Auto tippers, pushcart and tri cycle.

table Contd...

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b	Low income households which cannot pay the user fee	<b>809</b>	Bring system of waste collection
c	Slum households	13078	Bring system of waste collection
<b>2</b>	<b>Small waste generators</b>		
a	Small Hotels	313	Delivering the waste either to the SHG/secondary Strong bin .
b	Mobil hotels	150	Delivering the waste to secondary containers
c	Commercial establishment	1281	Collection through RWA/ SHG
<b>3</b>	<b>Bulk generators</b>		
a	Hotels, choultryaries and high rise building	Hotels: 23 High rise buildings: 6 Choultryaries: 16 Markets: 9 Hostels: 5	Collection of waste by SHG's only, few has their own system for SWM.
<b>4</b>	<b>Road side waste generators</b>		
a	Road sides cleaning	<i>(Not applicable)</i>	While sweeping roads PK's will clean the roadsides.
b	Debris clearance	<i>(Not applicable)</i>	To be removed by ULB labors along with street sweeping waste.
c	Dead animals	<i>(Not applicable)</i>	Municipal crew with tractor-trailer with 5 workers in it .
d	Litter from road	<i>(Not applicable)</i>	To be cleaned along with street sweeping .
e	Open space cleaning	<i>(Not applicable)</i>	Cleaned by the municipal task work labors.
<b>5</b>	<b>Waste generators not covered by the CMC</b>		
a	Institutions and companies	15	Deliver the waste to secondary storage bins or task work tractor to be collect the waste.
b	Hospitals	46 including nursing home	Some are made their own arrangement for disposal through deep burial system, the rest need to force to adopt their own arrangement.
c	Industries	42	Some have their own system for SWM and rest has to be forced to establish their own system.

#### 4.1 Street Sweeping details

*As per state policy, one worker should sweep 1 km of road length irrespective of its width.*

#### Definition of Street Sweeping:

Street Sweeping will include:

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

Classify the city or town into following zones for street sweeping:

#### A type Roads: Roads that requires daily sweeping

Total road length to be swept under type A: 35 kms

#### B Type Roads: Roads that requires twice in a week sweeping

Total road length to be swept under Type B: 48 kms

#### C Type Roads: Roads that requires once in a week sweeping

Total road length to be swept under Type C: 77 kms

**Table no 10:** Zone Wise Street sweeping and roadside drain cleaning frequency as per the State Policy



Zones	Street Sweeping frequency per day	DAYS						
		Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	Once a day							
2	Once a day							
3	Once a day	AC						

**AC** – Area Cleaning as a task work

**Table 11:** Distribution of sewers in the hospet



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)	144 kms
Once a year (to be outsourced) (Huge Sewers and storm water drains)	85 kms

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Total road length to be managed by the ULB : **160 .kms**

**Requirement of workers**

**A Type Roads:**

Total road length to be covered under Zone 1: **35 kms**

**Number of workers required for A type Roads =**

$$\frac{\text{Total road length in Kms} * 7}{7} = 35 \text{ workers}$$

**B Type Roads:**

Total road length to be covered under Zone 1: **48 .kms**

**Number of workers required for B type Roads =**

$$\frac{\text{Total road length in Kms} * 2}{6} = 16 \text{ workers}$$

**Note:** one day of the week will be reserved for Gang Work.

**C Type Roads:**

Total road length to be covered under Zone 1: **77 .kms**

**Number of workers required for C type Roads=**

$$\frac{\text{Total road length in Kms} * 1}{6} = 13 \text{ workers}$$

**Note:** one day of the week will be reserved for Gang Work.

**Total workers requirement = 64 workers**

**Total workers required for street sweeping:**

the Contractor for Street Sweeping =  
.....numbers(Give this detail for each package)

Total number of workers required by the Contractor for Street Sweeping = .....numbers

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**Table 12:** Package wise road distribution

Packages	Scope of work	Wards covered	Zones	Road length (kms)	Drain length (kms)
<b>Wards maintained by CMC</b>	<ul style="list-style-type: none"> <li>• Cleaning of silt accumulation along kerbs, mesh and shoulder drain.</li> <li>• Sweeping of roads, streets and path</li> <li>• Uprooting of vegetation</li> <li>• Cleaning of Open drains.</li> </ul>	<b>1 to 35 wards</b>	Zone 1	35	144
			Zone 2	48	
			Zone 3	77	
			<b>Total</b>	<b>160</b>	

**4.2. Equipments for roadside drain cleaning**



**Table 13:** Equipments to be procured by the ULB for street sweeping.

S no	Type of tools	Annual requirement of equipments			
		Actual (a)	Extra stock (b)	Frequency of replacement	Total (a) + (b)
1	Long handled broom	256	26	Once in 3 months	284
2	Metal scraper and tray	128	13	Once in 6 months	142
3	Plastic Basket/ Ghamela	64	7	Once in a year	71
4	Pushcarts	32	Nil	Once in 5 years	64

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### 4.3 Door to door waste collection

Number of households in the city,

Slum households: 13,078 nos.

Non-slum households: 19,809 nos

**Table 14:** Boundaries demarcating the clusters for door to door waste collection by the SHGs.



Zones	Number of households/ commercial shops	
	Households that can pay (19,000)	Shops(1 281)
<b>Zone 1*</b> (*Areas where door to door waste collection can be done through Auto Tipper)	4750	280
<b>Zone 2 **</b> (**Areas where door to door waste collection can be done through pushcart)	10650	750
<b>Zone 3***</b> (***Areas where door to door waste collection can be done through tricycles)	3600	200
<b>Areas where revenue cannot be generated &amp; slum areas. Areas maintained by ULB</b>	13887	51

### Non-Slum Households Management

#### 4.3.1 Auto Tipper

Number of households to be served by the Auto tipper = **4750 nos.**

Number of Auto tippers required = **05 nos.**

Total number of SHGs available = **320 nos.**

Number of SHGs who have come forward to manage the door-to-door waste collection using auto tipper = **05 nos.**

*As per the SWM state policy, an auto tipper can serve 800 to 1000 households per day.*

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### 4.3.2 Pushcarts

Number of households to be served by the Pushcart = 10650 nos.

Number of pushcart required = 67 nos.

Total number of SHGs available = 320 nos.

Number of SHGs who have come forward to manage the door to door waste collection using pushcart= 10.nos.

### 4.3.3 Tricycle

*As per the SWM state policy, an tricycle can serve 240 households per day.*

Number of households to be served by the tricycle = 3600 nos.

Number of tricycle required = 15 nos.

Total number of SHGs available = 320.nos.

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

## Slum households Management

### 4.3.4 Bring in System – using HDPE Bin

*As per the SWM state policy, 2 PKs to be deployed for a normative area of about 1080 households.*

*One HDPE bin has to be placed for every 20 households.*

Total number of slum households = 13078

Number of households to be served by bring in system 13887.no's.

Number of HDPE bins required = number of households/ 20 = 695 no's

Carrying capacity = 40 lits (approximate can carry 15 kgs of waste)

Number of Pks/workers required = (number of households to be served / 1080) \* 2 = 28 workers

Type of primary collection vehicle: Push carts

Number of vehicles: 14 nos.

#### 4.4 Collection Plan

**Using Auto tipper:** In Hospet CMC Residential area roads are in pathic condition. so auto tipper will be moving slowly on the road with an identifiable horn. Auto tipper will stop at each road at a distance interval of 50 mts. Resident near by to there points should come and deliver their waste. SHG's will pre-inform residents about the collection timing.

**Using tricycle:** Tricycle will move to the houses and bell for an identification. Residents may have to walk hardly 20-15 mts to the vehicle for delivering their waste.

**Using pushcart:** Push Carts are using when roads are very narrow. pushcart will move to the houses ring the bell , residents will have deliver their waste to cart.

**Using bring in system:** HDPE bins are located for every 20 houses. Resident will put their waste to these bins. Two pk's and one push cart are allotting to every 1080 houses, pk's will lift the waste from these bins and put to the push cart and finally deliver to Secondary storage container .

**Wet waste:**

Wet waste will be collected daily from the residential areas in the morning hours, as this is the main reason for delay. The wet waste generated by the bulk generators will be collected by the contractor and transport to the treatment site.

**Dry Waste including recyclables**

Dry waste is proposed to be collected once in a week in the residential area between 4 pm to 5.30 pm. Each command area will be divided into 7 zones, each day the collection vehicle will collect dry waste from one zone in a cycle there by covering the whole command area. Retrievers will segregate recyclables out of dry waste after its collection. The refuse will be deposited in an identified spots (shown in the map), which will be cleared along with street sweeping.

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**Table 15:** chart showing the collection plan for segregated Waste.



Type of waste	Frequency of Collection						
	Sun	Mon	Tue	Wed	Thur	Fri	Sat
Wet waste from residential area 7 am to 12 pm							
Dry waste from area including residential and commercial area 3 pm to 4 pm		Z 1	Z 2	Z 3	Z 4	Z 5	Z 6
waste collection from the bulk generators by contractor 7 am to 2 pm							

**Table 16:** Door to door waste collection plan in an area.



SNo	Details of collection activity in residential areas in morning time for 6 hours	Assuming 8 hrs operation		
		Auto tipper	Tricycle	Pushcart
1	Total time available per day including one hour break i.e. 6	330 Min	330 min	330 min
2	Number of houses to be covered in a day	1000	240	160
3	Carrying capacity of the collection vehicle per trip	500 – 600 kgs	80 -100 Kgs	40-50 kgs
4	Number of houses that can be covered per trip	500 houses	80 houses	40 houses
5	Number of trips per day per vehicle	2 trips	3 trips	4 trips
6	Time required per trip for up and down of collection vehicle to transfer the waste	15 min	20 min	25 min
7	Total time needed for transferring the waste in a day	30 min	60 min	100 min
8	Time required for door to door collection in day	300 min	270 min	230 min
9	Time required for collection of waste from each household	3 min for 10 households	9 min for 10 households	14 min for 10 households
10	Time required for each trip including up and down to the secondary storage container	2 hr 45 min	1 hr 35 min	1 hour
11	Pourakarmikas required per vehicle	1 worker	1 worker	1 worker
<b>Afternoon from 3 .pm to 4 pm, the vehicles will collect dry waste from the both residential and commercial area in a zone wise manner.</b>				

## ANNEXTURE-3

Table 17: Ward wise distribution of primary collection vehicle.

Ward No.	Primary collection of waste in		Type of primary collection vehicle	Management system
	Houses	Shops		
4	993	181	Auto tipper-01	Jayashree SHG
5&6	961	50	Push cart-06	Annapurneswari SHG
9	770	25	Push cart-05	Sonia SHG
11,12 & 3	1432	38	Tricycle -02 Push cart-05	Vishala SHG
15 & part 29	1418	30	Tri cycle-06	Kiran SHG
16	982	16	Auto tipper-01	Bhavani SHG
17&18	960	30	Push cart-06	Udayonmuka SHG
19&26	1094	26	Push cart-07	Jyoti SHG
20&21	1083	33	Push cart-07	Parvati SHG
22	1025	28	Auto tipper-01	Adarsha SHG
24	915	40	Tri cycle-01 Push cart-04	Vidyashree SHGs
25	1204	10	Tri cycle-02 Push cart-05	SHG
27&28	1120	55	Tri cycle-02 Push cart-04	salma saraswati SHG
29	1000	50	Auto tipper-01	MJ Nagar RWA
30	1014	10	Push cart-06	Raghavendra SHG
31	1158	57	Auto tipper-01	Ganga SHG
32&33	912	18	Push cart-06	Annapurneswari SHG
34&35	962	24	Tricycle-01 Push cart-05	Bhargavi SHG
Total	19003	721		

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Table:18 Grouping of slums for slums households management.

**ANNEXTURE-4**

Ward No.	SLUMS AREA NAMES	slum houses	poura karmika's	Push carts
1 and 12	Govinda nagar, kurubara Oni, Kakara Oni, Gulera Oni, Santhe bayalu, Banagar Oni, varakere, Pinjara honi, kajanagar.	1241	2	1
2 and 11	88 mudlapura , Muddlapur road, Jabbal area, Vaddara Oni.	1006	2	1
5 and 6	Sri Ramulu park, Theosophical lodge North side, Theosophical lodge west side, Hampi Road, Sunnad Batti Area Railway station area, Ranipet area.	1149	2	1
7	Vaddara Oni, Society area, Mastanamma colony, Harijana colony	1051	2	1
8	kondanayakanahalli	931	2	1
9 and 10	Mallamma gudi area, Goulera hatti, Prema Nagar, siddalingappa chowki, Gutti Tothappa.	887	2	1
13	Ganesha Temple in front, EV camp	804	2	1
14	Nishani camp, Dresses Camp	894	2	1
3, 16, 17, and 18	Rama Theater beside, Cheluvadi keri , Indira nagar, Gandhi nagar, Edga darga back side, 17th ward, Amaravathi road masjid backside, Navasandesh patrike office right side.	1191	2	
20, 21 and 22	Jaliline part, Moorugi, Jagalakatti raya, Kumbar geri matta, Sanklapura village, Sanklapura tanda, Azad nagar, Panduranga colony, RTSNN colony, Ashraya colony.	884	2	1
23	23 <sup>rd</sup> ward kariganoor.	956	2	1
24, 25 and 35	Mehaboob Nagar, Ambedkar Nagar Dasara honi Eshwar nagar, lalbahadur shastri school area, Ukkadakere, garadimane, Sirsinakallu area, Mehaboob nagar part II Jambunath kere, kanchigar pet.	1094	2	1
27, 28 and 15	chapparadalli (Slater hours ) Chapparadalli area, koravara Oni, Anjaneya temple backside, petrol bunk backside, Krishna lodge area Bhagat singh nagar, Harijankere	1080	2	1
32, 34, 26	Talavar keri, Dasaraoni, Kotturswamy math area, Talvarkere garadi mane surrounding, koravara Oni, Aravara Oni, Iddalimane Oni, Durgamma temple area, Myasakere, Valmikimath area.	856	2	1
Total		13887	28	14

**4.4.1 Waste Collection from bulk generators**

Number of markets = 9 .no's.  
Number of hotels = 23 .no's.  
Number of apartments= 6 .no's  
Number of hostels = 05.no's  
Number of commercial complex = 06.no's  
Number of Kalyana Mantapas = 16 .no's

**4.4.2Waste collection from Kalyana Mantapa**

There are 16 no's Kalyanamantapas in CMC area, every one should instructed to follow segregation. Kalyanamanatapas should provide the container with specification given by DMA & KUIDFC according their requirements. They should store the waste in bins and inform to CMC/ SHG's in that command area for waste collection when it was generated and should pay the user fee for each program conducted by them. The choutties with very less capacity can deliver their waste directly to the nearest secondary storage container. The wet waste should be put it into the secondary storage container. Dry waste including recyclable should be handled over to the collection vehicle that will carry it further to the disposal site.

**4.4.3 Waste Collection from High Raise Buildings**

There are about 6 High rise buildings are existing in Hospet CMC, these buildings should procure their own HDPE Two bins. As and when Waste is generated they should collect in these bins ( one for wet waste another for dry waste) and should dump wet waste to the primary collection vehicle. Institutions and offices should procure their own HDPE bins and deliver waste to the collection vehicles. Dry waste should be handed over to the collection vehicle , that will carry it further to the disposal site

**4.4.4Waste collection from resorts and hotels**

About 23 resort and hotels are Existing in Hospet, owner of these were procure the HDPE bins of 40 ltr capacities as per the specification given by DMA & KUIDFC. waste should be stored in HDPE bin until SHG's primary collection vehicle will collect the waste. If the waste generation is high, it shall be stored in appropriate Secondary storage container, which will be picked up by the dumper placer.

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Table 19 : waste transported per trip.

SL.NO.	vehicle	number	Average trip/day	waste /trip in tons	Total waste transported
1	Tractor	7	3	1.7	35.7
2	Mini lorry	1	2	2	4
3	Tipper	1	2	2	4
					43.7

## 5.2 Storage at community level

Total quantity of waste generated = 54 tones per day

*As per SWM State Policy, Carrying capacities of the various secondary storage containers are;*  
 3 m<sup>3</sup> - 1.2 tons  
 4.5 m<sup>3</sup> - 1.8 tons  
 7 m<sup>3</sup> - 2.4 tons (this capacity container is proposed only for the commercial areas of the city corporations)

*These containers should be placed in 40: 60 ratios*

Total quantity of wet waste generated in the city or town = 35 tones of waste

= (Quantity of wet waste \* 0.25) + Quantity of wet waste generated per day.  
 = 44 tones per day (say the value is x)

Total number of 3 m<sup>3</sup> containers required for wet waste storage = 44(x value) \* 0.4 / 1.2 = 15 numbers

Total number of 4.5 m<sup>3</sup> containers required for wet waste storage = 44(x value) \* 0.6 / 1.8 = 15 numbers

For wet waste storage at bulk generators:

- Number of 3 m<sup>3</sup> containers required for storing wet waste in bulk generating area = 3 numbers
- Number of 4.5 m<sup>3</sup> containers required for storing wet waste in bulk generating area = 3 numbers

Total number of containers required:

i) 3 m<sup>3</sup>:18 nos. ii) 4.5m<sup>3</sup> : 18 nos

Note: secondary storage container proposed 6 Nos for market areas, bulk generators area. Because waste generation is continuous through out the day .In such cases sweeper shall sweep the area frequently and put it to the secondary containers directly and also market shop owner shall put their waste when generated directly to secondary containers.

**ANNEXURE-4**

**Table 20:** Coverage area for each secondary storage bin

ward No	Number of Secondary storage containers		Number of households	Number of shops	Other generators	Quantity of waste to be stored in container in MT	Remarks
	3 cum	4.5 cum					
1	C-1	-	848	29	14	1.2	NA
2	C-2	-	881	26	01	1.2	NA
3&4	C-3	C-4	1674	310	35	3.0	Vegetable markets, weekly market, fruit and flower market
5	C-5	-	1096	37	12	1.2	Vegetable market
6	-	C-6	1035	36	7	1.8	NA
7	-	C-7	1312	16	2	1.8	NA
8	C-8	-	1043	12	8	1.2	NA
9	-	C-9	985	28	1	1.8	NA
10	C-10	-	674	61	2	1.2	NA
11&12	-	C-11	1429	47	4	1.8	small vegetable market
13	-	C-12	804	28	11	1.8	NA
14	C-13	-	1056	17	9	1.2	NA
15	C-14	-	972	21	5	1.2	NA
16	-	C-15	982	27	11	1.8	NA
17	C-16	-	826	25	11	1.2	NA
19&20		C-17	1862	53	18	1.8	NA
21	C-18	-	921	31	12	1.2	NA

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22	-	C-19	1151	33	20	1.8	NA
23	C-20	-	956	15	12	1.2	NA
24	C-21	-	915	40	30	1.2	NA
25	-	C-22	1204	20	6	1.8	NA
26	C-23	-	768	18	10	1.2	small vegetable market
27 & 18	-	C-24	2122	60	45	1.8	Small vegetable market
28	-	C-25	1118	45	21	1.8	NA
29	-	C-26	1446	70	31	1.8	APMC market
30	C-27	-	1013	28	8	1.2	NA
31	-	C-28	1157	67	12	1.8	NA
32 & 33	C-29	-	912	35	13	1.2	NA
34&35	-	C-30	1726	48	27	1.8	Vegetable market
<b>Total</b>	15	15	32889	1281	407	45	

The current page data

Source for the data : CMC Hospet.

is valid as on:

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**5.3 Placement of Litterbins**

Litter bins having an arrangement of tilting and carrying type are to be located between 50 to 500 distance depending upon density of population & commercial area. litter bins are placed around temple area, main Bajar, Bus Stop, 100 bed hospital road, Collage road Tourist place, shopping complex, commercial Street, school & government Institutions .

Total number of litterbins 100L to be procured by the ULB = 40 no's.

**Table 21:** location and number of litterbins required in the city or town.

Locations	Number of litterbins of 100 liters capacity	Clearance method	Distance between the litterbins (m)
Near temples	3	During street sweeping	Near each temple
Shopping complex	They have to procure their own bins	During street sweeping	one at each door .
Commercial streets	25	During street sweeping	50-200 mts
Tourist places	--	During street sweeping	
Bus stops	3	During street sweeping	one at each stop one at each inlet and out let gates
Schools and Gov. institutes	5	During street sweeping	one at each school
Public places	4	During street sweeping	one at spot
<b>Total</b>	<b>40</b>		

**6. Transportation of waste**

As per MSW Rules 2000, the waste in secondary storage containers is proposed to transport using twin container Dumper Placer, to the processing units or to the final disposal, depending upon the type of waste. A twin dumper placer can transport 2 numbers of 3 m<sup>3</sup> or 4.5 m<sup>3</sup> containers or in combination. It can handle a live load of over 4000 Kg and 6000 Kg. This vehicle will start with two empty containers of both 3 m<sup>3</sup> or 4.5 m<sup>3</sup> container or in combination and shall place the empty containers properly in the secondary storage points with shutters open for use and lift the filled containers.

*As per SWM State Policy, dumper placers are proposed for cities with more than a lakh population. Tractor drawn trailers are been proposed for towns and cities with less than a lakh population.*

*One dumper placer can carry two 3 m<sup>3</sup>, 4.5 m<sup>3</sup> or both in combination. Only one 7 m<sup>3</sup> container ca be carried by a dumper placer.*

*One tractor drawn trailer can carry only one 3 or 4.5 m<sup>3</sup> container.*

**Wet waste** should be carried to the compost pit built with in the landfill site.

**Dry waste** should be taken off for landfill. Dry waste collected by the auto tippers should be transferred to the tractors, which will further carry it to the landfill site. These tractors should cover its top with the tarpaulin to avoid littering

**Recyclables** should be segregated by the workers itself and to be sold in the market.

A dumper placer can clear two containers of wet waste from two locations per trip. One driver and helper is required per vehicle. A site of 40 acres, including compost unit and the landfill site is identified at sanklapura (Average distance from the farthest point) Hospet CMC limits. Efficient routing of solid waste collection vehicles can decrease costs by reducing the labor expended for the collection. The dumper placer has to travel through the Bellary road.

Total number of containers to be carried:

3 m<sup>3</sup>: **15 no's**

4.5 m<sup>3</sup>: **15 no's**

Number of trip a dumper placer can do in a day= **5 trips/ day**

**For cities above one lakh population:**

Number of containers carried by each vehicle

= Number of trips done by each secondary transportation vehicle \* 2

= 10 containers

Number of dumper placers required = 3 number

Requirement of workers for the transportation of waste: 6 number.

**Management:**

ULB will procure the vehicle ,operation and maintenance of vehicle will be on contract basis.

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**Table 22:** Transport plan for vehicles

Vehicles		Type of Waste carried	Number of containers cleared	No of Trips / Day	Requirement Of Workers	
<b>Dumper placer</b>						
DP-1		Wet waste	10	5	2	
DP-2		Wet waste	10	5	2	
DP-3		Wet waste	10	5	2	
<b>Total vehicles required</b>		<b>Dumper Placer: 3 numbers Dumper placer required for the Hospet city.</b>				
<b>Existing ULB's vehicular fleet</b>						
Type of Vehicle	Vehicle Number	Owner	Works doing presently	Works allotted as per the proposed Action Plan	Requirement of workers	Remarks
<b>Tractor (T1,T2)</b>	2	CMC	Garbage Transportation	Task works	4 Excluding drivers	Agricultural waste generation is high. About 5-6 trips of waste generation per day throughout the city. agricultural waste weighs less and accompanied more volume.
<b>Tractor (T3,T4,T5)</b>	3	CMC	Garbage, street sweeping waste, construction debris, Transportations.	Street sweeping waste, construction debris, silt Transportation.	4 Excluding drivers	--
<b>Tractor (T6-T7)</b>	2	CMC	Garbage, street sweeping waste, construction debris, bulk generators waste Transportations.	Bulk generator waste collection	4 Excluding drivers	---
<b>Tractor (T8)</b>	1	CMC	Not in operation	After repair to be work for water supply for the city.	1 Excluding Drivers	---
<b>Mini lorry (L-10)</b>	1	CMC	Garbage Transportation combined with water works	Water treatment plant works	1 driver	----
<b>Tipper</b>	1	CMC	Garbage transportation in ward 14,15,30.	Vehicle in pathic condition ,no further usage is possible	---	----

## 7. Processing of waste

The waste is segregated into wet and dry waste including recyclables.

### 7.1 Organic waste

The best way of processing organic waste is by composting. **Composting** is a biological process of decomposition carried out under controlled conditions of ventilation, temperature, moisture and organisms in the waste themselves that convert waste into humus-like material by acting on the organic portion of the solid waste.

**Vermi compost** is another type of composting produced using Earthworms. The biodegradable waste will be partially decomposed for a period of 3 weeks and the material is then shifted to vermi pits for consumption by Earthworms. The casting of the Earthworm is the final product i.e. vermi-compost, rich in micronutrients, enzymes etc.

### 7.2 Inorganic waste

The inorganic waste should be transported for scientific landfill identified at Sanklapura 4 Kms from the CMC. The waste collector will deposit the recyclables at the identified spots from where the contractor will pick up the useful material. Only the refuse is transported to the landfill site.

**Table 23:** Various types of recyclables present in the waste.



Sno.	Type of Recyclable	Type of Waste
1	Metals	Unbroken bottles.
2	Plastic	Iron, Ferrous and non-Ferrous
3	Glass	components.
4	Paper/cardboard	Plastics sheet, piping, and plastic
5	Rubber / leather	bags, cans and bottles.
6	wood	Newspapers, and packaging covers

**Management:** The processing unit construction and development will be outsourced on BOT basis and the designing will be done by the KCDC.

## 8. Disposal of waste

**Wet waste:** Wet waste/ organic waste collected can be processed by composting / vermi composting method. Hospet CMC requires about 20 Acres for processing unit..But in Hospet CMC limit land availability is less, due to mining activity and agricultural activity.In one part of the area purly agricultural activity going on, In another part of the area mining activity is still in progress.For solid waste management near to Jambunahalli area about 10.32 acres private land sy no 10/b2 is identified and got the NOC from pollution control board, land was in the process of acquisition. Now Beside this land one bypass road is passes for mining vehicles to pass out of the city. Due to this reason another land in sanklapura area about 40 acres sy no.185 /2 Government land is identified as suitable to this purpose, NOC for the land is obtained from KSPCB . **But this land is in lease for mining activity**, to follow supreme court direction lease to be cancelled and to allot for the solid waste management activity.

**Dry Waste:** Dry waste generated and street sweeping waste are disposing off through the land fill method

**Recyclables:** the waste Segregated from wet waste, inert wet waste which is reusable waste can be sold market by workers , the amount recovered will be invested as incentive for workers.

**Silt from drains:** are deposited in low lying areas, silt which will be used as covering Material while land filling process

**Street Sweeping waste:** wet waste to be processed through composting / vermi composting

Constructional Waste: generated in city is to be dumped in low laying areas and also used for land filling

**Agricultural Waste:** is organic waste can be processed by composting.

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Hazards waste generated in residential are stored separately in covers in their houses and transfer the waste to bin placed only for hazardous waste by ULB, ULB will take care of such waste disposal.

Table 24: Activity chart for SWM in a day.

Activities	6.30 to 7.30	7.30 to 8.00	8.00 to 9.30	9.30 to 10.00	10.00 to 12.00	12.00 to 1.00	1.00 to 2.30	2.30 to 4.00	4.00 to 6.00
Street Sweeping									
Door to Door Collection from Residents									
Collection from Bulk Generators									
Transportation of wet waste									
Transportation of street sweeping waste									
Collection and transportation of constructional waste									
Cleaning of drains									
Processing and Disposal									

### 9. Institutional Arrangement

Table 25: ULB's present manpower working as SWM staff in the ULB.



sent staff for SWM	Number
Workers	167 pk's+10 malaria staff
Drivers	1
Cleaners	-
Supervisors	9
Inspector	2+1(deputed)
Engineer	1

0	5	0	3	0	5
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**Table 26:** ULB's manpower deployment for the proposed SWM plan.

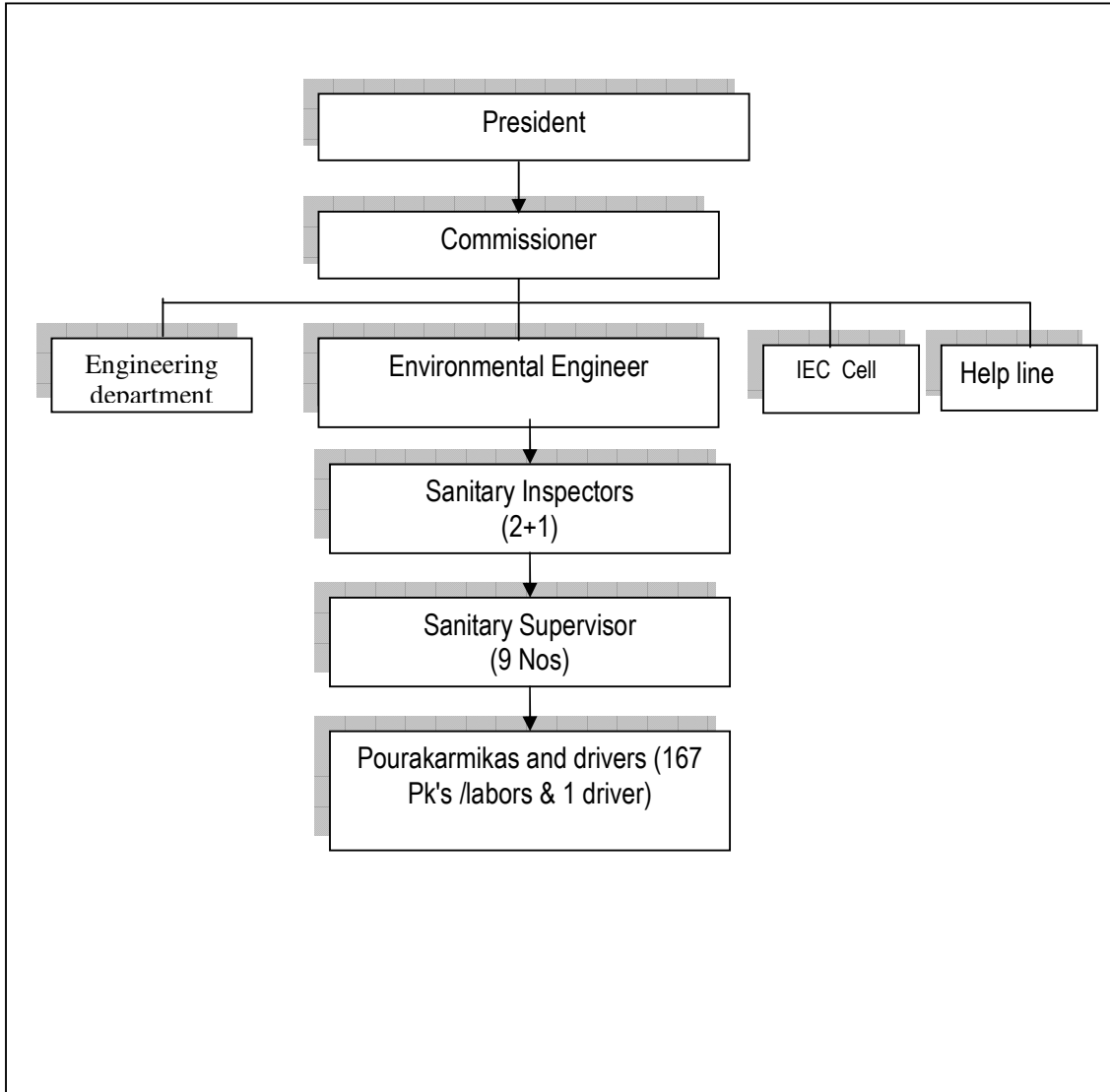
Sector	Proposed deployment of the Sanitary Staff in Hospet CMC						
	Workers	cleaners	Driver	Supervisor	Senior Health Inspector	Junior Health Inspectors	Environmental Engineer
Absentees 10% of labors	17			9	2	1 (Deputed)	1
Waste collection from slums	28						
Task Force –SWM	12						
Task work	30						
Transportation of street sweeping waste	12						
Street sweeping	64		1				
Transportation of agricultural waste	4						
<b>Total</b>	<b>167</b>	<b>-</b>	<b>1</b>	<b>9</b>	<b>2</b>	<b>1(Deputed)</b>	<b>1</b>

**Note:** The above given details are of ULB's staff.

Agricultural waste generation in the city is slightly more, due to agricultural activity. Agricultural waste weighs less and occupies more space. Waste was generating randomly throughout the city. Roits will dump the waste on roadside and some open places, to remove the waste above mentioned labors are required.

### 9.1 Organizational Structure (SWM)

Flow chart showing the hierarchy of solid waste management division.



### 9.2 Monitoring of operation

The drivers and workers will work under the close supervision and guidance of supervisor, who in turn will be working under Health Inspectors. One supervisor should be allotted for 20 workers. The Environmental Engineer will be in-charge of overall SWM activity. Areas where primary collection is done by RWAs and SHGs, the monitoring will be their job provided CMC will continuously monitor the progress. Any problems regarding the same can be solved with the help of CMC officials. The engineering department will supervise the processing and disposal activity. Commissioner should regularly inform the Council about the activities of SWM.

0	5	0	3	0	5
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**Table 27:** Allocation of work for the supervising staff.

<b>SWM Staff in charge</b>	<b>Role</b>
Health Officer	Supervision of the overall SWM activity
Environmental Engineer 1 number	Supervising the overall SWM activity
<b>Health Inspectors: 3.numbers</b>	
Senior Health Inspector	Supervising the SWM activity in ward no 1, 2, 3, 5, 6, 11, 12, 16, 30, 31, 29, 28, 27
senior Health Inspector	Supervising the SWM activity in ward no 4, 10, 13, 14, 15, 17, 18, 19, 20, 30, 8, 9, 7
Junior Health Inspector	Supervising the SWM activity in ward no 23, 24, 25, 32, 33, 34, 35, 26, 21, 22
<b>Supervisor: 9 numbers</b>	
Supervision	Supervisor need to work Under keen supervision of Health Inspector. They have to look after sweeping, desilting and transportation

**9.3 Working schedule of workers**

Arrangement of holidays for ULB’s SWM staff:

For primary collection: Two half days on Sunday and Wednesday in a week, Pk / labors will have half day during festival time.

For transportation and landfill unit the Total batch shall be divided into 7 groups and 1/7<sup>th</sup> will take one day leave in a cycle basis in week. Extra staff of 1/7<sup>th</sup> should be deputed by the ULB there will not be any holiday for festival.

**In case of absence:** The worker has to take prior permission for any leave, the ULB should arrange alternative arrangement shall be planned in well in advance for holidays

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**ANNEXTURE-6**

**10. Financial Arrangement**

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

1. Capital cost
2. Recurring cost

**Table 28:** Briefing the annual expenditure of the ULB from past 3 years for SWM.

Particulars	2001 -2002		2002-2003		2003-2004	
	Provision (Rupees in lakhs)	Expenditure (Rupees in lakhs)	Provision (Rupees in lakhs)	Expenditure (Rupees in lakhs)	Provision (Rupees in lakhs)	Expenditure (Rupees in lakhs)
Dustbins and pushcarts ( repairs and purchasing)	0.5	0.55	1.0	0.14	1.00	0.69
Transportation charges for contractor ( SWM)	15.00	4.67	15.00	16.2	15.00	16.1
Equipments	1.00	0.55	3.00	1.22	2.00	0.68
Construction and Desiltation of drains	20.00	6.3	20.00	15.17	10.00	13.84
Repair of the existing vehicles	3.00	1.3	15.00	13.48	5.00	1.10
Salary for SWM staff (Health Staff)	216:00	123.8	180.00	111.9	144:00	142.3
Pensionary contribution	50	50	50	50	50	49.24
Fuel and insurance ( for all the vehicles)	5.00	8.45	6.00	5.95	10.00	5.30
<b>Total</b>	<b>310.5</b>	<b>195.62</b>	<b>290:00</b>	<b>214.06</b>	<b>237:00</b>	<b>229.25</b>

**Average recurring cost born by the ULB from past 3 years** = Rs 213:00 lakhs...

## 10.1 Estimates of Capital cost for the proposed SWM Action Plan

**Table 29:** The estimated capital cost as per the proposed SWM action Plan for Hospet.

Sno	Particulars	Quantity	Rate (in Rs)	Amount (Rs in lakhs)
<b>A</b>	<b>Street sweeping</b>			
1	Pushcart	32	6500	2.08
	<b>Sub Total</b>			2.08
<b>B</b>	<b>Primary collection</b>			
1	Auto tipper (CMC)	0	2,10,000	0
1.2	Auto tipper ( SHGs)	5	1,05,000 (Subsidy)	5.25
2	Pushcarts( CMC)	14	6,500	0.91
2.2	Pushcart(SHG)	67	3,250 (Subsidy)	2.1775
3	Tricycles (CMC)	0	14,700	0
3.2	Tricycle (SHGs)	15	7,350 (Subsidy)	1.10265
	<b>Sub Total</b>			9.44
<b>B.1</b>	<b>Litterbins</b>			
1	Litter bins of 100 lit	40	3320	1.328
	<b>Sub Total</b>			1.328
<b>C</b>	<b>Secondary storage</b>			
3	Containers of 3 cubic meter capacity	18	35,000	6.3
4	Containers of 4.5 cubic meter capacity	18	40,000	7.2
5	Construction of PCC platform, for placing containers on it		To be Tendered out	
	<b>Sub Total</b>			13.5
<b>D</b>	<b>Transportation</b>			
1	Twin container Dumper Placer	3	8,50,000	25.45
<b>E</b>	<b>Processing and disposal</b>		To be Tendered out on BOT basis	
	<b>Sub Total</b>			25.45
<b>Grand Total</b>				51.798

ANNEXTURE -8

**10.2 Estimates of Annual Recurring Cost for HOSPET CMC**

**Table 30:** The proposed annual recurring cost of SWM for the ULB.

SNo	Particulars		Amount ( in lakhs Rs)
1	Salaries of the SWM staff including PF		125.00
2	Maintenance of 8 pushcarts @ Rs. 102.40 maintenance cost per pushcart per month		0.565
3	Maintenance of secondary storage, litterbins and PCC slab		1.00
4	Maintenance of dumper placers		0.72
4	Maintenance of the existing tractors		2.16
5	Conducting meetings and awareness programme		4.00
6	Uniforms for workers @ the rate of 1000 Rs for 34 workers		1.71
7	Fuel charge		6.00
8	Tipping cost at landfill site @ Rs 250 per ton of waste		48.60
9	Cost of treatment and landfill site @ Rs. 400 per ton of waste		77.76
<b>Street sweeping</b>			
11	Long handle brooms with 3 months once replacement	64 * 150* 4	0.384
12	Metal scraper with 6 months once replacement	64 * 60 * 2	0.0768
13	Metal tray with 6 month once replacement	64 * 200 * 2	0.256
14	Gloves with yearly once replacement	64 * 40	0.0256
15	Baskets with 6 month once replacement	64 * 150*2	0.192
<b>Total</b>			<b>268.44</b>
16	Miscellaneous say 5%		13.42
<b>Grand Total</b>			<b>281.872</b>

**ANNEXTURE-9**

**11. Collection of User Charges**

The user charges will be collected as per Government Order. Resolution has made in the council body.

SI no.	Type of waste generator	User charge to be collected ( in Rupees per month)	Number of households/shops to be served	Amount collected per month (in Rupees)
1	Households (to be served by Auto tippers)	30	4750	142500.00
2	Households ( to be served by Pushcarts)	10	10650	106500.00
3	Households (to be served by Tricycles)	10	3600	36000.00
4	Small Shops	30	750	22500.00
5	Big shops	75	531	39825.00
6	Hotels and restaurants	250	336	84000.00
7	Kalyana Mantapas	500	16	Depends upon the number of Programmes is arranged in each KalyanMantapas.
8	Major commercial complexes	500	06	3000
9	Major institutions	500	15	7500

Name of Environmental Engineer	Name of the Commissioner
<b>Yogesh B.S.</b>	<b>Sri Rangaswamy</b>
<b>Signature</b>	<b>Signature with Seal</b>