

ULLAL TMC

(A NIRMAL NAGARA AND KUDCEMP TOWN)

SOLID WASTE MANAGEMENT

INTRODUCTION

Ullal is one of the ten project towns of coastal belt taken up for infrastructure development under KUDCEM Project of KUIDFC. The Town Panchayat of Ullal is situated to the south of Mangalore on the NH 17 after the Nethravathi Bridge at a distance of about 12 km from Mangalore. The town lies on both side of the NH 17 with major part being towards the West. The town has been formed by the combination of two villages, viz. Permannur and Ullal. To the north, the Nethravati River and the Jeppinamoguru area of Mangalore bound Ullal. To the south is Someshwara. To the west is the Arabian Sea. Ullal is a typical coastal town with high humidity and temperature ranging from 17⁰ C to a maximum of 37⁰ C. Rainfall is heavy and is of order of 3500 mm per annum of which over 90 % is received in the monsoon months of June- September. This document gives the action plan for solid waste management of Ullal. The plan is based on the National and State policy of solid waste management. The table 1 gives a gist of the recommendations and implications of National and State policy documents.

SALIENT FEATURES OF TMC ULLAL

Table Shows the Salient Features of TMC Ullal

Present estimated population 2005	55882
Extent of TMC	11.8sq kms
Connectivity	Air : 34 kms (Bajpe Airport Mangalore). Rail : 2 kms, Railway Station (Someshwar). Road : 12 kms from Mangalore. Sea : 0.5 kms from TMC
Growth Potential	Fishing and Marketing. INDUSTRIAL ACTIVITIES: <ul style="list-style-type: none"> • Baraka fishing product Export Company. • Kanachur Sawmills and Plywoods. • Sorkar Sawmills and Plywoods. • Marine fish oil industry.
Research Activities	National Research Center for Cashew.
Main Tourist Spot	<ul style="list-style-type: none"> • Someshwara beach • Summer sands
Fairs and Festivals	Syed Madani Darga Urusu festival held once in every five years
Rainfall	3400mm to 4400mm. (June to Sept)
Temperature	Min 22 ⁰ c- 25 ⁰ c Max 31 ⁰ c - 37 ⁰ c
Climate	The town has heavy rain fall in the monsoon months and characterized by high humidity and temperature.

PRESENT SCENARIO OF SOLID WASTE MANAGEMENT

Current S.W.M practice:

The Ullal TMC is responsible for solid waste management of the city. The TMC does not have any staff for solid waste management except one sanitary supervisor. At present sweeping, collection and transport of solid waste is done on contract basis. The scope of work includes Road sweeping, collection and transport of MSW four days in week providing ten workers with

a Supervisor .In addition to that waste from the bins provided under KUDCEMP are being lifted on alternate days using the bin lifting truck by employing a driver and 2 labourers on contract basis. The Town Panchayat has 90 (660 liter) fiber plastic bins provided under the KUDCEM project. 70 bins have been placed on the concrete pavements. (The map showing deployment of these bins is enclosed). A side bin lifting truck has also been provided to empty the waste from the bin into the truck without manual handling. The overall management is carried out by Junior Engineer with the assistance of a caseworker whose major area of work is maintenance of street lights.

The present scenario of SWM in TMC Ullal is discussed under the following heads.

1. Type of Waste generation
2. Participation of stakeholders & their performance
3. Segregation
4. Primary collection
5. Secondary Storage
6. Secondary Transportation
7. Processing of waste.
8. Disposal of waste
9. Problems faced by TMC Ullal

TYPE OF WASTE GENERATION:

The TMC Ullal produces an average of 14.5 TPD of waste at present. The floating population is about 1500 per day. The waste from clinics and hospitals is not getting mixed with the Town Panchayat solid waste and is collected by a Bio- medical Private Contractor under the supervision of Indian Medical Association, Mangalore.

Waste Quantification:

Sl.No	Type of waste generators	Numbers	Total waste generation/day in kgs.	Wet waste generation/day in kgs
1	Households	8269	8269	6200
2	commercial establishments	1619	2428	242.80
3	Hotels			
	a. Big hotels & restaurants	14	140	140
	b. Small hotels & canteens	36	288	288
4	Kalyanamantapas	4	120	120
5	Meat shop	20	100	100
6	Fruit shops	27	54	54
7	Vegetable market & fish market	02	400	400
8	Institutions & Madrasa	64 +97	120.75	-
9	Religious place	103	77.25	77.25
	Total	10255	11997=12,000	7622.05

Street sweeping waste and drain silt:	2000kg.
Construction waste	400kg
Industrial wastes (Municipal waste)	100kg.
Hospital wastes (Municipal waste)	50kg.
Subtotal	2550kg.
Total waste of Generation in Ullal TMC	14.5TPD

PARTICIPATION OF STAKEHOLDERS & THEIR PERFORMANCE:

Upto June 2004 waste was collected through R.C.C. bins placed on the roadside and this was carried to the landfill site by a contractor with their vehicles. Since July, 2004 Ullal ULB has replaced the RCC bins with 660 liters (0.6 cum) fiber which are placed in different wards supplied by KUIDFC under KUDCEMP project. These bins are cleared by using bin lifting truck..

STREET SWEEPING:

Though, Ullal Town Panchayat has 68 kms of roads, only 37 kms. (Major roads, junctions and road side drains) are cleaned daily with 10 contract labour.

SEGREGATION:

At present Segregation is not being practiced in Ullal TMC.

PRIMARY COLLECTION:

Present mode of solid waste collection from the households, commercial establishment, market places & street sweeping is collected through the fiber bins placed on the roadsides.

DESILTATION OF ROAD SIDE DRAINS:

At present the roadside drains are cleaned by Contract workers. The bigger drains are cleaned once in a year by Engineering Division by engaging contractor.

SECONDARY TRANSPORTATION:

The waste from these fiber bins are directly transported to landfill site of Mangalore city Corporation. About 7 to 8 tons of waste is transported to the landfill site by one bin lifting truck everyday. Demolition waste, silt and some part of wet waste etc are transported either to low lying area or landfill depending on the type of waste once a week by the contractor.

CONSTRUCTION WASTE (DEBRIS):

The construction waste is now being put haphazardly on the roadside and vacant sites. However steps are taken to improve conditions while issuing construction licenses and removal of debris from the buildings and demolition of other structures. The inert materials and silt collected during cleaning of drains are placed in low lying areas and more such low lying area are identified in Ullal for dumping debris and construction waste in future.

PROCESSING AND DISPOSAL OF WASTE :

At present the waste is dumped in the landfill site (MCC landfill) without any processing and segregation.

PROBLEMS FACED BY THE TMC:

1. Lack of manpower and designated staff for SWM.
2. Frequent transfers of experienced officials.
3. Lack of IEC (Information, Education & Communication) activities for community participation & their representatives.
4. Lack of knowledge on basic concept of Solid Waste Management activities in the lower tier of the system.
5. Lack of infrastructure
6. Lack technical and administrative training.
7. Lack of coordination between different sections of TMClike Administration / Accounts.

Biomedical and industrial wastes :

The biomedical waste is being managed by the hospital themselves through a private waste management agency from Mangalore.

Table: Classification of Waste generators and Primary Collection Strategy.

Sl. No	Waste generator	Primary Waste Collection Strategy
1	Residential house holds	Through SHG's
	<ul style="list-style-type: none"> • Low income households, which cannot pay the user charge 	The concerned SHG has to cover these houses along with other households.
2	Small waste generators	
	<ul style="list-style-type: none"> • Small hotels & restaurants 	SHG's
	<ul style="list-style-type: none"> • Commercial establishments Hospitals, Industries, and Institution. 	SHG's
3	Roadside waste generators	
	<ul style="list-style-type: none"> • Roadside cleaning 	Street sweeping on contract basis.
	<ul style="list-style-type: none"> • Debris clearances 	Included in street sweeping
4	<ul style="list-style-type: none"> • Clearance of dead animals, malaria spraying, public toilet cleaning, Cleaning of seashores and beaches • emergency 	Clearance of dead animals by through SWM task work.
5	<ul style="list-style-type: none"> • Vegetable and fish market, Maidans & Religious festival places 	SWM task work.

Table Showing Data on Land Use Pattern in TMC Ullal

1. Residential -13.25%
2. Agricultural -77.09%
3. Commercial -1.41%
4. Industrial -0.73%
5. Public utilities -1.88%
6. Parks and open spaces -5.64%

Note: A land use map has been enclosed in MAP-3

Data Showing Ward wise Panchayat Area of Ullal Town Panchayat:

Sl. No.	Ward No.	Area	
		In sq. Kms.	In Hectares
1	1	0.3578	35.78
2	2	0.0977	9.77
3	3	0.1719	17.19
4	4	0.2586	25.86
5	5	1.0172	101.72
6	6	1.3344	133.44
7	7	0.5328	53.28
8	8	0.1484	14.84
9	9	0.1727	17.27
10	10	0.4520	42.50
11	11	0.8688	86.88
12	12	0.6125	61.25
13	13	0.4711	47.11
14	14	0.5000	50.00

15	15	0.5422	54.22
16	16	0.4812	48.12
17	17	0.7226	72.26
18	18	0.5875	58.75
19	19	0.8758	87.58
20	20	1.5047	150.47
Total		=11.683 sq.Kms	=1168.29 Hectares

Street Sweeping:

In TMC area only the 37 kms of roads are swept out of 68 kms of roads, which includes mainly the commercial area and highly populated area. Sweeping is not required in other roads as they are in residential areas, where doorstep collection will be taken up through SHG's.

The Scope of street sweeping component and other SWM works are,

1. Street sweeping
2. Road side drain cleaning
3. Median cleaning
4. Removal of road side and drain side vegetation
5. Cleaning of foot path
6. Cleaning of silt from drains and roads.
7. Clearing of litterbins
8. Clearing of construction debris.

The TMC, Ullal area is identified as a single zone for street sweeping and it is proposed to give street sweeping on contract. Details of road wise listing and sweeping frequency data is given below. This data would be used for the tender.

Standards used for calculation of primary collection & secondary storage and equipment requirements

Sl.No	Item	Standard
1	Handcart for primary collection	160 houses per day or 160 kg/day
2	Tricycle for primary collection	240 houses per day or 240 kg/ day
3	Auto container primary collection	1000 houses per day or 1000 kg /day
4	Handcart for street sweeping	1 for every 2 PK
5	Sweeping standards	1 km /day /Pourakarmika

The Classification of road is as follows:

Type	Length in Km	Workers requirement.	Drain length in Km
Daily sweeping : A	10 Kms	10	20
Weekly twice sweeping: B	9 Kms	3	12
Weekly once sweeping: C	18 Kms	3	10
Total	37kms	16	42

Drain details/length in TMC Ullal:

Open drains	34 km.
Closed drain	6km
L shape drain	<u>2km</u>
Total:	42 km

Note: Large open storm water drains and closed drains in Ullal TMC will be cleaned once in a year by Civil Engineering wing.

STREET SWEEPING FREQUENCY:

Zone 1: Daily sweeping (A type road):

This zone comprises of highly populated areas with highly commercial activity. This requires daily sweeping. (Core area including main roads and some cut roads). The classification and Road Sweeping frequency is shown in table.

Zone 2 : Twice a week (B type roads) :

This zone comprises of residential area with low commercial activity. This requires weekly twice sweeping. (Sub-urban areas)

Zone 3: Once in a week (C type road):

This zone comprises residential area. This requires weekly once sweeping. (Sub-urban area, less MSW littering,)

Coverage area of secondary container and vehicle route									
Sl. No.	Ward No.	SHG No.	Bin location Name and No.	Bin Nos.	Total Bins	Vehicle No.	Route	Houses	others
1	1,2,3,10,11	SHG.1	Baraka-5 Sharada Nikethana-6 Mukkchery-7 Subhsnagar-8	1,2,3,4,5,6,7,8,9,10,11,12,13,14	14	Side packer-I- KA-19B676	I	131 2	391
2	4,5,6,7	SHG.2	Ullal Chota Mangalore-3 Milath Nagar-2 *Uliya Kottara-4	15,16,17,18,19,20,21 [22,23,24]*	10	Side packer-I KA-19B676	I	126 7	279
3	8,9,14	SHG.3	T.C.Road -1 Masthikatte-9	25,26,27,28,29,30,31,32,33,34	10	Side packer-I KA-19B676	I	120 6	263
4	12,13,15	SHG.4	Ombuttukere-10 Ullalbail CRS-11 Thokkottu-12	35,36,37,38,39,40,41,42,43,44,45,46,47	13	Side packer II	II	154 7	256
5	16,19	SHG.5	Overbridge-14 Babbukatte-15 *Nithyadharnagar-16	48,49,50,51,52,53,54, [55,56]*	9	Side packer II	II	145 5	378
6	17,18,20	SHG.6	Nagabana-17 Kallapu Patla-18 Margathale-Uliya-13 *Sevanthe gudde-19 *Mudipodi-20 *Gandi-21 *Kallapu patla-22 *Sevanthe Guttu-23	57,58,59,60,61,62,63,64,65, [66,67,68,69,70]*	14	Side packer II	II	148 2	444
				Total	70			826 9	201 1

Note: * The bins located at these spots are lifted by auto bin lifter to the transfer points to further transport through side packers.

The location of transfer stations are shown in the location map of secondary transportation.

Plan for transport of wastes:

Dry waste shall be taken to landfill area, Dry waste collected by the auto containers would be transferred to the bin lifting truck, which will further carry it to the landfill site.

Recyclables: Shall be segregated by the SHG workers/reprocess and would be sold in the market. The amount gained can be distributed among the SHG

Sl. No.	Vehicle No.	Bin Number	No. of bin covered in each trip
1	KA 19B.676 side packer	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34	34
2	To be procured side packer	35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70	36

workers as an incentive.

Side packer requirement: 2 Nos.

Biomedical and industrial waste collection:

This collection would not be done by the Town Panchayat and the mechanism to ensure compliance would be put in place.

Processing of waste:

Waste is segregated into Biodegradable, Non-biodegradable, and rejects as per MSW Rules, 2000. The Biodegradable waste would be processed at Pachanady Landfill site, by way of composting.

Processing and disposal plan:

Sanitary Landfill and compost plant of MCC is located at Pachanady (24.5 Acres) in survey No. 6/1-6/4, 7/1, 7/2, 106/1, 110 (p), 153/2, 153/4b, 154/3 and 168/3 of Kudupu village and authorization for setting up waste processing/ disposal facility under Municipal Solid waste (Management and Handling) Rules 2000 has been obtained from Karnataka Pollution Control Board vide their letter No. KSPCB/SEO/MSW 2004/05/1537 dated 5th September 2004. It is proposed that processing and disposal of SWM waste would be jointly done with the Mangalore City Corporation landfill site at Pacchanadi, Vammanjur which is 17.5 kms, far from the core town.

Various types of recyclables:

Glass	Unbroken bottles
Metals	Iron, Ferrous and non ferrous components
Plastics	Plastics sheet, piping and plastic bags, cans and bottles
Paper/cardboard	Newspapers and packaging covers like milk covers etc. and cardboard.
Rubber/leathers	Old tyres and shoes
Wood	Wooden logs, woody waste from garden

Institutional Arrangement and financial requirement

1. Institutional Arrangement.

The total SWM staff working under present SWM in Ullal TMC

Present staff for SWM	Permanent
Workers	-
Drivers	-
Supervisors	01
Inspectors	-
Engineer	-
Total	01

The total staff, required for solid waste management in TMC as per C&R Rule.

Sl.No.	Designation	No. of sanctioned post	No. working	No. vacant.
1	PKS	15	-	15
2	Drivers	1	-	1
3	Sanitary Supervisor	1	1	-
4	Jr. Health Inspector	1	-	1
5	Environmental Engineer	-	-	-

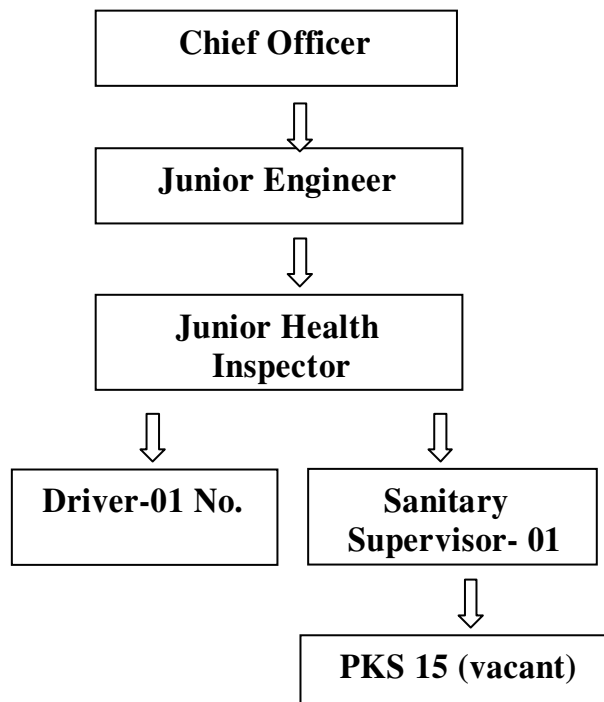
Drains cleaning done yearly once through civil Engineering wing.

- Σ TMC proposed to outsource the street sweeping and Insecticides spraying activities.
- Σ Task work includes emergences like floods, dead animal, disposal, dead body disposal referred by police and like and office attenders. This Activity is out sourced
- Σ The council approved user charges to be levied from waste generators as per Annexure.

2. Organizational structure (SWM):

The line of control of the staff of solid waste management is as shown below.

Flow chart showing the hierarchy of solid waste management division



3. Monitoring of operation:

The drivers and workers and supervisor will work under the close supervision and guidance of junior health Inspector. The Junior Engineer will be in-charge

of overall SWM activities. Chief Officer shall regularly inform the council about the activities of SWM.

Allocation of work for the SWM staff:

SWM staff in charge	Role
Junior Engineer-1No.	Supervising the overall SWM activity
Health Inspector-1 No.	Supervising the daily waste collection, street sweeping and transportation operation of SWM in all wards.
Supervisor-1 No.	Supervising the daily waste collection, street sweeping and transportation operation and other SWM works.

4. Proposed working schedule for the workers:-

For Street Sweeping :

The street sweeping will be from by 6.30 Am to 10.00 AM in the after noon 1.30PM to 5.00 PM.

For door to door collection wet waste : Daily by SHGs 6.30 A.M to 1:30 P.M.

Door to door collection of dry waste : 3.00P.M to 6.30 PM

Secondary transportation : The Secondary transportation will start from 8 AM to 5.00 PM

The following vehicles and infrastructures are supplied and developed respectively under KUDCEM Project

1. Bin lifting Truck (side pack) KA-19/B-676
2. Auto bin Lifter- KA-19/B-509
3. Auto bin lifter KA-19B-510
4. 90 numbers of 660 lt. capacity fiber bins.
5. Construction of platforms for placement of fiber bins.

Shows the Vehicle Available in TMC:

Sl.No.	Existing Vehicle Details	Purpose
1	Bin Lifting Truck (KA-19/B-676)	Lift the waste from Fiber bins.
2	Auto bin lifter (KA-19/B-509)	Lifting of fiber bins from narrow roads
3	Auto bin lifter (KA-19/B-510)	Lifting of fiber bins from narrow roads

Deployment of existing Staff and Vehicles :

There is only one supervisor who will supervise the entire SWM activity. Presently there are 10 Contract workers and one supervisor who are performing street sweeping and desilting and drainage cleaning activity. But it is proposed to remove these contract workers after implementing the proposed SWM action plan.