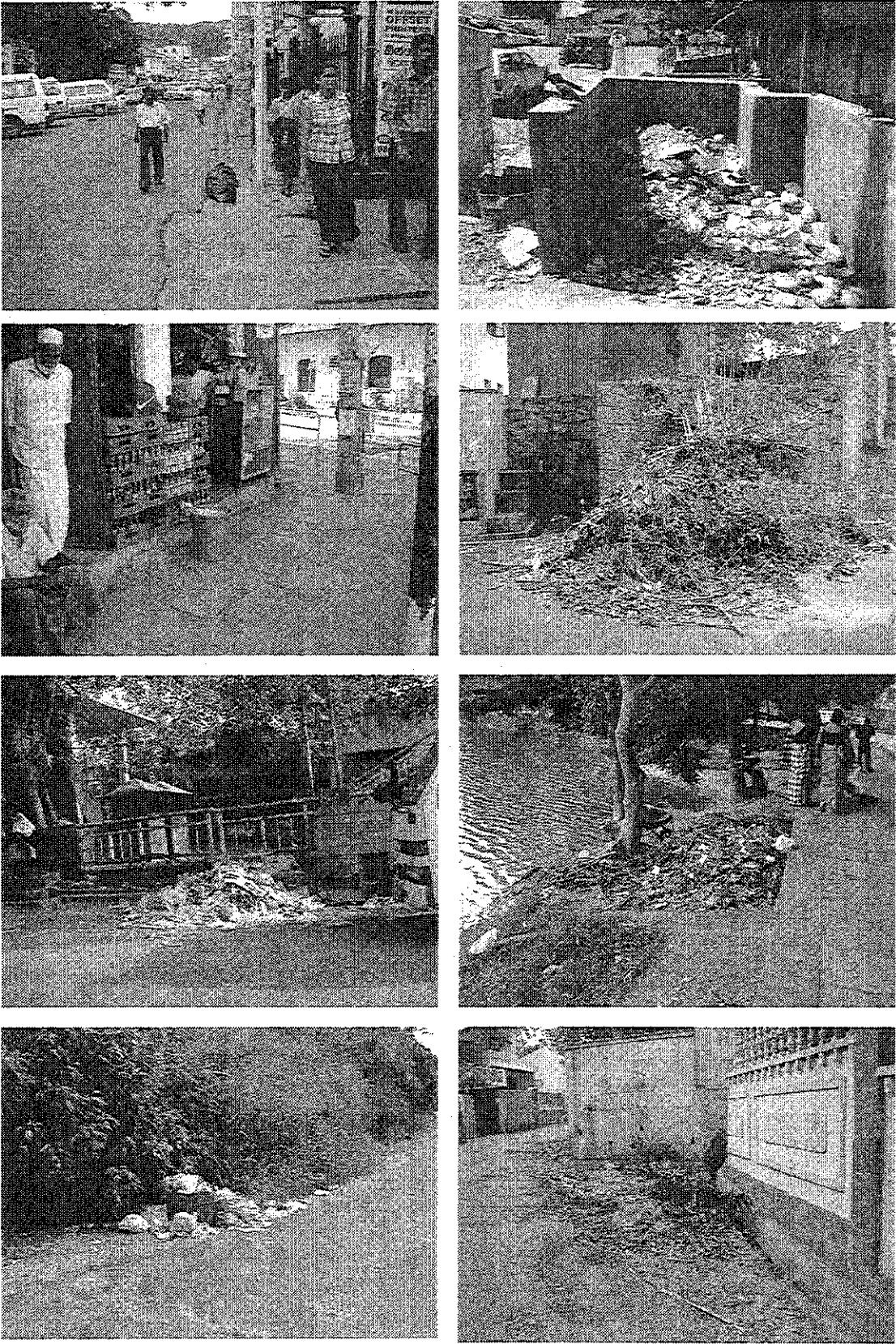
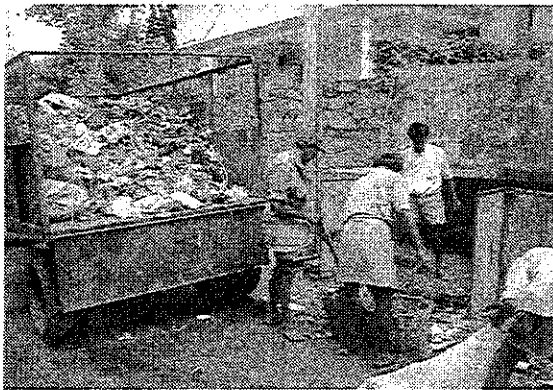
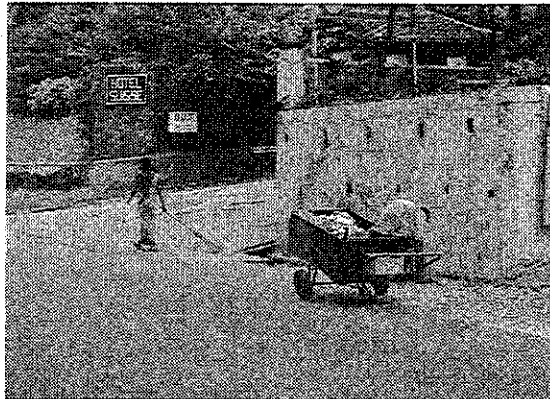


## 2.4 SWM Discharge/Collection – Additional Information

### 2.4.1 Photos Showing Some Examples of the Garbage Discharge System



## 2.4.2 Photos of Examples of the KMC Garbage Collection System



## 2.4.3 Garbage Collection Daily Routine

All garbage collection vehicles are parked near the KMC workshop overnight, while handcarts are generally parked near the zone offices or their working areas. Each morning, the Supervisors begin work at 6am, issuing instructions to vehicle drivers, who then go the Zone Office in each collection area. Primary collection workers start work at 6:30am.

Diesel is stored at the KMC Workshop Stores. Drivers must order diesel using a standard form, while all vehicles must complete a "running chart" record book, including a written description, start and finish odometer readings, trip distance (km), time in/out and fuel orders. These records must be signed by the Gohagoda Landfill Supervisor, Zone Supervisor or Scavenging Superintendent daily. An inspection of several tractors indicated that most odometers are not currently functioning.

## 2.4.4 Time and Motion Data

KMC time and motion study results for a tractor and compactor from August 2001 are tabulated below.

Table 2-6: Time and Motion Study Summary

Item	Tractor	Compactor
Zone	2 (Mahaiyawa)	3 (Peradeniya)
Start Time	8:15	7:15
Time for first collection round	1h 40min	3h 1min
Travel to landfill	32min	17min
Unloading at landfill	8min	10min
Return from landfill	12min	20min
Time for second collection round	2h 20min	2h 23min
Time at end of second collection round <sup>1</sup>	13:59	14:17
Total loading time	169min	217 min
Total time <sup>1</sup>	344 min	422 min
Loading time (% of total time)	49 %	51 %

**Note:** Assuming same travel time to and from landfill for emptying the second load as for first load.

#### 2.4.5 Care Kleen Performance Monitoring

KMC's Scavenging Superintendent is responsible for undertaking daily inspections of Zone 1A to monitor Care Kleen's performance. A daily inspection sheet is used for this purpose. This lists all streets in Zone 1A, with a grade from A-E (A = 80-100%, B = 60-80%, C = 40-60%, D = 20-40%, E = 0-20%) being assigned to each street for the following categories: 1 = drain cleaning, 2 = pavement cleaning, 3 = garbage removal, 4 = road sand removal and 5 = banner/poster removal. The Mechanical Engineer reviews these sheets and deducts payments from the contract according to performance. Typically 2-3% (but sometimes as low as 1%) of the contract sum is deducted per month. Problems cited by both contract parties during interviews are summarized below:

Care Kleen	KMC (Mechanical Engineer)
Poor public attitude: very few of the general public are conscious of cleanliness. In particular, many pavement vendors will not use garbage bins, even when they are placed in front of them. On other occasions, bins have been stolen.	Care Kleen are only cleaning the surface drains in the city centre and not the underground drainage. Some areas (e.g. Goodshed bus stand) now experience flooding during heavy rain.
Poor law enforcement: It is an offence to throw litter into the road/drains but KMC do not enforce the law and no one is ever charged.	The Mechanical Engineer believes Care Kleen's contract payments are too high and that KMC could provide the same service for about 50% of the cost.

#### 2.4.6 KMC Collection Vehicle Unit Costs

KMC garbage collection vehicle unit costs were calculated for handcarts, tractors and compactors using actual cost data supplied by KMC, supplemented by information from other sources where necessary. These costs are tabulated below.

Table 2-7: KMC Collection Vehicle Unit Costs

Item	Handcart		Tractor	Small Compactor
No of labourers	2	3	4	4
Driver	0	0	78,600	84,600
Labourers	145,200	217,800	290,400	290,400
Staff equipment	1,675	2,095	1,328	3,568
Diesel	0	0	82,448	298,404
Oil	0	0	1,792	8,400
Tyres, tubes	2,000	2,000	14,000	38,760
Repair/maintenance	2,000	2,000	49,500	50,740
Insurance	0	0	3,730	52,718
Licence/ registration	0	0	360	2,800
Depreciation	2,125	2,125	53,707	340,000
Total (Rs/yr)	153,000	226,020	575,864	1,170,390
Average trips/d	3.2	3.2	1.7	2.3
Collection (T/yr)	114	114	1,161	1,655
Unit cost (Rs/T)	1,342	1,983	496	707
<b>Comparative Unit Costs from other Local Authorities</b>				
Matale MC (Aug 2002)	501 (1Lr)	N/a	403 (4Lr)	451 (4Lr)
Negombo MC (Aug 02)	N/a	1,320-792 (3-5 trips/d)	418 (3Lr)	N/a
Chilaw UC (Aug 02)	N/a	1,322-749 (2.8-5trips/d)	629 (3Lr)	N/a
Gampaha MC (Aug 02)	1,482 (3trips/d)	2,185 (3trips/d)	799 (4Lr)	N/a
Nuwara Eliya MC (Sep 02)	N/a	1,858-1,115 (3-5trips/d)	517 (3Lr)	447 (3Lr)
Badulla MC (Sep 02)	N/a	1,865-1,119 (3-5trips/d)	268-254 (3Lr)	390 (3Lr)

**Notes:**

1. Average number of trips per day based on 26 working days per month; Lr = labourer.
2. Handcart garbage collection tonnage data based on Zone 4 Supervisor interview comments (13 handcarts doing a total of 41 trips/d) and assuming 26 working days/mth and 0.12T/handcart.
3. Tractor and compactor tonnages based on Gohagoda records for all KMC zones over a 12 mth period (4,548 trips = 10,065 tonnes collected by 8.67tractors (9 tractors for 8 mths and 8 tractors for 4 mths); 721 trips = 1,655 tonnes collected by compactor).
4. Straight line depreciation has been included, based on the following capital costs and lifetimes: handcart = 8,500Rs, 4 yrs; tractor = 683,200Rs, 17.5yrs (average capital cost of nine most recently purchased tractors); trailer = 132,000Rs, 9yrs (average capital cost of 11 most recently purchased trailers; compactor = 4,080,000Rs, 12yrs.

## 2.5 Final Disposal – Detailed Information

### 2.5.1 General

KMC were using three places until recently for final disposal. The other two are now playgrounds. The remaining operative landfill site is located at Gohagoda, approximately 6km outside the city limits. This site is located on a 13ha block of land that KMC has used since 1932, under a 90 year lease agreement with Harispattuwa Pradeshiya Sabha (PS).

The round trip from the city centre to the disposal site takes about 45min each way, primarily due to traffic congestion on the Katugastota Road. An alternative route is used from Peradeniya (Zone III only), which takes about 15min each way.

This site has been used for varying purposes since 1932, including first as an isolation ward for the hospital until 1960, then a sewage dumpsite, and then since the 1970s as a disposal site in one valley. Dumping was transferred to the adjacent valley in the mid-1980s, which is still being used for this purpose. In 1987, a dog pound and dog cemetery were established on this block of land, while a new slaughterhouse was constructed in 1988. However, the slaughterhouse has never been used, due to strong complaints from nearby residents and Buddhist monks from a nearby temple. The main intake for a new water treatment plant for Kandy City is scheduled to be constructed approximately 200m upstream of the Gohagoda landfill, with the water being piped from the intake to a new water treatment plant, to be constructed approximately 2km downstream. KMC has given some land in this area to retired staff and also to approximately 70 households (400 people) who lost houses during flooding in 1992.

The final disposal site has been operated for much of its lifetime as an open dump, with garbage being discharged from the top of the valley downhill in a single lift to a maximum depth of 20-30m. Dirt access roads provided access to the tipping face, with steel plates being placed on top of recently discharged garbage near the tipping face to prevent incoming vehicles from getting stuck. 17 labourers were employed for unloading of vehicles and garbage spreading, under the control of one Supervisor. No environmental protection measures were taken, with no daily cover being provided while leachate was visible seeping from the bottom of the garbage pile. Many birds were present and numerous goats grazed on the discharged garbage.

Recently, this system has been changed and slightly improved, following the privatisation of Zone 1A and the procurement of a D4C bulldozer in September 2001, which began operation in January 2002. With Care Kleen's introduction of night time collection in the city centre, KMC have introduced a two shift system at the landfill, comprising two Supervisors (one day, one night), and seven labourers (five on day shift from 6:30am-2:30pm; some labourers on overtime from 2:30-6:30pm and two on night shift from 6:30pm-2:30am). The reduction in the number of labourers from 17 to seven has been made possible by the introduction of the bulldozer. This is only used for several hours each day, its driver also being responsible for driving another KMC vehicle. The dozer is mainly used for garbage placement and compaction, creation of access roads and the placement of cover soil. However, a shortage of cover soil means that most of the garbage generally remains uncovered.

Incoming waste loads are recorded and the location of tipping is controlled by landfill staff. Unloading normally takes 5-20min. All labourers are provided with an apron, gumboots and gloves, although this equipment is often not used.

Gully sucker waste is also discharged into a pit at the disposal site for soakage into the ground or into a treatment plant (two concrete tanks), which has recently been constructed near to the landfill for the treatment of gully sucker waste (i.e. septic tank waste). Essentially, this functions as a sedimentation tank.

Conservancy waste (fish and meat waste and some hospital waste) is usually also discharged into a pit at the landfill.

## 2.5.2 Landfill Survey Results

A comprehensive survey of the landfill site and its surrounds was conducted in June 2002, with the main results being summarised below.

Table 2-8 : Gohagoda Landfill Survey Results

Item		Description
1. Name of landfill site		Gohagoda landfill
2. Location		Approximately 7km away from Kandy city centre in Tekkawatta village in the Polawatte Grama Sevaka division.
3. Start of operations		1970's
4. Land ownership		Harispattuwa Pradeshiya Sabha
5. General Site Description		Landfilling is taking place in a valley, surrounded by residential areas (villages) and paddy fields. There is a small stream, which supplies water to the paddy fields, near the landfill site. The Mahaweli River is about 300m away.
6. Surrounding land use		Residential and agricultural
7. Area	Current landfill site	Approximately 2.5 ha
	Previous landfill site	Approximately 1.4 ha (A=0.8ha, B=0.6ha)
	Other	Approximately 0.6 ha
	Total	Approximately 4.5 ha
8. Disposal details	Disposal method	Controlled tipping
	Reserve volume	Less than two years
9. Waste discharge	Municipal waste	Household, commercial, hotel, market, institutional and IDP waste collected by KMC and Care Kleen. Daily average: 77.4 tonnes/day (2,354 tonnes/month)
	Healthcare waste (HCW)	Majority of HCW (4.7T/d) is collected by KMC (most hospitals) or Care Kleen (Kandy General) and brought to Gohagoda for disposal. This comprises mainly non-risk HCW, together with some hazardous HCW (<<1T/d). The hazardous HCW is buried in a pit in the old landfill area, which is excavated and filled in manually.
	Industrial waste	Mainly Bata Co. and Ceylon Tobacco Corporation (direct haulage) and some garment factories (KMC collection). Average: < 1 T/day (<30T/month)
	Gully sucker waste	Collected by KMC; daily average: 22.3m <sup>3</sup> /d
10. Environmental and neighbourhood impact	Odour	Seriously affects surrounding villages throughout the year due to lack of proper soil cover.
	Pests (flies, crows, etc.)	Seriously affects surrounding villages throughout the year due to lack of proper soil cover.
	Fire & smoke	Seriously affects the surrounding villages in the dry season due to lack of proper soil cover.
	Leachate	Rainfall readily infiltrates the deposited waste due to lack of soil cover, producing large volumes of leachate which flow directly into the Mahaweli River without any treatment.
	Gully sucker waste	Discharged into pit and soaks into the soil, percolating through it to downgradient paddy fields or the Mahaweli River (see note).
11. Facilities	Control house	1 building
	Gate	None
	Boundary fence	None

Item		Description			
	Weighbridge	None			
	Leachate treatment	None			
	Buffer zone	None			
	Gully sucker treatment facility	2 tanks (construction not completed due to financial constraints - see note).			
	Electricity	Present at the control house and the water board building			
	Water supply	Two water supply pipelines - one to the water board building, the other to the control house			
	Telephone line	None			
12. Operation and Maintenance (O&M)  (costs given in following table)	Responsible organization	KMC			
	Equipment	Bulldozer (D4): 1 unit, owned by KMC and permanently based at the landfill site. Working hours: normal - 1.5-2 hours/day, maximum - 4 hours/day. The bulldozer operator is also involved in other driving activities for KMC, mostly in the evening.			
		Backhoe Loader (JCB 3CX Sideshift): 1 unit, owned by KMC and works at the landfill about 1-2 d/month. Mainly used for excavating pits for the disposal of gully sucker waste; cover soil excavation and loading also occasionally done.			
	Staff allocation	Position	No of workers	Duty	Work hours/shift
		Supervisor	1	Supervision	Day or night
		Assistant supervisor	1	Supervision	Day or night
		Labourers	2	Waste unloading	Day
			2	Waste unloading	Night
			3	Gully sucker and hospital waste burial	Day
		Bulldozer operator	1	Bulldozer operation	1.5-2 hours in day shift
Working hours	Day shift: 6.30 a.m. to 2.30 p.m.				
	Night shift: 2.30 p.m. to 10.30 p.m.				
	Overtime: 10.30 p.m. to 3.00 a.m.				
13. Surrounding villages or facilities	Thekkawatte village	The total number of households is around 120. Most of the households are middle and low income families, with most people working as KMC labourers. The whole village seems to be affected by the landfill site.			
	Polwatte village	Approximately 50 households near the boundary of the village are mainly affected, including high, middle and low income families.			
	Oliyahinne village	Approximately 25 households near the boundary of the village are mainly affected, including high, middle and low income families.			
	Former Water Board Workshop	The former Water Board workshop is located on the east of the landfill site, comprising buildings: approx. 640m <sup>2</sup> ; concrete slab: approx. 450m <sup>2</sup> ; other area: approx. 710m <sup>2</sup> ; total: approx. 1,800m <sup>2</sup>			

**Note:** Gully sucker waste is normally discharged into a pit at the landfill site of diameter ~3m and depth 2m, constructed once or twice per month by excavator, with the waste soaking into the ground and percolating underground into the downgradient paddy fields or river without any additional man-made treatment. Construction began on a gully sucker waste treatment facility adjacent to the landfill site in January 2002, with technical input from Peradeniya University, but was not completed due to financial constraints. However, KMC began to discharge gully sucker waste to the uncompleted treatment plant from February to March 2002, leading to complaints from residents of the surrounding villages about the improperly treated effluent. Hence KMC stopped this treatment facility in April 2002 and returned to using the pit system.



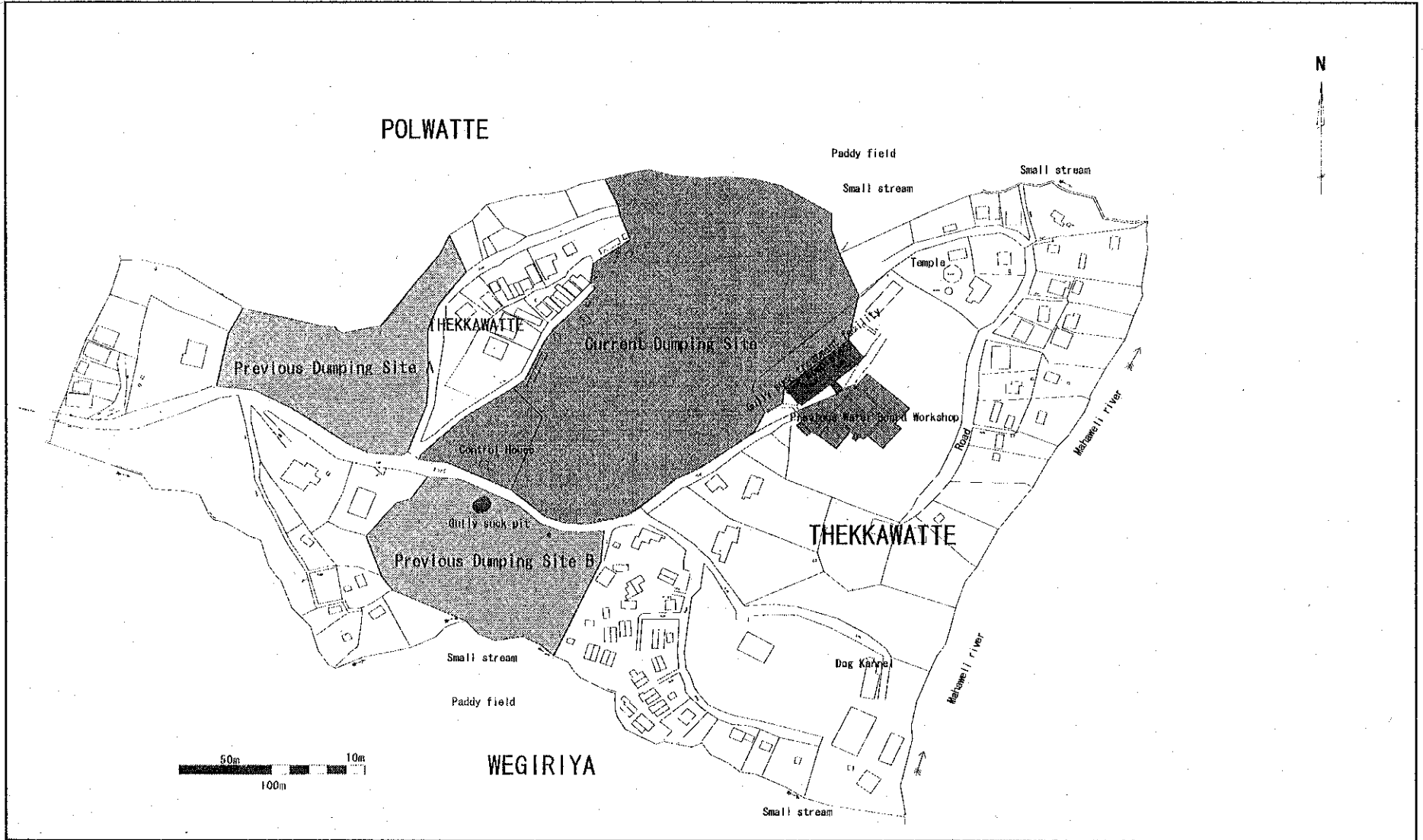


Figure 2-1: Gohagoda Landfill Site (mid-2002)



## 2.5.3 Gohagoda Landfill Site Issues

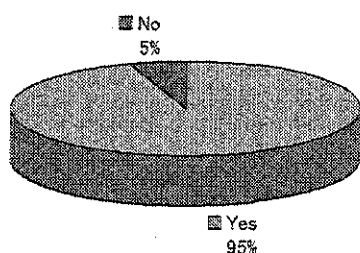
### 2.5.3.1 Remaining Lifetime

It is impossible to expand the Gohagoda landfill site any more because KMC has already discharged waste up to the landfill site boundary. Hence, there is an urgent need for KMC to look for and procure a new landfill site as soon as possible while taking measures to expand the lifetime of the Gohagoda landfill site.

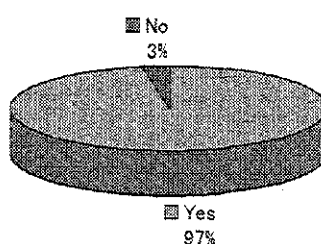
### 2.5.3.2 Odour, Pests, Crows and Smoke

According to the interview survey carried out in villages surrounding the Gohagoda landfill site in June 2002, odour, pests, crows, and smoke (from burning garbage) have a serious impact on the residents of these villages, as summarised below (survey sample size: 75 households at Thekkawatte, Polwatte and Oliyahinne villages). The major cause of these problems is inadequate covering of the deposited waste with soil. Therefore, KMC must cover the waste at the landfill site with soil more regularly in order to mitigate these negative impacts on nearby residents.

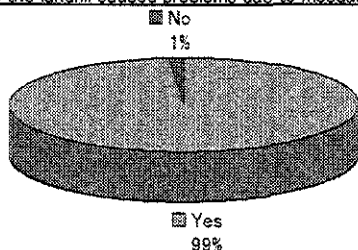
Is smoke from the landfill site a problem?



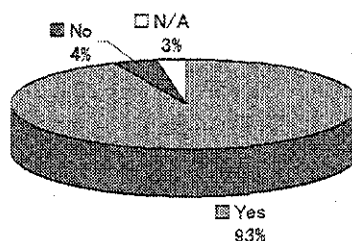
Is offensive odour from the landfill a problem?



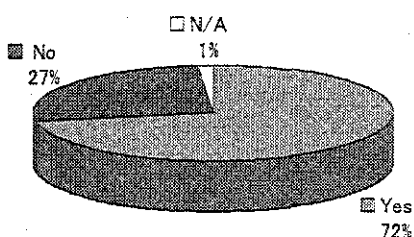
Has the landfill caused problems due to mosquitoes?



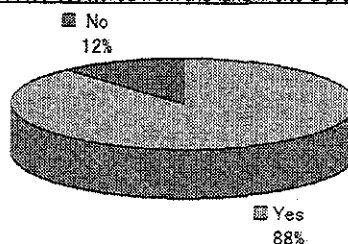
Has the landfill caused problems due to flies?



Is dust from landfill site a problem?



Are wastes scattered from the landfill site a problem?



### 2.5.3.3 Leachate

Rainwater readily penetrates the deposited waste at the landfill site, generating much leachate, again due to a lack of proper soil cover. This leachate flows directly into the Mahaweli River without any treatment, resulting in a serious environmental impact on the area downgradient of the landfill site.

### 2.5.3.4 Gully Sucker Waste

Gully sucker waste is discharged every day without any treatment into pits, which are excavated by machine at the landfill site. As for leachate, the gully sucker waste water soaks into the ground, percolating through it to downgradient paddy fields or the Mahaweli River, which is likely to have a significant negative environmental impact on the area downgradient of the landfill site.

### 2.5.3.5 Operation and Maintenance (O&M)

Current landfill O&M methods and corresponding issues are summarised below.

#### a. Current O&M Methods

- Waste collection vehicles discharge waste near the entrance of the landfill site, rather than at the tipping face of the landfill (working area), due to the access road not being constructed and maintained properly.
- The bulldozer hauls this waste to the tipping face and pushes it over the edge, whereby it falls to near the foot of the landfill site.
- The bulldozer operator also undertakes other KMC driving activities, mostly in the evening, and hence is not always present at the landfill site.
- KMC covers the landfill site with soil irregularly and only when soil generated by construction works in the city is obtained.
- Hospital hazardous waste (clinical and infectious waste, body parts) are discharged into a pit at the former landfill site and covered with soil manually.

#### b. O&M Issues

- There is no short or long term operation plan for the landfill site.
- The bulldozer consumes much fuel because it hauls the waste a long distance from near the entrance of the landfill to the tipping face.
- Waste scattering at the landfill site is common due to poor operation of the bulldozer.
- Soil cover provision is inadequate, due to the lack of a budget for obtaining cover soil.
- Nearby residents can easily approach the medical waste discharge area, as there is no boundary fence.

#### c. O&M Costs

Current O&M costs are tabulated below.

Table 2-9: Current O&M Costs of the Gohagoda Landfill Site

Item	Specification	Unit	Unit Rate	Time on SWM(%)	Quantity	Cost (Rs/yr)
Supervisor		Rs/yr	93,720	100	1	93,720
Assistant supervisor		Rs/yr	93,720	100	1	93,720
Labourer grade I		Rs/yr	79,260	100	4	317,040
Labourer grade II		Rs/yr	67,860	100	3	203,580
Diesel	Bulldozer(D4)	Rs/month	18,895	100	12	226,740
	JCB(3CX SIDESHIFT)	Rs/month	17,230	7	12	14,473
Lubricant	Bulldozer(D4)	Rs/month	675	100	12	8,100
	JCB(3CX SIDESHIFT)	Rs/month	386	7	12	324
Tyres	JCB(3CX SIDESHIFT)	Rs/yr	98,000	7	1	6,860
Repairs	Bulldozer(D4)	Rs/yr	-	-	-	-
	JCB(4CX SIDESHIFT)	Rs/yr	18,289	7	1	1,280
Insurance	Bulldozer(D4)	Rs/yr	74,684	100	1	74,684
	JCB(3CX SIDESHIFT)	Rs/yr	74,684	7	1	5,228
Total						1,045,749
Total waste tonnage to disposal/yr		T/yr			28,251	n/a
Unit O&M cost		Rs/T				37.0

Source: KMC Works Depart Mechanical Section

**Notes:**

1. 7,800Rs/month x 12months + 120Rs/yr (annual increment)=93,720 Rs/yr.
2. 6,600Rs/month x 12months + 60Rs/yr (annual increment)=79,260 Rs/yr.
3. 5,650Rs/month x 12months + 120Rs/yr (annual increment)=67,860Rs/yr.
4. JCB is dispatched from workshop 1-2 days per month.
5. Bulldozer was obtained on April 2002. Hence, KMC have yet to spend any money on it for repairs.

# Chapter 3

## Kandy Field Surveys

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## Chapter 3 Field Survey

### 3.1 Public Opinion Survey for Household in Kandy

#### Findings from Public Opinion Survey for Household in Kandy

A questionnaire survey was conducted among 150 households in Kandy Municipal Areas, in order to gather:

- Basic socio-economic profiles of inhabitants of Kandy.
- An appreciation of public attitude to the provision of solid waste collection service.
- An indication of willingness to pay for improved solid waste collection service.

Period of survey: First and second weeks of June, 2002

Sample size: 150 ( 50 each from high, middle and low income areas)

Sampling areas: \*High income areas are Weerakoon Garden, Aniwatte

\*Middle income areas are

Watapuluwa, Ampitiya

\*Low income areas are Mahaiyawa,

Suduhumpola

#### 1. General Questions

##### Q1-1 Ethnicity

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Sinhala	24	48%	49	98%	31	62%	104	69%
2 Muslim	5	10%	1	2%	12	24%	18	12%
3 Tamil	21	42%	0	0%	7	14%	28	19%
4 Other	0	0%	0	0%	0	0%	0	0%
Total	50	100%	50	100%	50	100%	150	100%

##### Q1-2 Religion

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Buddhist	24	48%	49	98%	27	54%	100	67%
2 Islam	4	8%	1	2%	12	24%	17	11%
3 Hindu	18	36%	0	0%	7	14%	25	17%
4 Christian	3	6%	0	0%	2	4%	5	3%
5 Other	1	2%	0	0%	2	4%	3	2%
Total	50	100%	50	100%	50	100%	150	100%

##### Q1-3 Household information

( person)	Low	Middle	High	Total
Avg. number of household members	5.6	4.5	4.8	5.0

(Rs.)	Low	Middle	High	Total
Avg. household income	8,300	12,921	25,602	15,608

(Rs.)	Low	Middle	High	Total
Income per person	1,477	2,871	5,356	3,142

Q1-4 How much is the total expenditure of your household per month on average?

(Rs.)	Low	Middle	High	Total
Avg. household expenditure	7,060	8,860	14,150	10,023

(Rs.)	Low	Middle	High	Total
Expenditure per person	1,256	1,969	2,960	2,018

Q1-5 Please specify the priority for your daily life regarding the improvement of the following aspects ? (Fill all three priorities)

	Low	Middle	High	Total
1 First	Garbage collection	Garbage collection	Garbage collection	Garbage collection
2 Second	Water supply	Storm water drainage	Water supply	Storm water drainage
3 Third	Storm water drainage	Waste water collection	Storm water drainage	Water supply

## 2. Questions on Garbage Collection Services in Your Area

Q2-1 Are there garbage collection services in your area?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	50	100%	48	96%	50	100%	148	99%
2 No	0	0%	2	4%	0	0%	2	1%
Total	50	100%	50	100%	50	100%	150	100%

Q2-2 Do you use these services?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	40	80%	39	78%	43	86%	122	81%
2 No	10	20%	9	18%	7	14%	26	17%
99 Irrelevant	0	0%	2	4%	0	0%	2	1%
Total	50	100%	50	100%	50	100%	150	100%

Q2-3 How is your garbage collected?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Placing garbage outside the property for collection	1	2%	8	16%	9	18%	18	12%
2 Carrying garbage to a specified collection point	27	54%	24	48%	32	64%	83	55%
3 Carrying garbage to a collection truck directly	12	24%	7	14%	2	4%	21	14%
4 Others	0	0%	0	0%	0	0%	0	0%
99 Irrelevant	10	20%	11	22%	7	14%	28	19%
Total	50	100%	50	100%	50	100%	150	100%



Q2-4 How often is your garbage collected?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Daily	18	36%	13	26%	16	32%	47	31%
2 More than four times per week	0	0%	16	32%	13	26%	29	19%
3 Two to three times per week	9	18%	4	8%	6	12%	19	13%
4 Once a week	2	4%	0	0%	1	2%	3	2%
5 Less than once per week	2	4%	1	2%	0	0%	3	2%
6 Irregular	9	18%	4	8%	6	12%	19	13%
98 Don't know	0	0%	1	2%	1	2%	2	1%
99 Irrelevant	10	20%	11	22%	7	14%	28	19%
Total	50	100%	50	100%	50	100%	150	100%

Q2-5 Is the garbage collection service done at a fixed time on the collection day?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	21	42%	19	38%	18	36%	58	39%
2 No	19	38%	19	38%	20	40%	58	39%
98 Don't know	0	0%	1	2%	5	10%	6	4%
99 Irrelevant	10	20%	11	22%	7	14%	28	19%
Total	50	100%	50	100%	50	100%	150	100%

Q2-6 Have you ever given small allowance such as new year's allowance and other seasonal allowance, including the reward to the extra work for you, to garbage collectors?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	7	14%	2	4%	12	24%	21	14%
2 No	33	66%	37	74%	31	62%	101	67%
99 Irrelevant	10	20%	11	22%	7	14%	28	19%
Total	50	100%	50	100%	50	100%	150	100%

Q2-7 How much is the total amount of (1) small allowance and (2) the reward you gave over the last one year?

(1) Small allowance

(Rs.)	Low	Middle	High	Total
Average annual small allowance	44	300	159	132

Note: No. of effective answers on this question is only twelve.

(2) Reward

(Rs.)	Low	Middle	High	Total
Average annual reward	400	50	56	93

Note: No. of effective answers on this question is only nine.

Q2-8 Are you satisfied with the collection service?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Very satisfied	5	10%	5	10%	10	20%	20	13%
2 Somewhat satisfied	23	46%	26	52%	20	40%	69	46%
3 Less than satisfied	7	14%	8	16%	8	16%	23	15%
4 Not satisfied at all	5	10%	0	0%	5	10%	10	7%
99 Irrelevant	10	20%	11	22%	7	14%	28	19%
Total	50	100%	50	100%	50	100%	150	100%

Q2-9 If you chose either 2, 3 or 4, what are the reasons? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Garbage collection / sweeping is not properly done	21	18%	27	26%	25	23%	73	22%
2 Garbage collection / sweeping frequency is too low	20	17%	19	18%	20	19%	59	18%
3 Garbage collection / sweeping is irregular	19	16%	18	17%	17	16%	54	16%
4 Garbage collection time is too early or too late or irregular	14	12%	17	16%	14	13%	45	14%
5 Behavior of garbage collection workers is bad	5	4%	0	0%	4	4%	9	3%
6 Garbage collection workers demand small allowance	1	1%	0	0%	6	6%	7	2%
7 Garbage collection small allowance is expensive	1	1%	0	0%	0	0%	1	0%
8 Collection service is not fair	5	4%	0	0%	0	0%	5	2%
9 Garbage collection point is too far	15	13%	8	8%	5	5%	28	9%
10 Other	0	0%	0	0%	0	0%	0	0%
99 Irrelevant	15	13%	16	15%	17	16%	48	15%
Total	116	100%	105	100%	108	100%	329	100%

Q2-10 Have you ever complained about the garbage collection service to the authorities in the last three years?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	10	20%	8	16%	12	24%	30	20%
2 No	30	60%	31	62%	31	62%	92	61%
99 Irrelevant	10	20%	11	22%	7	14%	28	19%
Total	50	100%	50	100%	50	100%	150	100%

Q2-11 *(Only for persons who chose "NO" in question Q2-1)* Do you want to receive a garbage collection service?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	0	0%	2	4%	0	0%	2	1%
2 No	0	0%	0	0%	0	0%	0	0%
99 Irrelevant	50	100%	48	96%	50	100%	148	99%
Total	50	100%	50	100%	50	100%	150	100%

### 3. Questions on Waste Discharge from Your Premises

Q3-1 How do you dispose of garbage generated in your premises?

	Low		Middle		High		Total	
	Main	Other	Main	Other	Main	Other	Main	Other
1 Discharge it outside of the house for the house to house collection	9	1	12	2	7	0	28	3
2 Discharge it at the specified place for the collection service	28	4	18	2	35	0	81	6
3 Open dumping outside of the house	4	1	4	3	1	2	9	6
4 Ask the relevant authority to send garbage collectors	0	0	0	0	0	0	0	0
5 Self-dispose	7	11	11	17	7	17	25	45
6 Composting (producing fertilizer from waste)	0	0	1	6	0	4	1	10
7 Give for recycling	1	2	0	0	0	3	1	5
8 Other	1	8	4	4	0	1	5	13
Total	50	27	50	34	50	27	150	88

Note: Most of the others means "discharge it directly to the truck"

	Low		Middle		High		Total	
	Main	Other	Main	Other	Main	Other	Main	Other
1 Discharge it outside of the house for the house to house collection	18%	4%	24%	6%	14%	0%	19%	3%
2 Discharge it at the specified place for the collection service	56%	15%	36%	6%	70%	0%	54%	7%
3 Open dumping outside of the house	8%	4%	8%	9%	2%	7%	6%	7%
4 Ask the relevant authority to send garbage collectors	0%	0%	0%	0%	0%	0%	0%	0%
5 Self-dispose	14%	41%	22%	50%	14%	63%	17%	51%
6 Composting (producing fertilizer from waste)	0%	0%	2%	18%	0%	15%	1%	11%
7 Give for recycling	2%	7%	0%	0%	0%	11%	1%	6%
8 Other	2%	30%	8%	12%	0%	4%	3%	15%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Q3-2 How often do you dispose of garbage generated in your premises?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 As soon as waste arises	5	10%	3	6%	10	20%	18	12%
2 Once daily	24	48%	32	64%	24	48%	80	53%
3 Once every 2 or 3 days	20	40%	11	22%	16	32%	47	31%
4 Less frequently	1	2%	4	8%	0	0%	5	3%
Total	50	100%	50	100%	50	100%	150	100%

Q3-3 Who mainly handles wastes at home?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 An adult male member	4	8%	4	8%	4	8%	12	8%
2 An adult female member	34	68%	42	84%	24	48%	100	67%
3 Servant	0	0%	2	4%	13	26%	15	10%
4 Others	12	24%	2	4%	9	18%	23	15%
Total	50	100%	50	100%	50	100%	150	100%

Note: Most of the others mean "anyone in the family".

**Q3-4 (Only for persons who chose 2 in question Q3-1) Who mainly brings the wastes to a specific collection point?**

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 An adult male member	8	16%	7	14%	11	22%	26	17%
2 An adult female member	14	28%	13	26%	13	26%	40	27%
3 Child	3	6%	0	0%	0	0%	3	2%
4 Servant	0	0%	0	0%	10	20%	10	7%
5 Others	7	14%	0	0%	1	2%	8	5%
99 Irrelevant	18	36%	30	60%	15	30%	63	42%
Total	50	100%	50	100%	50	100%	150	100%

Note: Most of the others mean "anyone in the family".

**Q3-5 What type of container do you use for carrying garbage to a collection point or for placing the garbage outside of your house? (Choose one or more)**

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Plastic bag	42	57%	36	48%	40	58%	118	54%
2 Paper bag	1	1%	1	1%	1	1%	3	1%
3 Metal/plastic/wood garbage bin	12	16%	15	20%	17	25%	44	20%
4 Box	2	3%	2	3%	2	3%	6	3%
5 Basket	11	15%	7	9%	6	9%	24	11%
6 None-place directly	6	8%	11	15%	3	4%	20	9%
7 Others	0	0%	3	4%	0	0%	3	1%
Total	74	100%	75	100%	69	100%	218	100%

Note: Others mean nylon bags of fertilizer, called pohora bag.

**Q3-6 Why do you use it? (Choose one or more)**

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 It is clean after collection work	17	17%	19	19%	19	20%	55	18%
2 It prevents foul odors	13	13%	12	12%	4	4%	29	10%
3 It is easy handling	42	41%	43	43%	44	45%	129	43%
4 It keeps away pests such as flies	7	7%	7	7%	8	8%	22	7%
5 It is cheap or easy to get	20	20%	19	19%	22	23%	61	21%
6 Other	3	3%	1	1%	0	0%	4	1%
Total	102	100%	101	100%	97	100%	300	100%

Note: Example of others are "a certain volume of waste can be carried at one time." and "it will be thrown away anyway."

**Q3-7 (Only for those who did not choose 2 in Q3-1) If you are requested to carry your garbage to a specified garbage collection point, would you cooperate to do so?**

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes, if it is located within 25m distance (30 sec to walk)	11	22%	15	30%	6	12%	32	21%
2 Yes, if it is located within 50m distance (1 min to walk)	7	14%	10	20%	2	4%	19	13%
3 No, I do not prefer the collection system mentioned above anyway	0	0%	4	8%	7	14%	11	7%
4 Others	0	0%	1	2%	0	0%	1	1%
99 Irrelevant	32	64%	20	40%	35	70%	87	58%
Total	50	100%	50	100%	50	100%	150	100%

Note: Other means "need to discuss with neighbors."

Q3-8 Do you have garden wastes (fallen leaves and branches or grass and weeds)?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	23	46%	35	70%	41	82%	99	66%
2 No	27	54%	15	30%	9	18%	51	34%
Total	50	100%	50	100%	50	100%	150	100%

Q3-9 How do you discharge your garden wastes generally?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Discharge it at the collection point with the other wastes for collection	5	9%	9	15%	13	21%	27	15%
2 Discharge it outside of my premises with the other wastes for collection	5	9%	4	6%	1	2%	10	6%
3 Ask the relevant authorities to send garbage collectors	1	2%	0	0%	0	0%	1	1%
4 Self-dispose	17	29%	27	44%	29	48%	73	40%
5 Composting (producing fertilizer from waste)	2	3%	5	8%	7	11%	14	8%
6 Give for composting	0	0%	0	0%	0	0%	0	0%
7 Others	1	2%	2	3%	2	3%	5	3%
99 Irrelevant	27	47%	15	24%	9	15%	51	28%
Total	58	100%	62	100%	61	100%	181	100%

Note: Others in rich family mean hiring someone, or bringing in dumping place by themselves. Others in poor areas are open dumping.

#### 4. Questions on Recycling and Waste Reduction

Q4-1 Recycling of waste is most effective if the waste can be sorted into different categories by the household. If the relevant authorities such as municipal councils and urban councils introduce a separate garbage collection system, you will be requested to separate your wastes into a number of categories, for example, such as i.) compostable waste such as food waste, paper and garden waste ii.) recyclable waste such as metals, glass, plastics, paper and iii.) other wastes. Are you willing to cooperate with this type of system?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Very much willing to cooperate	30	60%	34	68%	31	62%	95	63%
2 Somewhat willing to cooperate	11	22%	13	26%	11	22%	35	23%
3 Less willing to cooperate /somewhat unwilling to cooperate	6	12%	1	2%	0	0%	7	5%
4 Not willing to cooperate at all	3	6%	2	4%	8	16%	13	9%
5 Am doing already	0	0%	0	0%	0	0%	0	0%
Total	50	100%	50	100%	50	100%	150	100%

Q4-2 ***If you answered either 1 or 2 and 5***, why do you think recycling is important? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Recycling would reduce the amount of waste going to landfill	23	24%	21	25%	24	30%	68	26%
2 Recycling would help to protect environment	38	40%	45	53%	39	48%	122	47%
3 Recycling would allow you to earn some money	20	21%	7	8%	10	12%	37	14%
4 Others	5	5%	9	11%	0	0%	14	5%
99 Irrelevant	9	9%	3	4%	8	10%	20	8%
Total	95	100%	85	100%	81	100%	261	100%

Note: Example of others are "New products such as compost can be produced." and "Obligation as a citizen".

**Q4-3** *If you answered either 1 or 2 and 5, how many categories would you be willing to separate your wastes into?*

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Two	13	26%	13	26%	18	36%	44	29%
2 Three	17	34%	17	34%	12	24%	46	31%
3 More than that	11	22%	17	34%	12	24%	40	27%
99 Irrelevant	9	18%	3	6%	8	16%	20	13%
Total	50	100%	50	100%	50	100%	150	100%

**Q4-4** *If you choose 2, 3, or 4 in Q4-1, what are the reasons? (Choose one or more)*

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 It is inconvenient and difficult	11	16%	10	14%	11	15%	32	15%
2 It may increase financial burden regarding to the discharging cost	3	4%	1	1%	1	1%	5	2%
3 It will take much time	11	16%	12	16%	12	17%	35	16%
4 Needs for the recycling system is not clear	1	1%	2	3%	3	4%	6	3%
5 Benefits of the recycling system is not clear	6	9%	2	3%	0	0%	8	4%
6 There may be poor contribution from household members	5	7%	11	15%	12	17%	28	13%
7 Others	1	1%	2	3%	0	0%	3	1%
98 Don't know	2	3%	0	0%	1	1%	3	1%
99 Irrelevant	30	43%	34	46%	31	44%	95	44%
Total	70	100%	74	100%	71	100%	215	100%

Note: Example of others are, for example, "Not enough space in the house." and "Don't have much waste."

**Q4-5** *Is there someone who comes around to collect or buy your reusable or recyclable materials?*

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	41	82%	45	90%	38	76%	124	83%
2 No	9	18%	5	10%	12	24%	26	17%
Total	50	100%	50	100%	50	100%	150	100%

**Q4-6** *Which materials do they collect or buy from you?*

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Glass	37	29%	30	28%	31	27%	98	28%
2 Cardboard	1	1%	2	2%	2	2%	5	1%
3 Paper	24	19%	26	24%	30	27%	80	23%
4 Metal can	27	21%	18	17%	19	17%	64	18%
5 Other metal	12	9%	12	11%	13	12%	37	11%
6 Kitchen waste	0	0%	0	0%	0	0%	0	0%
7 Garden waste	0	0%	0	0%	0	0%	0	0%
8 Plastics	3	2%	1	1%	2	2%	6	2%
9 Textiles (e.g. clothes)	13	10%	9	8%	1	1%	23	7%
10 Leather, rubber	0	0%	0	0%	0	0%	0	0%
11 Wood / Timber	0	0%	0	0%	1	1%	1	0%
12 Tyres	1	1%	0	0%	0	0%	1	0%
13 Others	1	1%	1	1%	0	0%	2	1%
98 Not selling / Don't know	0	0%	4	4%	2	2%	6	2%
99 Irrelevant	9	7%	5	5%	12	11%	26	7%
Total	128	100%	108	100%	113	100%	349	100%

Note: One household in high income area said they won't sell though a collector comes.

Q4-7 Do you take for recyclable materials to shops for refund or sale?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	23	46%	8	16%	16	32%	47	31%
2 No	27	54%	42	84%	34	68%	103	69%
Total	50	100%	50	100%	50	100%	150	100%

Q4-8 Which materials do you return or sell to shops?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Glass	22	32%	5	9%	14	25%	41	23%
2 Cardboard	1	1%	1	2%	0	0%	2	1%
3 Paper	10	15%	4	8%	7	12%	21	12%
4 Metal can	3	4%	0	0%	2	4%	5	3%
5 Other metal	1	1%	0	0%	0	0%	1	1%
6 Kitchen waste	0	0%	0	0%	0	0%	0	0%
7 Garden waste	0	0%	0	0%	0	0%	0	0%
8 Plastics	2	3%	0	0%	0	0%	2	1%
9 Textiles (e.g. clothes)	1	1%	1	2%	0	0%	2	1%
10 Leather, rubber	1	1%	0	0%	0	0%	1	1%
11 Wood / Timber	0	0%	0	0%	0	0%	0	0%
12 Tyres	0	0%	0	0%	0	0%	0	0%
13 Others	0	0%	0	0%	0	0%	0	0%
99 Irrelevant	27	40%	42	79%	34	60%	103	58%
Total	68	100%	53	100%	57	100%	178	100%

Q4-9 Are you using kitchen and/or garden waste for compost?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	1	2%	14	28%	9	18%	24	16%
2 No	49	98%	36	72%	41	82%	126	84%
Total	50	100%	50	100%	50	100%	150	100%

Q4-10 Hazardous waste refers to items like dead batteries, used spray cans, old medicines, old household chemicals, solvents, paints, etc. Considering all the solid waste produced by your household, how many hazardous waste items would you dispose of per month?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 None	26	52%	17	34%	9	18%	52	35%
2 One to two	17	34%	26	52%	37	74%	80	53%
3 Three to five	5	10%	5	10%	3	6%	13	9%
4 Six to ten	2	4%	2	4%	1	2%	5	3%
5 More than ten	0	0%	0	0%	0	0%	0	0%
Total	50	100%	50	100%	50	100%	150	100%



Q4-11 Suppose that you are satisfied with the service of Municipal solid waste management, either as is or as a result of improvement. Think for a moment about the largest amount of money that your household would be willing to pay each month as a garbage collection fee. (Important: If the garbage collection fee is more than this amount, your household will not be able to afford to pay and will not be able to use the garbage collection service.)

(Rs.)	Low	Middle	High	Total
Avg. amount of WTP (willingness to pay)	156	162	140	153

## 5. Public cooperation / Community participation

Q5-1 Now, we would like to ask about the community you live. In your community, do you have any community-based organizations to solve not only the waste problems but also other community problems?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	28	56%	33	66%	31	62%	92	61%
2 No	22	44%	15	30%	12	24%	49	33%
98 Don't know	0	0%	2	4%	7	14%	9	6%
Total	50	100%	50	100%	50	100%	150	100%

Q5-2 If yes, when did the community-based organization start functioning?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Within five years	8	16%	4	8%	1	2%	10	7%
2 Between six to ten years	4	8%	0	0%	3	6%	10	7%
3 More than eleven years ago	12	24%	14	28%	16	32%	42	28%
98 Don't know	4	8%	15	30%	11	22%	30	20%
99 Irrelevant	22	44%	17	34%	19	38%	58	39%
Total	50	100%	50	100%	50	100%	150	100%

Q5-3 How is the leader of this community chosen?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Democratically elected	18	36%	25	50%	18	36%	61	41%
2 Appointed by elders	6	12%	0	0%	6	12%	12	8%
3 Appointed by administration	0	0%	0	0%	0	0%	0	0%
4 Inherited	1	2%	0	0%	0	0%	1	1%
5 Others	0	0%	0	0%	0	0%	0	0%
98 Don't know	3	6%	8	16%	7	14%	18	12%
99 Irrelevant	22	44%	17	34%	19	38%	58	39%
Total	50	100%	50	100%	50	100%	150	100%

Q5-4 How often do you have the meetings?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Once a month	4	8%	11	22%	17	34%	31	21%
2 Once in two months to five months	3	6%	6	12%	1	2%	11	7%
3 Once in six months	2	4%	0	0%	0	0%	2	1%
4 Once in seven to eleven months	0	0%	0	0%	0	0%	0	0%
5 Once in a year	13	26%	8	16%	7	14%	28	19%
6 No meeting	1	2%	0	0%	0	0%	1	1%
98 Don't know	5	10%	8	16%	6	12%	19	13%
99 Irrelevant	22	44%	17	34%	19	38%	58	39%
Total	50	100%	50	100%	50	100%	150	100%

Q5-5 Have you ever discussed the methods of proper garbage handling and discharge at the meetings?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	10	20%	9	18%	9	18%	28	19%
2 No	16	32%	14	28%	19	38%	49	33%
98 Don't know	2	4%	10	20%	3	6%	15	10%
99 Irrelevant	22	44%	17	34%	19	38%	58	39%
Total	50	100%	50	100%	50	100%	150	100%

Q5-6 Have you ever been taught methods of proper garbage handling and discharge?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	19	38%	21	42%	24	48%	64	43%
2 No	31	62%	29	58%	26	52%	86	57%
Total	50	100%	50	100%	50	100%	150	100%

Q5-7 If "Yes" to the previous question, who taught these to you? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Parents	3	5%	3	5%	4	6%	10	5%
2 Community leaders	2	4%	3	5%	6	9%	11	6%
3 School teachers	4	7%	8	13%	8	12%	20	11%
4 Local government	14	25%	15	25%	16	24%	45	25%
5 Central government	0	0%	0	0%	3	5%	3	2%
6 NGOs	0	0%	0	0%	0	0%	0	0%
7 Others	2	4%	2	3%	3	5%	7	4%
99 Irrelevant	31	55%	29	48%	26	39%	86	47%
Total	56	100%	60	100%	66	100%	182	100%

Note : Example of others are "Media such as TV and radio." and " work place".

Q5-8 Does anyone in your family or your servant clean the side of the road or adjacent public area in front of your premises?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes, almost everyday	29	58%	25	50%	13	26%	67	45%
2 Yes, sometimes	15	30%	19	38%	21	42%	55	37%
3 No	6	12%	6	12%	16	32%	28	19%
Total	50	100%	50	100%	50	100%	150	100%

Q5-9 Here please tell me about the behavior of your community population, **and not yours**. What are **the most common** methods to dispose of the garbage in this community?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Picked up by garbage collection service	37	53%	41	53%	42	72%	120	58%
2 Burnt	12	17%	20	26%	3	5%	35	17%
3 Thrown in the open space or rivers	17	24%	6	8%	3	5%	26	13%
4 Just dumped on the yard / in the garden	4	6%	6	8%	5	9%	15	7%
5 Buried on the yard / in the garden	0	0%	5	6%	2	3%	7	3%
6 Others	0	0%	0	0%	0	0%	0	0%
98 Don't know	0	0%	0	0%	3	5%	3	1%
Total	70	100%	78	100%	58	100%	206	100%

Q5-10 Has anyone in this household, including children, received any health and environmental education or information relating to solid waste?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Yes	26	52%	41	82%	33	66%	100	67%
2 No	24	48%	9	18%	17	34%	50	33%
Total	50	100%	50	100%	50	100%	150	100%

Q5-11 If yes, where did this information come from? (Choose one or more)

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Parents	8	9%	13	9%	10	9%	31	9%
2 School	26	30%	33	23%	29	25%	88	26%
3 Medical worker /center / hospital	2	2%	2	1%	5	4%	9	3%
4 Community organization/ NGOs	1	1%	2	1%	2	2%	5	1%
5 Newspaper	4	5%	22	16%	11	10%	37	11%
6 Radio program	5	6%	21	15%	9	8%	35	10%
7 TV program	11	13%	34	24%	23	20%	68	20%
8 Local government	3	3%	5	4%	5	4%	13	4%
9 Central government	2	2%	0	0%	2	2%	4	1%
10 Others	0	0%	0	0%	1	1%	1	0%
99 Irrelevant	24	28%	9	6%	17	15%	50	15%
Total	86	100%	141	100%	114	100%	341	100%

Q5-12 Do you think a campaign to raise awareness of people for maintaining the cleaner city and environment is necessary?

	Low		Middle		High		Total	
	Number	%	Number	%	Number	%	Number	%
1 Very necessary	46	92%	48	96%	37	74%	131	87%
2 Somewhat necessary	4	8%	2	4%	9	18%	15	10%
3 Not very necessary	0	0%	0	0%	4	8%	4	3%
4 Not necessary at all	0	0%	0	0%	0	0%	0	0%
Total	50	100%	50	100%	50	100%	150	100%

## 3.2 Commercial/Industrial and Institutional Waste Generator Survey Results

Commercial/industrial and institutional interview survey results for 91 samples within KMA are summarized in this section.

### 3.2.1 Garbage Discharge and Collection

The following table sets out the main interview survey results relating to garbage discharge and collection. Some key points are summarized below:

- (a) 83 (91%) enterprises are provided with a garbage collection service by KMC or Care Kleen, with 77 (85%) of these using this service.
- (b) 25 (27%) enterprises pay garbage collection workers informally, the average payment being 1,728 Rs/yr (range = 10 (small shop) to 12,000 (large hotel) Rs/yr).
- (c) 39 (51%) of the 77 enterprises using the garbage collection service are satisfied with it (one no response). The main reasons for dissatisfaction are:
  - Garbage collection/sweeping is irregular (15).
  - Poor garbage discharge system (14).
  - Garbage collection/sweeping frequency is too low (14).
  - Garbage collection/sweeping is not properly done (13).
- (d) Hospitals are also concerned with the handling and disposal of hazardous healthcare wastes<sup>1</sup>.
- (e) 19 (21%) enterprises have complained to KMC about the garbage collection service at least once in the last 3 years.
- (f) 37 (88%) out of 42 enterprises in Zone 1A, the area serviced by Care Kleen, believe Care Kleen is providing a much better (11) or slightly better (26) garbage collection service than when KMC was collecting garbage in this area.

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<sup>1</sup> Although only one hospital stated this in the survey, this emerged as an issue of great concern during informal discussions with hospitals.

Table 3-1: Survey results - Garbage Discharge and Collection

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	30	23	30	8	91
<b>Q1.5 - Garbage storage within premises (main method) - No of responses<sup>2,3</sup></b>					
a. Plastic bag	11	2	1	2	16
b. Open container	10	5	15	2	32
c. Container with lid	4	13	14	4	35
d. Place on ground/floor	3	1	1	0	5
e. Direct disposal	2	0	0	0	2
f. Other	0	1	0	0	1
g. No response	0	1	0	0	1
<b>Q1.6 - Main method of garbage disposal - No of responses<sup>3</sup></b>					
a. Place outside for collection	14	3	4	5	26
b. Carry to collection vehicle	8	1	0	1	10
c. Take to collection point	9	4	15	2	30
d. Labourers collect from premises	1	5	2	0	8
e. Bury on site	0	1	4	0	5
f. Burn on site	0	0	4	0	4
g. Recycle	0	7	3	0	10
h. Compost	0	2	1	0	3
i. Open dumping	0	0	0	0	0
j. Other	0	2	0	0	2
<b>Q1.8 - Walking distance to garbage collection point - No of responses (only if chose Q1.6c)</b>					
a. 0-25m	8	2	13	1	24
b. 25-50m	1	0	1	0	2
c. 50-100m	0	1	0	0	1
d. 100-250m	0	1	0	0	1
e. Over 250m	0	0	0	0	0
f. No response	0	2	1	1	4
<b>Q1.12 to 1.13 - Provision and use of garbage collection service - No of responses</b>					
Provided	30	20	25	8	83
Not provided	0	3	5	0	8
Use	30	17	22	8	77
<b>Q1.14 - Garbage discharge and collection frequency - No of responses</b>					
Discharge at least once daily	26	15	18	7	58
Collection at least daily	26	16	13	5	60
<b>Q1.15 to 1.17 - Garbage collection worker payment<sup>3</sup></b>					
No giving payments	9	11 <sup>4</sup>	2	3	25
Average payment (Rs/yr)	176 (10-600)	3,144 (150-12000)	350 & 6,000	225 (75-500)	1,728 (10-12,000)
<b>Q1.18 - Satisfaction with existing garbage collection service</b>					
Satisfied (no)	17	7	10	5	39
Dissatisfied (no)	13	10	11 (1 nr)	3	37
Reasons for dissatisfaction:					
a. Poor discharge system	4	2	5	3	14
b. Collection point too far away	6	2	0	1	9
c. Coll'n/sweep. not done properly	4	3	5	1	13
d. Collection/sweeping is irregular	3	4	8	0	15
e. Coll'n/sweep. frequency too low	3	5	5	1	14
f. Collection time is too early/late	4	2	3	1	10
g. Garbage workers behave badly	1	0	0	0	1
h. labourers demand payment	1	1	1	0	3
i. LA garbage fee is too high	N/A	N/A	N/A	N/A	N/A
j. Lack of recycling	0	0	0	1	1
k. Other	1	4	3	0	8
l. Problems handling hazardous healthcare waste	N/A	N/A	N/A	1	1
<b>Q1.19 - Complaints to KMC in last 3 years - No of responses</b>					
a. None	29	10	12	3	54
b. Once only	1	1	2	1	5
c. Several times	0	4	4	3	11
d. More than 5 times	0	1	2	0	3
e. No response	0	0	0	1	1

a. Much better	10	0	1	Not asked	11
b. Slightly better	15	4	7		26
c. About the same	1	1	3		5

**Notes:**

1. Institutional results include two extra government enterprises, not included in government office waste stream analysis.
2. Some hotels and hospitals have their own reinforced concrete bin collection point, either inside or outside their premises.
3. Hospital garbage storage and disposal results apply to their main method of disposal – i.e. normal garbage.
4. Eight hotels pay garbage collection workers informally in money, three pay in meals.
5. N/a = not applicable.

### **3.2.2 Improvements to Garbage Collection and Disposal**

The following table sets out the main interview survey results relating to desired improvements to garbage discharge and collection. Some key points are summarized below:

- (a) The five most desired improvements to garbage collection and disposal in descending order are:
  - Improved garbage collection frequency (weighted average rank, WAR = 58.0).
  - Improved discharge system (WAR = 36).
  - Public education (WAR = 32).
  - Shorter distance to collection point (WAR = 29.5).
  - Greater recycling/composting (WAR = 19.5).
- (b) Improved collection and disposal of healthcare hazardous waste was also of great concern to the hospitals. Three hospitals (Peradeniya, Katugastota, Kandy General) specifically requested the provision of an incinerator, while the Dental hospital incinerator's chimney requires extension. The capacity of the two existing incinerators in the city is likely to be too small for any sharing arrangement between hospitals to be feasible.
- (c) Most enterprises thought that KMC (49, 54%) or the Central government (27, 30%) should pay for improved garbage collection and disposal. However, 26 (29%) supported the introduction of an individual garbage collection fee.
- (d) 25 (27%) enterprises indicated a willingness to pay (WTP) a garbage collection fee, the average WTP being 264Rs/mth (range = 24 to over 2,000Rs/mth). Another 41 were not willing to pay anything, while 25 enterprises did not respond to this question. The non-respondents are mainly hotels and institutions, where the survey respondent felt unable to make such a decision without referring it to the hotel management committee or the Hotel Association for discussion, or in the case of institutions, to senior management (i.e. mainly provincial/central government).

Table 3-2: Survey Results – Improvements to Garbage Collection and Disposal

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	30	23	30	8	91
<b>Q2.1 - Desired improvements to garbage collection/disposal – weighted average rank</b>					
a. Improved discharge system	11	12.5	8	4.5	36
b. Closer collection point	15	9	4	1.5	29.5
c. More reliable service	3.5	7	3.5	5.0	19
d. Improved collection frequency	20	11	20	7.0	58
e. Greater recycling/composting	2.5	7.5	5	4.5	19.5
f. Improve landfill operation	3.5	0	1.5	2	7
g. Public education	9.5	6	13	3.5	32
h. Other <sup>1</sup>	4	7	12	2.5	25.5
i. Improved collection/disposal of hospital hazardous waste <sup>2</sup>	N/A	N/A	N/A	7.5	7.5
<b>Q2.2 – Who should pay for improved garbage collection/disposal – No of responses</b>					
a. Central government	3	6	13	5	27
b. Provincial Council	2	2	0	1	5
c. Local authority	23	12	13	1	49
d. Individual garbage fee	8	9	8	1	26
e. Other	3	1	1	0	5
f. No response	0	1	4	0	5
<b>Q2.3 - Willingness to pay for improved garbage collection/disposal</b>					
Willing to pay (no)	15	7	1 (1500 Rs/mth)	2	25
Not willing to pay (no)	15	10	11	5	41
No response (no)	0	6	18	1	25
Willingness to pay (Rs/mth)	24 <sup>3</sup>	337	ID	>2,000 & 375	264 (24 – 2,000)

**Notes:**

1. "Other" included taking legal action against lawbreakers, cleaning the drainage system, providing a proper town management plan, improving labourer supervision, the need for more labourers, and having a special programme for the Tooth temple.
2. This question was asked in terms of Rs/yr, while the other surveys were asked in terms of Rs/mth – this may partially explain the relatively low figure derived.
3. N/a = not applicable.

### 3.2.3 Recycling and Possible Source Separation Collection System

The following table sets out the main interview survey results relating to recycling and a possible source separation collection system. Some key points are summarized below:

- (a) 89 (98%) enterprises believed recycling is necessary.
- (b) 66 (73%) enterprises are either very willing (60) or somewhat willing (6) to cooperate in separating their garbage at source, while three are doing this already.
- (c) The main reasons given by those enterprises not willing to cooperate are that it is inconvenient/difficult (11) or takes too much time (9).
- (d) The main reasons given by those willing to cooperate are that recycling protects the environment (63 responses), followed by the opportunity to earn some additional money (25 responses). 45 of these respondents were willing to sort their wastes into three (20) or more (25) categories, with the preferred source separation system being either coloured plastic bags or permanent containers, collected from outside their premises.
- (e) Twelve enterprises indicated an average WTP for permanent containers of 153Rs, while 26 enterprises were not willing to pay anything. Another six were willing to pay, the amount



depending on the size of the container and its quality. There were 25 non-responses mainly from hotels and institutions, with the matter being referred to senior management for discussion.

Table 3-3: Survey Results – Recycling and Possible Source Separation System

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	30	23	30	8	91
<b>Q2.4 – Recycling – No of responses</b>					
Necessary	30	23	28 (1 nr)	8	89
Not necessary	0	0	1	0	1
<b>Q2.5 – Willingness to cooperate in separating wastes at source – No of responses</b>					
a. Very willing	20	17	17	6	60
b. Somewhat willing	1	2	3	0	6
c. Less/somewhat unwilling	2	0	2	1	5
d. Not willing at all	7	2	7	0	16
e. Already sort	0	2	0	1 (partial)	3
f. No response	0	0	0	1	1
<b>Q2.6 – Reasons for not being willing to cooperate – No of responses (only if chose Q2.5c or d)</b>					
a. Increased financial burden	2	0	4	0	6
b. Inconvenient/difficult	5	1	4	1	11
c. Takes too much time	5	0	3	1	9
d. Needs/benefits not clear	1	0	1	0	2
e. Other	0	2	5	0	7
f. No response	0	0	1	0	1
<b>Q2.7 – Reasons for being willing to cooperate – No of responses (only if chose Q2.5a, b or e)</b>					
a. Reduces waste to landfill	8	3	3	3	17
b. Protects environment	17	20	19	7	63
c. Earn some extra money	8	8	8	1	25
d. Other	3	4	2	0	9
<b>Q2.8 – No of categories willing to separate waste into – No of responses (only for Q2.5a,b or e)</b>					
a. Two	10	6	7	1	24
b. Three	8	6	4	2	20
c. More than three	3	9	9	4	25
<b>Q2.9 – Preferred separate collection system – Weighted average rank (only for Q2.5a,b or e)</b>					
a. Coloured plastic bags collected from outside premises	16	8.5	15	11.5	51
b. Permanent coloured containers collected from outside premises	13	14	12	9.5	48.5
c. Own bags/containers collected from outside premises	5	7.5	7	2.5	22
d. Own bags/containers taken to community collection point	0	1.5	0	0	1.5
e. Other	0	1.5	0	2	3.5
<b>Q2.10 – Willingness to pay for permanent containers for source separation system – (only for Q2.5a,b or e)</b>					
Willing to pay (no)	9	3	0	0	12
Not willing to pay (no)	12	4	5	5	26
Depends on size and quality	0	6	0	0	6
No response (no)	0	8 <sup>1</sup>	15 <sup>2</sup>	2	25
Willingness to pay (Rs)	39	714	0	0	66

**Notes:**

1. The high number of no responses is mainly due to the survey respondent believing such a decision should be made by the hotel management committee or after discussion with the Hotel Association, rather than them.
2. Most institutional respondents felt such a decision needed to be made by senior management (mainly provincial/central government) and did not give an answer.
3. nr = no response.

### 3.2.4 Composting

The following table sets out the main interview survey results relating to composting. Some key points are summarized below:

- (a) 17 (19%) enterprises are willing to undertake on-site composting, while 13 are doing so already. However, the majority (59, 65%) of enterprises are not in favour, particularly small commercial enterprises and institutions, mainly due to a lack of space on site (45) and it taking too much time (18).
- (b) Only three enterprises indicated a willingness to pay for a compost container, giving an average WTP of 375Rs. However, this is not considered representative due to the low number of responses. Another six enterprises, mainly hotels and institutions did not respond to this question for reasons described above.
- (c) 64 (70%) enterprises were willing to store their organic wastes for up to one day, if they were to be collected for composting at a centralized facility.

Table 3-4: Survey Results – Composting

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	30	23	30	8	91
<b>Q2.11 – Willing to compost – No of responses</b>					
a. Already compost	0	6	7	0	13
b. Willing	2	7	4	4	17
c. Not willing	28	10	17	4	59
d. No response	0	0	2	0	2
<b>Q2.12 – Willingness to pay for compost system – (only if chose Q2.11b)</b>					
Willing to pay (no)	1 (125Rs)	1 (250Rs)	0	1 (750Rs)	3
Not willing to pay (no)	0	1	2	3	6
Depends on size and quality	0	1	0	0	1
No response (no)	1	4 <sup>1</sup>	2 <sup>2</sup>	0	7
Willingness to pay (Rs)	ID	ID	0	ID	375
<b>Q2.13 – Reasons for not being willing to compost – No of responses (only if chose Q2.11c)</b>					
a. Not enough space on site	18	10	13	4	45
b. Takes too much time	14	4	0	0	18
c. LA/contractor should do	0	0	1	0	1
d. No equipment	3	0	0	0	3
e. Lack of knowledge	1	0	2	0	3
f. Concern about smell/pests	1	2	0	2	5
g. Not interested	4	0	3	0	7
h. Other	3	2	3	1	9
<b>Q2.14 – Factors that would encourage on-site composting (only if chose Q2.11b or c)</b>					
a. Free compost container	0	0	2	1	3
b. Availability of cheap, easy to use, nuisance free system	2	1	1	1	5
c. Reduction in LA taxes	0	0	0	1	1
d. Education/training	0	0	1	0	1
e. Earning extra money	0	1	0	1	2
f. Other	0	1	2	1	4
<b>Q2.15 – Willingness to store organic wastes between collection – No of days</b>					
a. Half a day	3	0	1	4	8
b. One day	17	18	18	3	56
c. Two days	3	2	1	0	6
d. Three days	3	2	1	0	6
e. More than 3 days	2	1	4	1	8
f. No response	2	0	5	0	7

**Notes:**

- The high number of no responses is mainly due to the survey respondent believing such a decision should be made by the hotel management committee or after discussion with the Hotel Association, rather than them.
- Most institutional respondents felt such a decision needed to be made by senior management (mainly provincial/central government) and did not give an answer.
- nr = no response, N/a = not applicable, ID = insufficient data.

### 3.2.5 Environmental Education and General Cleanliness

The following table sets out the main interview survey results relating to environmental education and cleanliness. Some key points are summarized below:

- (a) 45 (50%) enterprises indicated they have received some health/environmental education related to SWM.
- (b) Most people had received this training as part of their work, including vocational training (e.g. hospitals), on the job training (e.g. hotels), internal health and safety programmes, seminars and workshops.
- (c) 87 (96%) enterprises consider a campaign to raise peoples' awareness for maintaining a cleaner city and environment is either somewhat necessary (78) or very necessary (9).

Table 3-5: Survey Results – Environmental Education and General Cleanliness

Item	Small Waste Gen'rs	Large Waste Generators			Total
		Comm./ industrial	Other Inst'ns	Hospitals	
No of respondents	30	23	30	8	91
<b>Q3.1 to 3.2 – Receipt of Health/environmental education/knowledge about SWM</b>					
No of responses	5	12	22	6	45
Source:					
a. School	0	0	1	0	1
b. Leaflets/posters, etc.	0	0	2	2	4
c. Health worker/centre	1	0	5	2	8
d. Community organization/NGO	1	1	2	0	4
e. Newspaper	0	0	1	1	2
f. Radio programme	0	3	5	1	9
g. TV programmes	0	3	4	1	8
h. Local authority	0	0	2	0	2
i. Local authority contractor	0	0	0	0	0
j. Central government	0	3	9	3	15
k. Other	1	11	15	4	31
l. No response	2	0	0	0	2
<b>Q3.2 – Necessity for campaign to raise peoples' awareness of need for cleaner city/environment</b>					
a. Very necessary	22	20	26	8	78
b. Somewhat necessary	4	3	2	0	9
c. Not very necessary	3	0	1	0	4
d. Not necessary at all	0	0	1	0	1
e. No response	1	0	0	0	1

### 3.2.6 Other Comments

Other comments covered a broad range of issues and are summarized below. The most common comments relate to:

- (a) Public education/awareness raising being vital (16).
- (b) Strict rules/regulations are needed (9).
- (c) Legal action should be taken against inappropriate waste handling/disposal (6).
- (d) Monitoring and effective supervision is needed (5), with two respondents adding the proviso that this applies particularly to labourers.

Table 3-6: Survey Results – Other Comments

Comments	Small Waste Genr's	Large Waste Generators			Total
		Comm./ Indust.	Other Inst'ns	Hosp -itals	
<b>Five or more comments</b>					
Public education/awareness raising is vital	0	4	10	2	16
Strict rules/regulations/laws are needed	2	2	4	1	9
Take legal action against inappropriate waste handling/disposal	3	0	2	1	6
Monitoring and effective supervision needed for SWM, particularly labourers (2)	0	3	2	0	5
<b>Three or four comments</b>					
Increase the number of collection points	1	1	2	0	4
Establish permanent collection points in schools	0	0	4	0	4
Establish proper SWM systems/facilities	0	0	3	1	4
Collect garbage regularly, at least once/day.	3	0	0	0	3
Waste recycling/composting is important	1	2	0	0	3
<b>Two comments</b>					
Ban polythene, substituting items made from natural materials instead.	0	1	0	1	2
Remove unofficial/illegal pavement sellers	1	1	0	0	2
MC is not efficiently involved in SWM	1	0	1	0	2
Willing to pay, if system improved	1	1	0	0	2
Motivate students to think about appropriate SWM practices (e.g. recycling/composting)	0	0	2	0	2
Efficient collection system needed	0	0	2	0	2
Install permanent collection points with lids	0	2	0	0	2
Need an incinerator	0	0	0	2	2
<b>One comment</b>					
Solve problems through collective effort	0	1	0	0	1
SWM is essential	0	1	0	0	1
Use new technology to improve system	0	1	0	0	1
Institutions should have own SWM regulations	0	0	1	0	1
Pavement traders should properly discharge waste	0	1	0	0	1
Establish community based organisations	0	0	1	0	1
Stop political intervention	0	0	1	0	1
Waste collection, cleaning and street sweeping should be done by private sector	0	0	1	0	1
Waste collection should be done by government/ KMC	1	0	0	0	1
Cleaning should be done, even at night	0	0	1	0	1
SWM labourers and officers should be evaluated by customers	1	0	0	0	1
Separate unit in hospital for SWM and trained staff	0	0	0	1	1
Willing to participate in environmental education programmes	1	0	0	0	1
Supervisors and collection vehicles should be deployed in each street	1	0	0	0	1
Also clean Cross St and other secondary sts	1	0	0	0	1
Put waste collection points close to shops	0	1	0	0	1
Build new collection point by Army Camp	0	0	1	0	1
Establish large scale composting/recycling factories	0	1	0	0	1
Give households knowledge/equipment for compost making	0	0	1	0	1
Prison inmates can be used as labourers in waste handling with government approval.	0	0	1	0	1

### 3.3 Cleansing Worker Survey

#### Findings from Cleansing Workers Survey in Kandy

A questionnaire survey was conducted among 33 municipal / private cleansing workers, in order to gather;

- Basic socio-economic profiles of cleansing workers.
- An appreciation of working condition of municipal cleansing workers.

Period of survey: From June 11 2002 to June 14 2002

Sample size: 33 (25 municipal cleansing workers and 8 cleansing workers hired by a private company) These 25 municipal waste workers are chosen with careful consideration about zoning of MC limits.

#### 1. General Questions

##### Q1-1 Gender

		Kandy	
		Number	%
1	Male	21	64%
2	Female	12	36%
Total		33	100%

##### Q1-2 Ethnicity

		Kandy	
		Number	%
1	Sinhala	16	48%
2	Muslim	0	0%
3	Tamil	17	52%
4	Other	0	0%
Total		33	100%

##### Q1-3 Religion

		Kandy	
		Number	%
1	Buddhist	16	48%
2	Islam	0	0%
3	Hindu	16	48%
4	Christian	1	3%
5	Other	0	0%
Total		33	100%

Q1-4 Household information

( person)	Kandy
Avg. number of family members	6.2
(Rs.)	Kandy
Avg. household income	9,419
(Rs.)	Kandy
Income per person	1,516

Q1-5 How much is the total expenditure of your household per month on average?

(Rs.)	Kandy
Avg. household expenditure	6,924
(Rs.)	Kandy
Expenditure per person	1,115

Q1-6 Please specify the priority for your daily life regarding the improvement of the following aspects ?

	Kandy	point
1 First	Storm water drainage	30
2 Second	Water supply	29
3 Second	Access road to my house	29
4 Fourth	Others (Housing problems)	28
5 Fifth	Garbage collection	11
6 Sixth	Waste water collection	8
7 Seventh	Electricity supply	8

## 2. Questions about Your Work

### Part A : Status and Wage

Q2-1 Are you a permanent worker or a casual worker?

	MC		Private	
	Number	%	Number	%
1. Permanent	22	88%	0	0%
2. Casual or recently become-permanent	3	12%	8	100%
3. Kanganis or a head of labors	0	0%	0	0%
Total	25	100%	8	100%

Note : Two out of three MC's "Casual or recently become-permanent" is recently became permanent.

Q2-2 How long have you been doing this job?

(years)	MC	Private
Average working years	14.6	2.0

Q2-3 How many days do you usually work per week?

(days)	MC	Private
Average working days per week	5.9	6.5

Q2-4 How many hours do you usually work per day?

(hours)	MC	Private
Average working hours per day	7.7	8.6

Q2-5 Had either your father or mother done this same job?

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Yes	14	56%	1	13%	15	45%
2 No	11	44%	7	88%	18	55%
Total	25	100%	8	100%	33	100%

Q2-6 How much is your monthly wage on average (including official allowance such as holiday pay, overtime and so on)?

(Rs)	MC	Private	Kandy
Average monthly income	5,121	5,438	5,198

Q2-7 Do you have any secondary jobs after working hours?

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Yes	7	28%	0	0%	7	21%
2 No	18	72%	8	100%	26	79%
Total	25	100%	8	100%	33	100%

Q2-8 How often and what type of work do you do as a secondary job?

- (1) How often: Four out of seven workers work two to three times per week.
- (2) Type of work: Labor work such as construction work, cleaning houses and gardens and so on.

Q2-9 How much is your monthly wage on average from this secondary resource?

(Rs)	MC
Average monthly income from secondary job	1,760

Note : After adjusted by omitting extreme values, numbers of effective answers are five only.



Q2-10 Are there some waste generators which give you small allowance, including the reward to your extra cleaning work?

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Yes	10	40%	1	13%	11	33%
2 No	15	60%	7	88%	22	67%
Total	25	100%	8	100%	33	100%

Q2-11 How much is your income from small allowance per month on average?

(Rs.)	MC	Private	Kandy
Average monthly allowance from waste generators	190	300	200

Q2-12 Do you know other solid waste laborers who sometimes receive a small allowance?

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Yes	16	64%	1	13%	17	52%
2 No	9	36%	3	38%	12	36%
98 Don't know	0	0%	4	50%	4	12%
Total	25	100%	8	100%	33	100%

Q2-13 Do you collect recyclable materials from waste for sale?

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Yes	4	16%	3	38%	7	21%
2 No	21	84%	5	63%	26	79%
Total	25	100%	8	100%	33	100%

Q2-14 If yes to Q2-13, what materials do you collect, how much do you collect per month and who do you sell them to?

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Bottle	3	30%	3	38%	6	33%
2 Iron	2	20%	1	13%	3	17%
3 Metal can	1	10%	0	0%	1	6%
4 Aluminum	2	20%	2	25%	4	22%
5 Cardboard	0	0%	1	13%	1	6%
6 Brass	1	10%	1	13%	2	11%
7 Copper	1	10%	0	0%	1	6%
Total	10	100%	8	100%	18	100%

(Rs.)	MC	Private	Kandy
Average monthly income from recycling	141	224	177

## Part B : Working Conditions and Technical Problems

Q2-15 These are the possible difficulties you may face. Please prioritize your difficulties?

		(points)	MC	Private	Kandy
1	Heavier workload and unhealthier conditions due to the improper discharge of waste by people		32.5	22	54.5
2	Unsanitary waste such as human waste / excrement is mixed with other waste		29	11	40
3	Heavier workload for you due to absenteeism among your colleagues		14	1.5	15.5
4	Heavier workload for you due to alcoholism among your colleagues		2	2.5	4.5
5	Insufficient wage		42.5	14	56.5
6	Health problems		34	8	42
7	The working schedule such as allocation of vehicles and routes are so changeable		7.5	0.5	8
8	Lack of protecting clothing (boots, gloves, apron and so on)		42.5	7.5	50
9	Vehicle often breakdown		1	2	3
10	Not enough tools for collection work		8	5	13
11	Vehicle parked on the street makes your work more difficult		12	3.5	15.5
12	Others		2	0	2
Total			227.0	77.5	304.5

Note : Others are "problem of stray dogs" and " lack of labors".

Q2-16 Are there any particular areas of the city where you feel difficult to collect garbage?

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Yes	17	68%	8	100%	25	76%
2 No	8	32%	0	0%	8	24%
Total	25	100%	8	100%	33	100%

Q2-17 If yes to the previous question, what are the reasons of difficulties?

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Improper discharge of waste by people	2	8%	1	13%	3	9%
2 Physically difficult work	7	28%	2	25%	9	27%
3 Large amount of garbage	2	8%	2	25%	4	12%
4 Traffic and many people	1	4%	2	25%	3	9%
5 Road	1	4%	1	13%	2	6%
6 Other	1	4%	0	0%	1	3%
98 Don't know	3	12%	0	0%	3	9%
99 Irrelevant	8	32%	0	0%	8	24%
Total	25	100%	8	100%	33	100%

Q2-18 When difficulties relating to your work arise, whom you talk to first? (**Choose only one.**)

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Officer in charge such as PHI and MOH	5	20%	2	25%	7	21%
2 Supervisor	13	52%	5	63%	18	55%
3 Minor supervisor	5	20%	0	0%	5	15%
4 Colleagues	2	8%	0	0%	2	6%
5 Others	0	0%	1	13%	1	3%
Total	25	100%	8	100%	33	100%

Q2-19 How do you think MC / UC can improve the garbage collection system? Please give your honest opinion.

	MC		Private		Kandy	
	Number	%	Number	%	Number	%
1 Household / citizens contribution	6	14%	2	14%	8	14%
2 Need salary increase	6	14%	2	14%	8	14%
3 Need more workers	7	17%	2	14%	9	16%
4 Need awareness program	3	7%	1	7%	4	7%
5 Need more equipments / vehicles	6	14%	1	7%	7	13%
6 Health protection incl. introducing protecting clothing	6	14%	2	14%	8	14%
7 Others	6	14%	3	21%	9	16%
98 Don't know	2	5%	1	7%	3	5%
Total	42	100%	14	100%	56	100%