

**From: Kekoi Kuyateh & Malang Keita, Fax: 220-229683, Tel: 220-228327
(Local consultants, Gambia)**

To: Kieron Crawley

Date: 10th June, 1999.

Dear Mr. Crawley,

REMINDER ON PROPOSED WASTE ASSESSMENT EXERCISE.

This is to inform you that we have submitted the final report to Isatou, NEA, after my last fax and email message sent to you about a week ago.

As mentioned in the last fax message, expenses were incurred which were not budgeted for but these will be accommodated within the agreed amount.

In case of any comments on the paper do call or send a fax message. We think an email copy is sufficient.

Note the slight change in the: Preface, Rainfall data and the conclusion.

Thanks and best wishes.

REPORT: WASTE ASSESSMENT EXERCISE (CONSULTANT WORK)

PREFACE

This report is the outcome of an ITC program manager's mission to The Gambia for consultations with relevant authorities and stakeholders in waste generation and management. After consultations with some agencies, including the National Environment Agency (NEA), the ITC conceived and contracted this waste assessment consultancy. The exercise is an attempt to compile base-line information necessary for assessing the introduction and suitability of waste incineration as an alternative waste disposal method especially in Greater Banjul Area (GBA).

The waste samples examined were from the two municipalities – Banjul City Council and Kanifing Municipality. The samples analyzed were from households in Banjul Central and Ebo Town. A period of only eleven working days was given for the entire studies, therefore, waste examination could not be as repetitive, although the samples were thoroughly analyzed.

A. INTRODUCTION.

1. The issue and importance of waste management strategy in the overall environmental management has increasingly gained momentum since the 1992 Earth Summit in Rio, Brazil. Due to the rapid growing urban population and its related consequences, especially in developing countries, improving waste management has been accorded high priority.
2. In view of the above, the Department of Foreign and International Development (DFID) has expressed interest in assessing the feasibility of introducing municipal waste incinerators in order to enhance our overall waste management. To further pursue the objective of introducing municipal waste incineration program in other developing countries, the Intermediate Technology Consultants (ITC) identified The

Gambia as a possible pilot site for development of a low-cost incinerator.

The current assessment is designed to physically analyze waste quantities and their composition in the Greater Banjul Area (GBA). This component of the studies seeks to thoroughly examine waste composition given the importance of the constituents of waste dynamics during incineration.

The Objective of the Exercise.

- i. The primary objective of the waste assessment exercise is to assess and analyze household wastes disposed in Greater Banjul, with a view to ascertaining their composition. Along with this analysis, an estimate of total waste quantities disposed is considered to be useful in this study.
- ii. The outcome of the exercise is envisaged to provide baseline information for subsequent determination of the suitability of municipal waste incineration countrywide.

THE TERMS OF REFERENCE (TOR)

1. To solicit data on demographic and socio-economic characteristics of The Gambia:
 - i. Population
 - ii. GDP/capita
 - iii. Pay levels:
 - Labourers
 - Junior managers
 - Graduate Engineers
 - Unemployment (% of population)
 - iv. Annual rainfall for GBA on month to month basis
 - v. Land use in The Gambia with particular reference to the GBA
 - vi. Summary of sources of drinking water in GBA
 - vii. Details of local brick manufacturer
 - viii. Availability of other materials:
 - * Mild steel – angle, channel, tube, sheet, plate.
 - * Stainless steel
 - * Electrical motors and switch-gear.
 - ix. Find out air and water testing facilities with the help of NEA
2. **Waste Quantities and Characteristics:**
 - I. Waste Quantities – From the councils’ records, compile six months figures on waste disposal.
 - II. Waste Composition – Should be compiled from the waste characteristics survey.
3. **Output:** This should be in the form of a report not longer than ten pages of A4 in both hard copy and electronic form suitable for E-mail. It should have an annex on breakdown of daily activities.

B. METHODOLOGY.

The methodology used in this study is two folded:

- i. collection of country socioeconomic data(GDP, Demographic, spatial and other (nonspatial statistics) and soliciting municipal waste data from councils’ records.
- ii. categorization of household waste by weighing the constituents from disposal sites.

As a relatively new exercise and envisaged for other countries as well, the procedure and methodology used in analyzing the various waste categories from BCC and KMC dumping sites was furnished by ITC, RUGBY, UK and it is as follows: A random sample of one truck-load from each dump site was unloaded and spread on nylon sheets, designed suitable for this purpose. All coarse pieces were picked, weighed and the weights recorded in the categories provided (refer to the table: 9 for the categories).

After treating all the coarsest pieces in the above manner, the remainder was raked continuously allowing handpicking of the different appropriate waste categories for weighing and recording. When raking alone did not reveal enough pieces, the waste was sieved, using sieves constructed for this exercise. This allowed the picking of the waste components, which were again bagged, weighed and recorded. The fines, residual small particles, were finally put in bags, weighed and recorded as well.

C. THE FINDINGS

Specifications

The findings of this particular assessment exercise are arranged and presented according to the content and format of the TOR. There is provision for all key areas of concern, but some issues are only addressed by direct question/answer dialogue.

For easy reading and understanding, the findings as well as background information are prepared and presented in table format whilst the others are only in text form.

a. Background Information.

This heading contains information such as: Population, (GBA and the entire Gambia), GDP & GDP per capita, Demographic, Social data, etc. Its main contents are specified as follows:-

LAND USE

The below table gives the distribution of land in The Gambia. This country is basically agricultural which is also reflected in the table. Almost half of the land(42.94%) is for grazing, 16.36% is cultivated and 6.36% is under forest.

TABLE1. LANDUSE DISTRIBUTION IN THE GAMBIA

TYPE OF USE	AREA(KM2)	% OF LAND
The Gambia Total Area in (km2)	10689	100.00
Cultivated Area in (km2)	1751	16.38
Grazing Area in (km2)	4590	42.94
Wood and Forest in (km2)	680	6.36
Other Land in (km2)	3668	34.32

PAY LEVELS

The table below gives the minimum wages in the Gambia. It should be born in mind that minimum pays do not reflect actual labour costs since there are more things to labour besides only the agreed wages.

TABLE: 2 MINIMUM MONTHLY PAY IN DALASIS, 1999.

	Government	Private
Labourers	425.00	450.00
Junior Managers	1773.00	3000.00
Graduate Engineers	1773.00	3000.00

POPULATION PROFILE

Table: 3.gives the age and sex distribution of The Gambian population base on the 1993 population census. The Gambia has a very high rate of population growth, 4.2% per annum. Majority of our population are within the ages '0–19', forming over 50% of all the inhabitants. The table below gives the details.

TABLE: 3. POPULATION BY AGE AND SEX, 1999.

AGE GROUP	MALE COUNT	% OF COUNT	FEMALE COUNT	% OF COUNT	BOTH SEXES COUNT	% OF COUNT
ALL AGES	665530	100	663284	100	1328814	100
0-4	108414	16.29	106876	16.11	215290	16.20
5-9	104836	15.75	104789	15.80	209625	15.78
10-14	78683	11.82	78292	11.80	156975	11.81
15-19	67198	10.10	71695	10.81	138893	10.45
20-24	57269	8.61	59666	9.00	116935	8.80
25-29	52381	7.87	60306	9.09	112687	8.48
30-34	39052	5.87	44476	6.71	83529	6.29
35-39	31902	4.79	31389	4.73	63292	4.76
40-44	27062	4.07	26302	3.97	53364	4.02
45-49	21239	3.19	15931	2.40	37170	2.80
50-54	18329	2.75	15199	2.29	33528	2.52
55-59	11572	1.74	7403	1.12	18975	1.43
60-64	12485	1.88	10763	1.62	23248	1.75
65+	22383	3.36	20484	3.09	42867	3.23
N/S	12723	1.91	9550	1.44	22273	1.68

EMPLOYMENT PROFILE

Table: 4 presents the employment profile also derived from the 1993 population census. This source continues to be the most comprehensive source of information on this subject. It shows that the majority of our employed are in the age bracket '15–39' years. This alone suggests the prevalence of less professionals as it requires many years of training to make a professional. In fact up country agriculture is the only significant source of economic activity, which basically involves crop cultivation.

The figures also show that females have a higher percentage of the employment in the ages 15–39 years. This may be partly because they pursue education less and assume family responsibilities at earlier ages.

The unemployment rate is about 4% in The Gambia putting into consideration farming. In the rural areas, employment figures are very high simply because of farming, which is highly seasonal.

TABLE: 4. DISTRIBUTION OF EMPLOYED POPULATION BY AGE AND SEX**

AGE GROUP	MALE		FEMALE		BOTH SEXES	
	COUNT	%	COUNT	%	COUNT	%
ALL AGES	251924	100.00	170554	100.00	422478	100.00
10-14	11590	4.60	13278	7.79	24868	6.19
15-19	19756	7.84	22061	12.93	41817	10.39
20-24	31802	12.62	23228	13.62	55030	13.12
25-29	36719	14.58	27439	16.09	64158	15.33
30-34	32621	12.95	22505	13.20	55126	13.07
35-39	27497	10.91	16988	9.96	44485	10.44
40-44	23498	9.33	14614	8.57	38111	8.95
45-49	18484	7.34	8626	5.06	27111	6.20
50-54	15721	6.24	8011	4.70	23732	5.47
55-59	9686	3.84	3641	2.13	13327	2.99
60-64	9942	3.95	4595	2.69	14537	3.32
65+	14609	5.80	5567	3.26	20177	4.53

Source: 1993 Population and Housing Census**

ECONOMIC INDICATORS

The GDP(gross domestic product) is the most important single economic indicator. From the table below, it can be seen that agriculture accounts for over 20% of the GDP, with industry contributing only about half this amount. Trade, including trade in agricultural produce under services, accounts for 36.9%.

TABLE: 5 GDP AT CURRENT PRICES BY INDUSTRY

Industry	1995	1996	1997	1998	% Contribution
1. Agriculture Production	727239.7	655144.1	669040.3	804857.1	20.4
2.INDUSTRY	293051.0	447593.8	336973.1	382675.3	10.4
2.1. Mining and Quarrying	822.0	889.0	962.0	1041.0	0.0
2.2. Manufacturing	155980.1	160536.3	167669.7	172056.8	5.0
2.3. Electricity & Water Supply	21104.8	26060.2	32274.9	39971.6	0.8
2.4. Building & Construction	115144.1	260108.4	136066.5	169605.9	4.7
3.SERVICES	2180629.1	2338687.2	2437467.1	2645879.4	69.2
3.1. Trade	1205725.3	1248445.1	1284985.5	1424795.3	36.9
3.1.1 Groundnut	73947.0	69593.0	69678.0	73370.9	1.2
3.1.2 Others	1131778.3	1178852.1	1215307.5	1351424.4	35.7
3.2. Hotels & Restaurants	98717.0	176438.0	185180.0	212169.0	4.9
3.3. Transport	199720.0	205312.0	217014.0	228299.0	6.8
3.4. Communications	123422.0	127523.0	148068.0	157798.0	3.8
3.5. Finance & Insurance	113827.4	114304.2	118967.8	123946.1	3.2
3.6. Real Estate & Business Services.	218826.0	226703.7	234865.1	243320.2	6.4
3.7. Other Services	66804.7	69610.5	72534.1	75580.6	2.0
3.8. Public Administration	209237.0	226234.0	234016.0	240568.4	6.8
3.9. Less IMP. Bank Charges	55650.2	55883.3	58163.4	60597.2	1.5
4. GDP at Market Prices	3200919.7	3441425.1	3443480.5	3833411.8	100.0

Source: Central Statistics, National Accounts.

MAIN SOURCES OF WATER

A good percentage of the population does not have access to pipe-born water. This means that good waste management continues to be vital to prevent pollution. The table below gives the details.

TABLE: 6. PERCENTAGE DISTRIBUTION OF HOUSEHOLDS BY MAIN SOURCE DRINKING WATER

SOURCE OF WATER	Stand pipe in compound	Public stand pipe	Well in compound	public Well with pump	Public well without pump	Stream/ river	Others	Not stated
URBAN	32.0	29.3	26.1	2.4	3.2	0.0	4.5	2.5
RURAL	1.5	7.6	19.0	29.7	35.0	0.2	4.2	2.8
THE GAMBIA	15.7	17.7	22.3	17.0	20.2	0.1	4.3	2.6

Source: Central Statistics Department.

WASTE PROFILE IN GREATER BANJUL

The quantities of wastes disposed in GBA and elsewhere in The Gambia is now becoming more and of concern to authorities. Recordation has not been given priority. Efforts were made by councils, for their administrative purposes, to track the number of vehicles that carry wastes to dump sites. No quantities were actually recorded. In the absence of any such records, on quantities, the number of trips carried by the different types of vehicles were used along the survey results to arrive at the estimates in this table and the daily quantities in the annexes B1 and B2

TABLE: 7 QUANTITY OF WASTE DUMPED AT THE KANIFING(BAKOTEH) AND BCC(MILE II) DUMPING SITES IN METRIC TONNES

	MONTH						
	NOV. 98	DEC. 98	JAN. 99	FEB. 99	MAR. 99	APRIL 99	SUM
BAKOTEH	2406	2362.6	2042.8	2099.6	2332.8	2104	13347.8
BANJUL CITY COUNCIL	902.2	949.4	919.6	946.4	928	937.8	5583.4
TOTAL	3308.2	3312	2962.4	3046	3260.8	3041.8	18930.4

SOURCE: COUNCIL'S RECORDS.

Table:8 gives the rainfall data by major rainfall data collection points. Generally summer begins in June and ends in October. It rains in May as well but farmers are not advised to plant their seeds by that time. Most of the rains are expected in August and September.

TABLE: 8. TOTAL RAINFALL IN THE GAMBIA BY STATION(MM), 1992 TO 1997

YEAR	1992	1993	1994	1995	1996	1997	AVERAGE
YUNDUM	1075.9	659.7	1107.5	887.0	684.0	959.5	904.7
KEREWAN	733.1	681.9	871.8	810.4	728.0	622.0	735.6
JENOI	557.7	683.0	905.2	670.8	713.0	728.2	712.3
JANJAN-BUREH	820.9	811.7	1023.4	847.7	702.0	603.5	773.2
BASSE	892.7	627.0	1018.3	925.2	889.0	759.3	838.7
TOTAL	4675.9	4256.2	5908.0	4893.5	3716.0	3712.5	3964.6
AVERAGE	779.3	709.4	984.7	815.6	619.3	742.5	792.9

OTHER MATERIAL REQUIREMENT

For the establishment and sustenance of incinerators a number of materials are required. These include construction materials like specific types of metals, blocks and bricks, electrical equipment, etc. After consultations with relevant suppliers, it has been confirmed that all the specifications supplied by the consultant are available in the market.

As regards bricks, refractory ones were recommended to resist high temperatures. From studies carried with one consulting firm in collaboration with Community Development on soil qualities, it has been confirmed that excellent clay qualities exit in Upper River Division that resist very high temperatures without degenerating.

b. ANALYSIS OF WASTE QUANTITIES FROM DUMP SITES.

The table below presents the composition of household waste disposed at the Kanifing waste disposal site in Bakoteh and at MileII, the Banjul City Council’s disposal site. Analysis revealed that nearly one third (1/3) of the waste comprises of food and vegetables (29.19%). The next biggest category of waste is the ‘Fines, dust and small particles, which form just over a quarter of the total waste disposed. Paper and cardboard comprised of 6.96% and 4.95% respectively.

From the same table, it can be seen that about one quarter of the waste disposed in Banjul consists of food and vegetables (25.32%). Nearly half of the total solid waste generated from households in Banjul(47.2%) comprises of ‘Fines, dust and small particles’. The quantity of paper waste is also significant, accounting for 6.16% of Banjul’s waste. The lowest percentages, of 0 and 0.99, were recorded by liquids and, metals, besides cans, respectively.

TABLE:9 ANALYSIS OF WASTE QUANTITIES FROM BANJUL(MILE II) AND KANIFING DISPOSAL SITES.

CATEGORY	BANJUL	% Distribution	KANIFI NG	% Distributio n	TOTAL	% Distribution
	QUANTI TY IN KILOS	% OF QUANTITY	QUANTI TY IN KILOS	% OF QUANTIT Y	QUANTITY IN KILOS	
Food Waste and vegetable	306.3	25.32	683.5	29.19	989.8	27.87
Paper	74.5	6.16	163	6.96	237.5	6.69
Cardboard	32.14	2.66	116	4.95	148.14	4.17
Plastic film	47.5	3.93	28	1.20	75.5	2.13
Other plastic(e.g. bottle)	20	1.65	106	4.53	126	3.55
Textiles	43.5	3.60	123	5.25	166.5	4.69
Wood	23.5	1.94	48	2.05	71.5	2.01
Leather and rubber	23.5	1.94	94	4.01	117.5	3.31
Glass	28	2.31	85	3.63	113	3.18
Metal cans	27.8	2.30	64	2.73	91.8	2.59
Other metals	12	0.99	96	4.10	108	3.04
Fines, dust and small particles	571	47.20	616	26.31	1187	33.42
Liquids	0	0.00	2	0.09	2	0.06
Total	1209.74	100	2341.5	100	3551.24	100

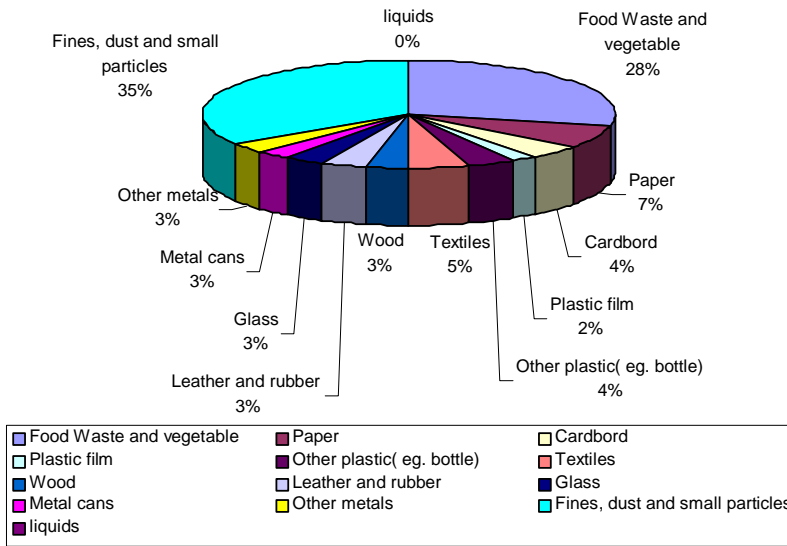
The above table depicts the overall picture for GBA and it is interesting to note the persistence of the leading two groups – the ‘Fines, dusts and particles’ and the ‘Foods and vegetables’ categories accounting for 33.42% and 27.87% respectively. Paper and plastic film wastes recorded 6.69 % and 2.13% respectively.

The waste category for textiles accounts for 4.69% with cardboard recording a similar percentage of 4.17. This distribution is depicted more vividly in the chart below. The percentages are rounded to the nearest whole number, therefore the category for liquids has a zero percent assigned to it.

Records at BCC were accessed with difficulty and were quite scanty, whilst that of KMC were readily available in the desired format. The KMC records only indicate the number of full or half trips, instead of converting these into metric tonnes. Therefore the disposed quantities at Bakoteh Dumping Site (from KMC records) give little information as far as the quantity/tonnage is concern. As part of the exercise, the number of full or half trips on record have been converted into quantities in order to create a sound basis for future estimation.

In order to avoid overstating the quantities, the truck types, their respective capacities (quantity they carry) have been used to estimate the tonnage. The tables contain converted quantities for the last six months.

COMPOSITION OF HOUSEHOLD WASTE IN GBA



D. CONCLUSIONS AND RECOMMENDATIONS

Some of the indicators favour incineration, e.g., the land use data, which indicates that agriculture demands a lot of our land leaving available less space for waste disposal. Also the high rate of population growth, coupled with the already high population density provide enough need for sparing any piece of land possible.

Despite all the above facts, incineration does not seem to be the best option considering the composition of our household waste. Table:9 shows that almost half of our household waste comprises of materials not legible for incineration, with ‘fines, dusts and small particles’ forming 33.42%. The composition of waste from other sources was not considered (refer to TOR, page 2), but household waste is by far the most important source of our wastes generated. However, its positive correlation with commercial waste will not be accidental. This is to say that waste from households is a reliable indicator of all the wastes generated in The Gambia.

To make incineration more viable, therefore, households should be sensitized and convinced to sieve their wastes before handing them agencies for disposal. Sorting of waste at household level is also another means by which incineration could be encouraged. This will ensue that only flammable constituents are taken for incineration.

The results of this survey are not secluding incineration as an alternative waste management, but rather the current situation needs to be addressed in the interest of building a better atmosphere for subsequently introducing it.

ANNEXES: ACTUAL WEIGHINGS AND DAILY QUANTITIES RECORDED

A1. ANALYSIS OF WASTE QUANTITIES (IN KILOS) DISPOSED AT MILE 2 DISPOSAL SITE BY TYPE.

CATEGORY	SACK 1	SACK 2	SACK 3	SACK 4	SACK 5	SACK 6	SACK 7	SACK 8	SACK 9	SACK 10	TOTAL	% Distributi on
	QUANT ITY	QUANT ITY	QUANT ITY	QUANT ITY	QUANT ITY	QUANT ITY	QUANT ITY	QUANT ITY	QUAN TITY	QUANT ITY		
Food Waste and vegetable	12	39.3	37	61.5	63.5	42	18	33			306.3	25.32
Paper	6.5	3.5	12	8.5	15.5	12.5	8	8			74.5	6.16
Cardboard	13	6.3	6.3	6.54							32.14	2.66
Plastic film	5	8	7.5	4.5	2.5	10	10				47.5	3.93
Other plastic	5.5	3.5	4	7							20	1.65
Textiles	7.5	12	14	10							43.5	3.60
Wood	3.5	9	5	6							23.5	1.94
Leather and rubber	4	9.5	10								23.5	1.94
Glass	28										28	2.31
Metal cans	8	8	7.8	4							27.8	2.30
Other metals	12										12	0.99
Fines, dust and small particles	15	24	20	96	86	85	61	87	63	34	571	47.20
Liquids											0	0.00
Total	120	123.1	123.6	204.04	167.5	149.5	97	128	63	34	1209.7 4	100

A2. ANALYSIS OF WASTE QUANTITIES DISPOSED AT KANIFING DISPOSAL SITES(BAKOTEH).

	SACK 1	SACK 2	SACK 3	SACK 4	SACK 5	SACK 6	SACK 7	SACK 8	SACK 9	SACK 10	TOTAL	
CATEGORY	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	QUANTITY IN KILOS	% Distribution
Food Waste	97	75.5	85	93	72	66	84	86	77	65	683.5	29.19
Paper	4	24	15	25	10	15	70				163	6.96
Cardboard	13	32	6	40	25						116	4.95
Plastic film	7	8	6	4	3						28	1.20
Other plastic)	5	3	25	35	5	33					106	4.53
Textiles	12	7	19	5	55	25					123	5.25
Wood	5	6	12	25							48	2.05
Leather, rubber	6	8	15	65							94	4.01
Glass	16	23	6	31	9						85	3.63
Metal cans	6	20	8	5	25						64	2.73
Other metals	11	15	20	5	45						96	4.10
Fines, particles	43	37	66	74	80	85	41	80	85	25	616	26.31
Liquids	2										2	0.09
Total	227	258.5	283	407	329	224	195	166	162	90	2341.5	100

**B1. TABLE: QUANTITY OF WASTE DUMPED AT THE BAKOTEH DUMPING SITE
(DAILY)**

DATE	NOV. 98	DEC. 98	JAN. 99	FEB. 99	MAR. 99	APRIL 99	SUM
	0	122	0	90	56.8	0	268.8
2	109.2	0	0	63.2	52	0	224.4
3	104.4	114	0	94	0	76.8	389.2
4	111.2	72.4	116	78.4	96.4	0	474.4
5	74	96	108.8	46.4	118.4	117.2	560.8
6	71.2	0	0	88.8	109.2	103.2	372.4
7	78.8	99	94.4	0	82	83.2	437.4
8	119.2	97.6	84.8	113.2	80	84	578.8
9	0	88	83.6	99.2	0	0	270.8
10	101.6	86.4	0	104.4	85.6	78	456
11	114.4	65.6	119.2	89.2	81.2	0	469.6
12	96.4	78.4	91.2	66.4	83.2	64.8	480.4
13	72.4	0	108.8	112.8	90	105.6	489.6
14	68.8	90.4	72	0	68.8	113.6	413.6
15	0	118.4	94	112	0	75.2	399.6
16	104.4	110	68.8	0	108	78.4	469.6
17	80.4	76.8	0	92.8	121.6	89.6	461.2
18	90.4	76	0	88	106.8	0	361.2
19	75.6	78	113.6	84	107.6	109.6	568.4
20	94.4	0	0	88.8	81.6	138.4	403.2
21	95.2	105.6	96.8	0	116	88	501.6
22	0	116.4	86.4	131.2	0	107.2	441.2
23	94.4	68.8	90.4	76.8	98.4	84.8	513.6
24	100.4	89.2	0	122.4	60.4	82.4	454.8
25	131.6	56	124	108.8	110	0	530.4
26	124	79.2	111.2	69.6	71.2	121.6	576.8
27	91.6	0	119.6	79.2	0	0	290.4
28	95.2	85.6	88.8	0	58.8	116.8	445.2
29	0	88.8	0	0	82	94.4	265.2
30	106.8	109.6	74	0	90	91.2	471.6
31	0	94.4	96.4	0	116.8	0	307.6
	0	0	0	0	0	0	0
TOTAL	2406	2362.6	2042.8	2099.6	2332.8	2104	13347.8

B2. QUANTITY OF WASTE DUMPED AT THE BCC (MILE II) DUMPING SITE

DATE	NOV. 98	DEC. 98	JAN. 99	FEB. 99	MAR. 99	APRIL 99	SUM
1	0	39.2	0	41.2	35.8	38.6	154.8
2	41.6	26.8	39.2	39.2	0	35	181.8
3	34	38	0	39.6	41.4	30.8	183.8
4	39.2	39.8	40.2	40.4	40.4	0	200
5	28.8	27.4	32	26.8	26	39.8	180.8
6	32.4	0	34	31.2	33.4	34.4	165.4
7	27.6	33	31.2	0	30.2	30.4	152.4
8	0	41.2	40.8	40.8	40.4	27.6	190.8
9	30	34	34.8	35.6	0	33.6	168
10	40.4	40.8	0	41.6	41.8	34.6	199.2
11	34.8	34.4	41.2	34.2	34	0	178.6
12	27.2	27.6	30	28.8	27.8	40.6	182
13	29.6	0	32	34.4	28.6	34.8	159.4
14	34	39.4	30.4	0	36.8	36.8	177.4
15	0	35	31.6	32	28	34.8	161.4
16	36.8	31.6	33.2	27.8	0	34.2	163.6
17	36	40.4	0	42.8	44.6	38.2	202
18	35.2	34.6	39.8	34.4	34	0	178
19	31.6	33.4	34.4	34.8	35.2	39.8	209.2
20	28.6	0	33.6	34.8	36	30.4	163.4
21	29.2	40.4	34	0	34.8	34.8	173.2
22	0	34.8	38	38	38.8	17.4	167
23	27.6	31.2	35.6	32	0	29.4	155.8
24	41.6	38.4	0	36.8	41	40	197.8
25	46.8	38	42.4	33.6	34.8	0	195.6
26	35.6	33.2	39.2	32.4	30.2	41.6	212.2
27	38	0	35.6	26.8	33.2	34.8	168.4
28	40.4	39.2	31.2	0	30.6	39.8	181.2
29	0	27.6	38.4	39.2	27	33	165.2
30	40.8	38.4	35.6	37.2	35.4	39.6	227
31	34.4	31.6	31.2	30	27.8	33	188
	0	0	0	0	0	0	0
TOTAL	902.2	949.4	919.6	946.4	928	937.8	5583.4

**DFID PROJECT - DEVELOPMENT OF LOW COST WASTE INCINERATORS
WORKPLAN FOR ASSESSING QUANTITY AND TYPE OF WASTE**

DAILY WORK SCHEDULE																						
ACTIVITY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1 <i>Drawing the work plan</i>	█																					
2 <i>Extraction of waste quantities local councils' records.</i>		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█						
3 <i>Compiling the waste quantity data from the councils. Acquiring materials and labourers for the decomposition of waste.</i>			█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█				
4 <i>Identifying the most representative waste truck load for analysis. Decomposition and weighing waste samples.</i>												█	█	█								
5 <i>Compiling and tabulating the waste data</i>															█							
6 <i>Tabulation and analysis of waste data</i>																█	█					
7 <i>Data collection on demographic and other socioeconomic data.</i>													█	█	█	█	█					
8 <i>Data collection on climate, land use,</i> 9 <i>water resources and industry.</i>													█	█	█	█	█	█				
10 <i>Data collection on construction, technological and other engineering aspects, including electrical equipment(including motors, switches, etc.</i>																		█	█	█	█	█
11 <i>Writing and presenting the final report.</i>																		█	█	█	█	█