

**Monthly Performance Report
(HWT-NG100-MPR-22-R0)**

**May 2018
(From 01/05/2018 to 31/05/2018)**

**100 TPD Municipal Solid Waste (MSW) Facility
Calangute, North Goa**

Prepared By
**Hindustan Waste Treatment Pvt. Ltd.
(HWT)**

Submitted To
**Department of Science & Technology (DS&T)
&
Goa State Infrastructural Development
Corporation Limited (GSIDC)**

Table – 1
Summary of Overall Average Results for May 2018
(As compared to Schedule – 7: Performance Standards, Volume – I of RFP)

Sr. No.	Parameter	Performance Standard As per Schedule – 7	Actual Performance at Plant (Monthly Average)
1.	Number of fractions of recyclables sorted per day from the input mixed waste	Minimum 10 numbers of fractions shall be sorted daily from the input dry waste as received in the facility. The list of fractions are as follows: <ol style="list-style-type: none"> 1. PET Bottles 2. Mixed Plastic Articles 3. Newspapers / other Paper Material 4. Cardboard 5. Styrofoam & Thermocol 6. Coconut Shells 7. Clothes 8. Rubber Articles 9. Metal Articles & Cans 10. E-waste Articles and any Hazardous Waste 	13 numbers of fractions are being sorted daily from the input dry waste as received in the facility. The list of fractions are as follows: <ol style="list-style-type: none"> 1. Glass 2. Metal Articles & Cans 3. Tetrapacks 4. Paper / Cardboard 5. Plastic Film 6. Hard Plastics 7. PET Bottles 8. Styrofoam & Thermocol 9. Cloth / Rags / Textile 10. Jute bags 11. Leather / Rubber / Rexine 12. Coconut Shells 13. E-waste Articles and any Hazardous Waste
2.	Quantum of reject/residues to be sent to the landfill after processing. No organic fraction shall be disposed in the landfill.	Maximum 10% of inert of the total input waste as received in the facility (in TPD).	Input waste to the Plant is <u>136.32 TPD</u> . Quantum of Inert is <u>0.88 TPD</u> which is < 10% of the Total Input Waste as received in the Facility. No Organic Waste has been disposed in the Sanitary Landfill Facility.
3.	Electricity generation in the Plant	Minimum electricity to be generated in the plant shall be 0.40 MW per 100 tons of input wet biodegradable waste as received in the Facility (in TPD).	Electricity generation is <u>0.52 MW/100</u> tons of Input Biodegradable Waste as received in the Facility (in TPD).

Sr. No.	Parameter	Performance Standard As per Schedule – 7	Actual Performance at Plant (Monthly Average)										
4.	Biogas Flaring System	The Biogas Flaring System shall strictly be used only in case of emergency and not as a routine practice.	Biogas is being flared strictly, only under emergency and not as a routine practice. The average running time of Biogas Flaring System is 0.06 hours/day .										
5.	Discharge of treated effluent conforming to regulatory norms	Effluent Treatment Plant shall be operated under all conditions.	Effluent Treatment Plant is being operated continuously and is meeting all statutory conditions. The Treated Effluent Characteristics are as follows: <table border="1" data-bbox="1032 726 1403 940"> <tbody> <tr> <td>pH</td> <td>6.99</td> </tr> <tr> <td>BOD</td> <td>7 mg/l</td> </tr> <tr> <td>COD</td> <td>69 mg/l</td> </tr> <tr> <td>TSS</td> <td>8 mg/l</td> </tr> <tr> <td>TDS</td> <td>1,630 mg/l</td> </tr> </tbody> </table>	pH	6.99	BOD	7 mg/l	COD	69 mg/l	TSS	8 mg/l	TDS	1,630 mg/l
pH	6.99												
BOD	7 mg/l												
COD	69 mg/l												
TSS	8 mg/l												
TDS	1,630 mg/l												
6.	General Housekeeping, hygienic conditions, cleanliness, safety norms, adequate manpower, treatment methodology for plant operation & maintenance and storage conditions in the plant.	Minimum housekeeping, safety norms and cleanliness conditions shall be maintained at all times as per the Bid Document requirement.	<ul style="list-style-type: none"> • High standard of Housekeeping, Cleanliness and Safety are being maintained at all times at the Plant. • Adequate manpower has been deployed in all shifts. • Also, the treatment methodology is being followed properly and proper storage conditions have been maintained in the Plant. 										

100 TPD Municipal Solid Waste (MSW) Facility at Calangute, North Goa

#	Plant Performance Data: May 2018		
Sr. No.	Content	Month	Signature
1	Input Waste Composition	From 01.05.2018 To 31.05.2018	
2	Recyclables		
3	Electricity Generation		
4	Biogas Flare		
5	Effluent Treatment Plant		
6	Inert		
7	Housekeeping		

100 TPD Municipal Solid Waste (MSW) Facility at Calangute, North Goa

1 INPUT WASTE COMPOSITION:

Sr. No.	Description	Unit	1-May	2-May	3-May	4-May	5-May	6-May	7-May	Weekly Average		8-May	9-May	10-May	11-May	12-May	13-May	14-May	Weekly Average		
A Input Waste:																					
1	Dry Waste	TPD	62.89	66.79	77.10	55.24	55.76	48.66	75.89	63.19	50.44%	62.09	59.64	63.31	71.87	59.24	53.06	60.28	61.36	48.85%	
2	Wet Waste	TPD	60.24	64.77	56.42	61.94	62.26	63.08	62.77	61.64	49.20%	59.34	64.82	58.72	58.83	71.94	61.04	65.98	62.95	50.12%	
3	Mixed Waste	TPD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	
4	Mulched Tree Waste	TPD	0.65	0.29	0.61	0.55	0.22	0.42	0.40	0.45	0.36%	1.66	1.52	1.71	0.82	1.30	1.62	0.38	1.29	1.02%	
5	Total.....1+2+3+4	TPD	123.78	131.85	134.13	117.73	118.24	112.16	139.06	125.28	100.00%	123.09	125.98	123.74	131.52	132.48	115.72	126.64	125.60	100.00%	
B Input Waste Composition:																					
1	Organic / Bio degradable Fraction	65.00%	60.24	64.77	56.42	61.94	62.26	63.08	62.77	61.64	49.20%	59.34	64.82	58.72	58.83	71.94	61.04	65.98	62.95	50.12%	
2	Inorganic / Non-recyclable Fraction (RDF)		46.98	48.12	56.68	37.85	40.59	31.34	57.44	45.57	36.38%	45.62	44.34	47.19	53.32	38.88	40.28	42.06	44.53	35.45%	
3	Recyclables	14.00%	16.56	17.58	19.88	16.56	14.39	16.12	16.73	16.83	13.43%	17.22	15.58	17.83	19.37	19.10	14.40	18.60	17.44	13.89%	
	Glass	0.50%	0.12	0.09	0.09	0.07	0.09	0.08	0.10	0.09	0.07%	0.12	0.06	0.06	0.07	0.09	0.12	0.10	0.09	0.07%	
	Metal	0.50%	0.48	0.50	0.55	0.41	0.39	0.38	0.54	0.47	0.37%	0.53	0.40	0.38	0.45	0.60	0.35	0.41	0.44	0.35%	
	Paper / Cardboard / Tetrapack	4.00%	3.02	3.60	2.32	3.53	4.00	2.66	2.86	3.14	2.51%	4.15	1.89	2.46	3.49	4.36	1.93	4.24	3.22	2.56%	
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	5.61	6.17	9.08	7.75	5.26	6.44	5.09	6.48	5.18%	6.87	6.79	9.16	8.22	8.53	5.06	8.29	7.56	6.02%	
	Thermocoal / Styrofoam	1.00%	0.12	0.13	0.11	0.09	0.07	0.11	0.14	0.11	0.09%	0.12	0.06	0.11	0.08	0.13	0.12	0.11	0.11	0.08%	
	Cloth / Rags / Textiles	1.50%	2.60	2.24	2.96	1.84	2.33	2.22	3.28	2.50	1.99%	1.94	2.39	2.23	3.05	2.31	3.11	2.41	2.49	1.98%	
	Rubber Items	0.50%	0.41	0.65	0.46	0.55	0.34	0.40	0.61	0.49	0.39%	0.48	0.57	0.41	0.34	0.46	0.38	0.51	0.45	0.36%	
	Coconut		4.20	4.19	4.31	2.32	1.90	3.82	4.10	3.55	2.83%	3.00	3.41	3.02	3.68	2.62	3.33	2.53	3.09	2.46%	
4	Inert	10.00%	0.00	1.38	1.15	1.38	1.00	1.62	2.12	1.24	0.99%	0.91	1.24	0.00	0.00	2.56	0.00	0.00	0.67	0.54%	
5	Mulched Tree Waste	11.00%	0.65	0.29	0.61	0.55	0.22	0.42	0.40			1.66	1.52	1.71	0.82	1.30	1.62	0.38			
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%	

2 RECYCLABLES:

Sr. No.	Description	Unit	1-May	2-May	3-May	4-May	5-May	6-May	7-May	Weekly Average		8-May	9-May	10-May	11-May	12-May	13-May	14-May	Weekly Average		
A Recyclables:																					
1	Glass	Kg	124	92	94	71	95	79	97	93		123	63	62	66	93	116	101	89		
2	Metal	Kg	483	501	550	412	390	381	542	466		529	403	384	447	596	347	405	444		
3	Tetrapack	Kg	166	288	207	219	376	149	226	233		361	113	217	202	436	162	390	269		
4	Paper / Cardboard	Kg	2,854	3,312	2,114	3,313	3,621	2,509	2,638	2,909		3,787	1,776	2,246	3,283	3,923	1,770	3,852	2,948		
	Total.....3+4	Kg	3,020	3,600	2,321	3,532	3,997	2,658	2,864	3,142		4,148	1,889	2,463	3,485	4,359	1,932	4,242	3,217		
5	Plastic Films	Kg	4,710	5,375	7,709	6,724	4,646	5,511	4,275	5,564		5,790	5,670	7,673	7,151	6,885	4,187	6,852	6,315		
6	Hard Plastic	Kg	499	401	745	403	321	476	310	451		611	570	604	444	793	400	647	581		
7	Pet	Kg	398	395	627	620	295	451	504	470		467	550	879	625	853	470	796	663		
	Total.....5+6+7	Kg	5,607	6,171	9,081	7,747	5,262	6,438	5,089	6,485		6,868	6,790	9,156	8,220	8,531	5,057	8,295	7,560		
8	Thermocal	Kg	124	132	107	94	71	112	139	111		123	63	111	79	132	116	114	105		
9	Cloth / Rags / Textile	Kg	2,030	1,746	2,131	1,444	1,922	1,688	2,520	1,926		1,515	1,745	1,744	2,472	1,789	2,254	1,740	1,894		
10	Jute Bags	Kg	569	495	833	393	408	533	761	570		430	649	483	580	516	859	667	598		
	Total.....9+10	Kg	2,599	2,241	2,964	1,837	2,330	2,221	3,281	2,496		1,945	2,394	2,227	3,052	2,305	3,113	2,407	2,492		
11	Leather / Rubber / Rexine	Kg	408	646	456	553	343	404	612	489		480	567	408	342	464	382	507	450		
12	Coconut	Kg	4,196	4,193	4,306	2,319	1,904	3,825	4,102	3,549		3,003	3,414	3,019	3,683	2,623	3,333	2,533	3,087		
13	Total	Kg	16,561	17,576	19,879	16,565	14,392	16,118	16,726	16,831		17,219	15,583	17,830	19,374	19,103	14,396	18,604	17,444		
		TPD	16.56	17.58	19.88	16.57	14.39	16.12	16.73	16.83		17.22	15.58	17.83	19.37	19.10	14.40	18.60	17.44		

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	1-May	2-May	3-May	4-May	5-May	6-May	7-May	Weekly Average		8-May	9-May	10-May	11-May	12-May	13-May	14-May	Weekly Average		
A Biogas Gensets:																					
1	Biogas Genset-I: Running Time	hr	18.06	16.82	19.01	22.38	19.43	17.22	15.55	18.35		18.25	20.54	19.95	20.57	20.64	16.77	21.29	19.72		
2	Biogas Genset-I: Energy Generation	kW.hr	2,964	2,720	3,074	3,471	3,275	2,810	2,565	2,983		2,905	3,457	3,352	3,455	3,299	2,704	3,291	3,209		
3	Biogas Genset-II: Running Time	hr	19.99	22.74	23.46	17.75	18.46	23.13	22.90	21.20		23.64	16.60	16.50	21.57	22.00	22.20	15.80	19.76		
4	Biogas Genset-II: Energy Generation	kW.hr	3,369	3,939	3,800	2,910	2,987	3,692	3,967	3,523		3,812	2,681	2,693	3,479	2,800	2,220	1,510	2,742		
5	Total.....2+4	kW.hr	6,333	6,659	6,874	6,381	6,262	6,502	6,532	6,506		6,717	6,138	6,045	6,934	6,099	4,924	4,801	5,951		

100 TPD Municipal Solid Waste (MSW) Facility at Calangute, North Goa

Sr. No.	Description	Unit	1-May	2-May	3-May	4-May	5-May	6-May	7-May	Weekly Average	8-May	9-May	10-May	11-May	12-May	13-May	14-May	Weekly Average
B Electricity Generation:																		
1	As per Tender: Minimum electricity to be generated in the plant shall be 0.4 MW per per 100 tons of Input Biodegradable Waste as received in the Facility.																	
2	Biodegradable Waste.....1.B4	Tons	60.24	64.77	56.42	61.94	62.26	63.08	62.77	61.64	59.34	64.82	58.72	58.83	71.94	61.04	65.98	62.95
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	226	240	240	240	240	238	237	240	235	235	240	240	240	238
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	333	335	324	319	330	323	338	329	320	330	331	329	287	261	250	301
#	Surplus / Shortage	kWH	93	95	98	79	90	83	98		83	90	96	94	47	21	10	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	1-May	2-May	3-May	4-May	5-May	6-May	7-May	Weekly Average	8-May	9-May	10-May	11-May	12-May	13-May	14-May	Weekly Average
1	Operation Time	hr/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	1-May	2-May	3-May	4-May	5-May	6-May	7-May	Weekly Average	8-May	9-May	10-May	11-May	12-May	13-May	14-May	Weekly Average
A Raw Effluent Quality:																		
1	Flow	m ³ /day	61.24	79.10	80.92	81.62	82.31	79.07	76.69	77.28	78.79	79.53	72.90	70.25	72.02	72.92	67.72	73.45
2	pH	---	7.55	6.96	7.89	7.47	6.20	6.37	7.43	7.12	7.91	6.95	6.16	6.22	6.79	6.43	7.50	6.85
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,511	2,487	2,324	1,533	1,606	2,290	2,005	1,965	1,800	1,615	2,489	2,078	1,641	1,915	2,355	1,985
4	Chemical Oxygen Demand (COD)	mg/l	4,488	6,267	5,043	3,725	4,336	7,832	6,195	5,412	5,742	3,666	5,451	6,982	5,202	6,434	7,913	5,913
5	Total Suspended Solids (TSS)	mg/l	2,554	3,830	3,672	3,587	2,473	3,985	4,612	3,530	4,068	3,682	5,003	4,156	2,757	3,485	3,580	3,819
6	Total Dissolve Solids (TDS)	mg/l	1,423	1,314	1,730	1,445	1,368	1,605	1,783	1,524	1,582	1,598	1,455	1,552	1,609	1,445	1,318	1,508
B Treated Effluent Quality:																		
1	pH	---	6.54	7.16	7.05	6.82	6.74	7.44	7.05	6.97	6.65	7.13	7.02	6.98	7.12	7.14	6.73	6.97
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	8	6	7	8	7	6	7	7	7	8	6	6	9	9	7
3	Chemical Oxygen Demand (COD)	mg/l	81	77	88	68	84	63	53	73	66	52	70	80	70	52	84	68
4	Total Suspended Solids (TSS)	mg/l	8	9	7	8	9	8	7	8	8	8	9	7	7	10	10	8
5	Total Dissolve Solids (TDS)	mg/l	1,551	1,445	1,782	1,474	1,395	1,669	1,890	1,601	1,756	1,678	1,499	1,661	1,641	1,474	1,423	1,590

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	1-May	2-May	3-May	4-May	5-May	6-May	7-May	Weekly Average	8-May	9-May	10-May	11-May	12-May	13-May	14-May	Weekly Average
1	As per Tender: Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.																	
2	Input Waste	TPD	123.78	131.85	134.13	117.73	118.24	112.16	139.06	125.28	123.09	125.98	123.74	131.52	132.48	115.72	126.64	125.60
3	Inert Fraction	TPD	0.000	1.380	1.150	1.380	1.000	1.620	2.120	1.236	0.910	1.240	0.000	0.000	2.560	0.000	0.000	0.673
4	% of Total Input Waste.....3/2	%	0.00%	1.05%	0.86%	1.17%	0.85%	1.44%	1.52%	0.98%	0.74%	0.98%	0.00%	0.00%	1.93%	0.00%	0.00%	0.52%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	1-May	2-May	3-May	4-May	5-May	6-May	7-May	Weekly Average	8-May	9-May	10-May	11-May	12-May	13-May	14-May	Weekly Average
1	Hygienic Conditions	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
2	Cleanliness	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
3	Manpower Deployed	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
4	Safety Norms	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
5	Treatment Methodology	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
6	Storage Conditions	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted

100 TPD Municipal Solid Waste (MSW) Facility at Calangute, North Goa

1 INPUT WASTE COMPOSITION:

Sr. No.	Description	Unit	15-May	16-May	17-May	18-May	19-May	20-May	21-May	Weekly Average	22-May	23-May	24-May	25-May	26-May	27-May	28-May	Weekly Average		
A Input Waste:																				
1	Dry Waste	TPD	73.07	68.71	79.37	67.24	69.34	78.34	78.34	73.49	53.27%	75.70	74.35	62.44	73.49	69.73	70.73	87.18	73.37	52.14%
2	Wet Waste	TPD	63.17	70.35	59.62	70.51	65.85	54.15	54.15	62.54	45.33%	62.33	54.18	71.07	76.07	63.75	52.70	73.30	64.77	46.03%
3	Mixed Waste	TPD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%
4	Mulched Tree Waste	TPD	1.72	2.34	2.32	1.56	1.57	2.01	2.01	1.93	1.40%	1.24	3.16	5.53	2.94	3.02	0.45	1.63	2.57	1.82%
5	Total.....1+2+3+4	TPD	137.96	141.40	141.31	139.31	136.76	134.50	134.50	137.96	100.00%	139.27	131.69	139.04	152.50	136.50	123.88	162.11	140.71	100.00%
B Input Waste Composition:																				
1	Organic / Bio degradable Fraction	65.00%	63.17	70.35	59.62	70.51	65.85	54.15	54.15	62.54	45.33%	62.33	54.18	71.07	76.07	63.75	52.70	73.30	64.77	46.03%
2	Inorganic / Non-recyclable Fraction (RDF)		54.10	48.91	64.76	47.29	50.78	61.22	59.10	55.17	39.99%	53.47	54.72	47.96	55.43	49.98	46.88	64.56	53.29	37.87%
3	Recyclables	14.00%	20.69	20.12	16.93	19.71	20.13	19.13	21.25	19.71	14.29%	19.46	20.58	20.01	21.00	22.77	19.63	21.51	20.71	14.72%
	Glass	0.50%	0.14	0.11	0.07	0.07	0.10	0.13	0.09	0.10	0.07%	0.10	0.12	0.08	0.12	0.10	0.06	0.13	0.10	0.07%
	Metal	0.50%	0.50	0.45	0.49	0.42	0.51	0.46	0.61	0.49	0.36%	0.42	0.54	0.42	0.49	0.51	0.50	0.65	0.50	0.36%
	Paper / Cardboard / Tetrapack	4.00%	3.26	2.77	3.17	4.68	4.08	4.47	4.24	3.81	2.76%	4.29	3.24	3.95	3.57	4.68	3.96	4.65	4.05	2.88%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	8.50	9.18	5.94	7.04	8.34	8.12	7.72	7.83	5.68%	6.92	9.40	6.79	6.85	9.24	8.41	7.62	7.89	5.61%
	Thermocoal / Styrofoam	1.00%	0.11	0.13	0.13	0.07	0.10	0.09	0.08	0.10	0.07%	0.11	0.07	0.07	0.14	0.12	0.12	0.13	0.11	0.08%
	Cloth / Rags / Textiles	1.50%	3.21	3.52	2.84	2.13	3.28	3.13	3.63	3.11	2.25%	3.45	3.09	3.75	3.80	3.51	2.84	4.49	3.56	2.53%
	Rubber Items	0.50%	0.41	0.59	0.55	0.49	0.68	0.48	0.63	0.55	0.40%	0.63	0.65	0.50	0.73	0.68	0.48	0.81	0.64	0.45%
	Coconut		4.57	3.37	3.74	4.82	3.05	2.23	4.25	3.72	2.70%	3.54	3.48	4.45	5.31	3.93	3.26	3.03	3.86	2.74%
4	Inert	10.00%	0.00	2.02	0.00	1.80	0.00	0.00	0.00	0.55	0.40%	4.01	2.21	0.00	0.00	0.00	4.67	2.74	1.95	1.38%
5	Mulched Tree Waste	11.00%	1.72	2.34	2.32	1.56	1.57	2.01	2.01			1.24	3.16	5.53	2.94	3.02	0.45	1.63		
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	15-May	16-May	17-May	18-May	19-May	20-May	21-May	Weekly Average	22-May	23-May	24-May	25-May	26-May	27-May	28-May	Weekly Average	
A Recyclables:																			
1	Glass	Kg	138	113	71	70	96	135	94	102	97	119	83	122	96	62	130	101	
2	Metal	Kg	497	452	495	418	506	457	605	490	418	540	417	488	505	496	648	502	
3	Tetrapack	Kg	221	263	228	253	359	237	364	275	330	236	371	211	379	297	256	297	
4	Paper / Cardboard	Kg	3,034	2,508	2,937	4,428	3,717	4,229	3,872	3,532	3,959	3,003	3,578	3,358	4,303	3,667	4,397	3,752	
	Total.....3+4	Kg	3,255	2,771	3,165	4,681	4,076	4,466	4,236	3,807	4,289	3,239	3,949	3,569	4,682	3,964	4,653	4,049	
5	Plastic Films	Kg	7,207	7,800	4,902	6,001	6,699	7,222	6,609	6,634	5,890	8,387	5,869	5,704	8,178	7,124	6,263	6,774	
6	Hard Plastic	Kg	663	477	469	443	818	431	610	559	616	545	400	514	582	564	762	569	
7	Pet	Kg	629	899	564	591	826	471	502	640	415	470	516	630	481	723	594	547	
	Total.....5+6+7	Kg	8,499	9,176	5,935	7,035	8,343	8,124	7,721	7,833	6,921	9,402	6,785	6,848	9,241	8,411	7,619	7,890	
8	Thermocal	Kg	110	127	127	70	96	94	81	101	111	66	70	137	123	124	130	109	
9	Cloth / Rags / Textile	Kg	2,691	2,877	2,312	1,703	2,468	2,278	3,007	2,477	2,881	2,398	3,015	3,148	2,863	2,153	3,278	2,819	
10	Jute Bags	Kg	524	644	528	428	814	856	625	631	573	696	740	649	645	684	1,212	743	
	Total.....9+10	Kg	3,215	3,521	2,840	2,131	3,282	3,134	3,632	3,108	3,454	3,094	3,755	3,797	3,508	2,837	4,490	3,562	
11	Leather / Rubber / Rexine	Kg	414	594	551	488	684	484	632	550	627	645	501	732	683	483	811	640	
12	Coconut	Kg	4,566	3,365	3,745	4,820	3,050	2,233	4,250	3,718	3,537	3,477	4,449	5,307	3,931	3,258	3,031	3,856	
13	Total	Kg	20,694	20,119	16,929	19,713	20,133	19,127	21,251	19,709	19,454	20,582	20,009	21,000	22,769	19,635	21,512	20,709	
		TPD	20.69	20.12	16.93	19.71	20.13	19.13	21.25	19.71	19.45	20.58	20.01	21.00	22.77	19.64	21.51	20.71	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	15-May	16-May	17-May	18-May	19-May	20-May	21-May	Weekly Average	22-May	23-May	24-May	25-May	26-May	27-May	28-May	Weekly Average	
A Biogas Gensets:																			
1	Biogas Genset-I: Running Time	hr	19.32	19.04	16.83	20.28	18.84	14.66	16.82	17.97	18.63	19.88	15.17	19.70	20.45	20.21	19.93	19.14	
2	Biogas Genset-I: Energy Generation	kW.hr	3,214	3,114	2,792	3,146	3,060	2,510	2,663	2,928	2,962	3,345	2,629	3,078	3,381	3,324	3,218	3,134	
3	Biogas Genset-II: Running Time	hr	19.99	23.31	21.90	20.20	22.10	16.90	17.45	20.26	20.45	16.57	20.40	17.25	14.20	16.05	23.85	18.40	
4	Biogas Genset-II: Energy Generation	kW.hr	3,184	3,834	2,760	2,690	2,820	2,140	1,960	2,770	2,550	2,826	2,930	2,510	2,120	2,470	3,230	2,662	
5	Total.....2+4	kW.hr	6,398	6,948	5,552	5,836	5,880	4,650	4,623	5,698	5,512	6,171	5,559	5,588	5,501	5,794	6,448	5,796	

100 TPD Municipal Solid Waste (MSW) Facility at Calangute, North Goa

Sr. No.	Description	Unit	15-May	16-May	17-May	18-May	19-May	20-May	21-May	Weekly Average	22-May	23-May	24-May	25-May	26-May	27-May	28-May	Weekly Average
B	Electricity Generation:																	
1	<u>As per Tender:</u> Minimum electricity to be generated in the plant shall be 0.4 MW per per 100 tons of Input Biodegradable Waste as received in the Facility.																	
2	Biodegradable Waste.....1.B4	Tons	63.17	70.35	59.62	70.51	65.85	54.15	54.15	62.54	62.33	54.18	71.07	76.07	63.75	52.70	73.30	64.77
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	238	240	240	217	217	233	240	217	240	240	240	211	240	233
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	326	328	292	288	290	298	271	299	284	339	317	302	315	318	297	310
#	Surplus / Shortage	kWH	86	88	53	48	50	81	54		44	122	77	62	75	108	57	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	15-May	16-May	17-May	18-May	19-May	20-May	21-May	Weekly Average	22-May	23-May	24-May	25-May	26-May	27-May	28-May	Weekly Average
1	Operation Time	hr/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	1.77	0.27	0.00	0.00	0.32

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	15-May	16-May	17-May	18-May	19-May	20-May	21-May	Weekly Average	22-May	23-May	24-May	25-May	26-May	27-May	28-May	Weekly Average
A	Raw Effluent Quality:																	
1	Flow	m ³ /day	68.06	76.96	79.19	70.65	66.99	70.77	71.33	71.99	65.12	69.20	76.08	70.05	45.05	56.67	72.18	64.91
2	pH	---	7.13	7.65	7.57	6.03	6.7	6.1	7.74	6.99	7.37	6.45	6.83	7.81	6.24	6.09	7.51	6.90
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,972	1,563	1,885	1,610	1,566	1,886	1,781	1,752	1,632	1,817	1,936	2,328	1,788	2,063	1,747	1,902
4	Chemical Oxygen Demand (COD)	mg/l	6,153	3,861	5,071	4,508	4,072	5,941	6,091	5,100	3,313	4,179	4,066	7,147	4,524	5,818	5,521	4,938
5	Total Suspended Solids (TSS)	mg/l	4,181	3,235	3,582	2,512	2,427	3,583	3,918	3,348	3,623	4,161	3,233	3,864	3,093	4,435	3,372	3,683
6	Total Dissolve Solids (TDS)	mg/l	1,644	1,493	1,749	1,501	1,379	1,377	1,617	1,537	1,399	1,650	1,596	1,463	1,445	1,721	1,501	1,539
B	Treated Effluent Quality:																	
1	pH	---	7.24	7.25	7.01	6.7	6.62	6.53	7.43	6.97	6.91	6.55	7.43	7.31	6.72	6.93	7.04	6.98
2	Biochemical Oxygen Demand (BOD5)	mg/l	5	9	5	9	8	8	7	7	9	8	9	5	6	5	5	7
3	Chemical Oxygen Demand (COD)	mg/l	80	59	79	53	91	57	62	69	55	64	89	78	88	64	83	74
4	Total Suspended Solids (TSS)	mg/l	6	10	6	10	9	9	8	8	10	9	10	6	7	6	6	8
5	Total Dissolve Solids (TDS)	mg/l	1,660	1,508	1,889	1,666	1,517	1,528	1,649	1,631	1,553	1,782	1,644	1,551	1,459	1,893	1,576	1,637

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	15-May	16-May	17-May	18-May	19-May	20-May	21-May	Weekly Average	22-May	23-May	24-May	25-May	26-May	27-May	28-May	Weekly Average
1	<u>As per Tender:</u> Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.																	
2	Input Waste	TPD	137.96	141.40	141.31	139.31	136.76	134.50	134.50	137.96	139.27	131.69	139.04	152.50	136.50	123.88	162.11	140.71
3	Inert Fraction	TPD	0.000	2.020	0.000	1.800	0.000	0.000	0.000	0.546	4.010	2.210	0.000	0.000	0.000	4.670	2.740	1.947
4	% of Total Input Waste.....3/2	%	0.00%	1.43%	0.00%	1.29%	0.00%	0.00%	0.00%	0.39%	2.88%	1.68%	0.00%	0.00%	0.00%	3.77%	1.69%	1.43%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	15-May	16-May	17-May	18-May	19-May	20-May	21-May	Weekly Average	22-May	23-May	24-May	25-May	26-May	27-May	28-May	Weekly Average
1	Hygienic Conditions	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
2	Cleanliness	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
3	Manpower Deployed	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
4	Safety Norms	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
5	Treatment Methodology	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted
6	Storage Conditions	---	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted	Accepted

100 TPD Municipal Solid Waste (MSW) Facility at Calangute, North Goa

1 INPUT WASTE COMPOSITION:

Sr. No.	Description	Unit	29-May	30-May	31-May	Weekly Average		Monthly Average	
A Input Waste:									
1	Dry Waste	TPD	86.16	78.78	71.99	78.98	51.94%	70.08	51.33%
2	Wet Waste	TPD	70.06	73.93	70.17	71.39	46.95%	64.66	47.53%
3	Mixed Waste	TPD	0.00	0.00	0.00	0.00	0.00%	0.00	0.00%
4	Mulched Tree Waste	TPD	2.46	0.00	2.60	1.69	1.11%	1.58	1.14%
5	Total.....1+2+3+4	TPD	158.68	152.71	144.76	152.05	100.00%	136.32	100.00%
B Input Waste Composition:									
1	Organic / Bio degradable Fraction	65.00%	70.06	73.93	70.17	71.39	46.95%	64.66	47.53%
2	Inorganic / Non-recyclable Fraction (RDF)		63.26	57.20	57.25	59.24	38.96%	51.56	37.73%
3	Recyclables	14.00%	25.36	21.58	17.34	21.43	14.09%	19.22	14.08%
	Glass	0.50%	0.10	0.14	0.14	0.13	0.08%	0.10	0.07%
	Metal	0.50%	0.68	0.46	0.61	0.58	0.38%	0.50	0.36%
	Paper / Cardboard / Tetrapack	4.00%	4.82	2.32	4.55	3.90	2.56%	3.62	2.65%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	11.71	11.10	6.27	9.69	6.38%	7.89	5.77%
	Thermocoal / Styrofoam	1.00%	0.08	0.14	0.10	0.11	0.07%	0.11	0.08%
	Cloth / Rags / Textiles	1.50%	3.92	4.03	2.33	3.43	2.25%	3.02	2.20%
	Rubber Items	0.50%	0.56	0.61	0.59	0.59	0.39%	0.54	0.40%
	Coconut		3.49	2.78	2.75	3.01	1.98%	3.44	2.54%
4	Inert	10.00%	0.00	0.00	0.00	0.00	0.00%	0.88	0.66%
5	Mulched Tree Waste	11.00%	2.46	0.00	2.60				
	Total.....1+2+3+4+5	100.00%					100.00%		100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	29-May	30-May	31-May	Weekly Average		Monthly Average	
A Recyclables:									
1	Glass	Kg	95	137	145	126		102	
2	Metal	Kg	682	458	608	583		497	
3	Tetrapack	Kg	444	158	268	290		273	
4	Paper / Cardboard	Kg	4,380	2,163	4,277	3,607		3,350	
	Total.....3+4	Kg	4,824	2,321	4,545	3,897		3,622	
5	Plastic Films	Kg	9,708	9,315	5,165	8,063		6,670	
6	Hard Plastic	Kg	1,031	1,066	483	860		604	
7	Pet	Kg	972	722	621	772		618	
	Total.....5+6+7	Kg	11,711	11,103	6,269	9,694		7,892	
8	Thermocal	Kg	79	137	101	106		106	
9	Cloth / Rags / Textile	Kg	2,798	3,354	1,816	2,656		2,354	
10	Jute Bags	Kg	1,121	677	515	771		663	
	Total.....9+10	Kg	3,919	4,031	2,331	3,427		3,017	
11	Leather / Rubber / Rexine	Kg	555	611	594	587		543	
12	Coconut	Kg	3,491	2,779	2,750	3,007		3,443	
13	Total	Kg	25,356	21,577	17,343	21,425		19,224	
		TPD	25.36	21.58	17.34	21.43		19.22	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	29-May	30-May	31-May	Weekly Average		Monthly Average	
A Biogas Gensets:									
1	Biogas Genset-I: Running Time	hr	16.59	18.54	17.90	17.68		18.57	
2	Biogas Genset-I: Energy Generation	kW.hr	2,742	3,102	2,830	2,891		3,029	
3	Biogas Genset-II: Running Time	hr	22.15	23.25	19.18	21.53		20.23	
4	Biogas Genset-II: Energy Generation	kW.hr	3,230	3,330	3,866	3,475		3,035	
5	Total.....2+4	kW.hr	5,972	6,432	6,696	6,367		6,064	

100 TPD Municipal Solid Waste (MSW) Facility at Calangute, North Goa

Sr. No.	Description	Unit	29-May	30-May	31-May	Weekly Average	Monthly Average
B Electricity Generation:							
1	<u>As per Tender:</u> Minimum electricity to be generated in the plant shall be 0.4 MW per per 100 tons of Input Biodegradable Waste as received in the Facility.						
2	Biodegradable Waste.....1.B4	Tons	70.06	73.93	70.17	71.39	64.66
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	240	240	236
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	311	311	360	327	313
#	Surplus / Shortage	kWH	71	71	120		

4 BIOGAS FLARE:

Sr. No.	Description	Unit	29-May	30-May	31-May	Weekly Average	Monthly Average
1	Operation Time	hr/day	0.00	0.00	0.00	0.00	0.06

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	29-May	30-May	31-May	Weekly Average	Monthly Average
A Raw Effluent Quality:							
1	Flow	m ³ /day	85.72	77.92	0.00	54.55	68.43
2	pH	---	6.47	7.03	7.19	6.90	6.95
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,730	1,895	1,555	1,727	1,866
4	Chemical Oxygen Demand (COD)	mg/l	3,616	5,780	5,411	4,936	5,260
5	Total Suspended Solids (TSS)	mg/l	3,771	4,283	2,364	3,473	3,571
6	Total Dissolve Solids (TDS)	mg/l	1,745	1,721	1,388	1,618	1,545
B Treated Effluent Quality:							
1	pH	---	7.47	7.15	6.63	7.08	6.99
2	Biochemical Oxygen Demand (BOD5)	mg/l	6	5	6	6	7
3	Chemical Oxygen Demand (COD)	mg/l	58	68	60	62	69
4	Total Suspended Solids (TSS)	mg/l	7	6	7	7	8
5	Total Dissolve Solids (TDS)	mg/l	1,850	1,824	1,402	1,692	1,630

6 DISPOSAL OF INERT:

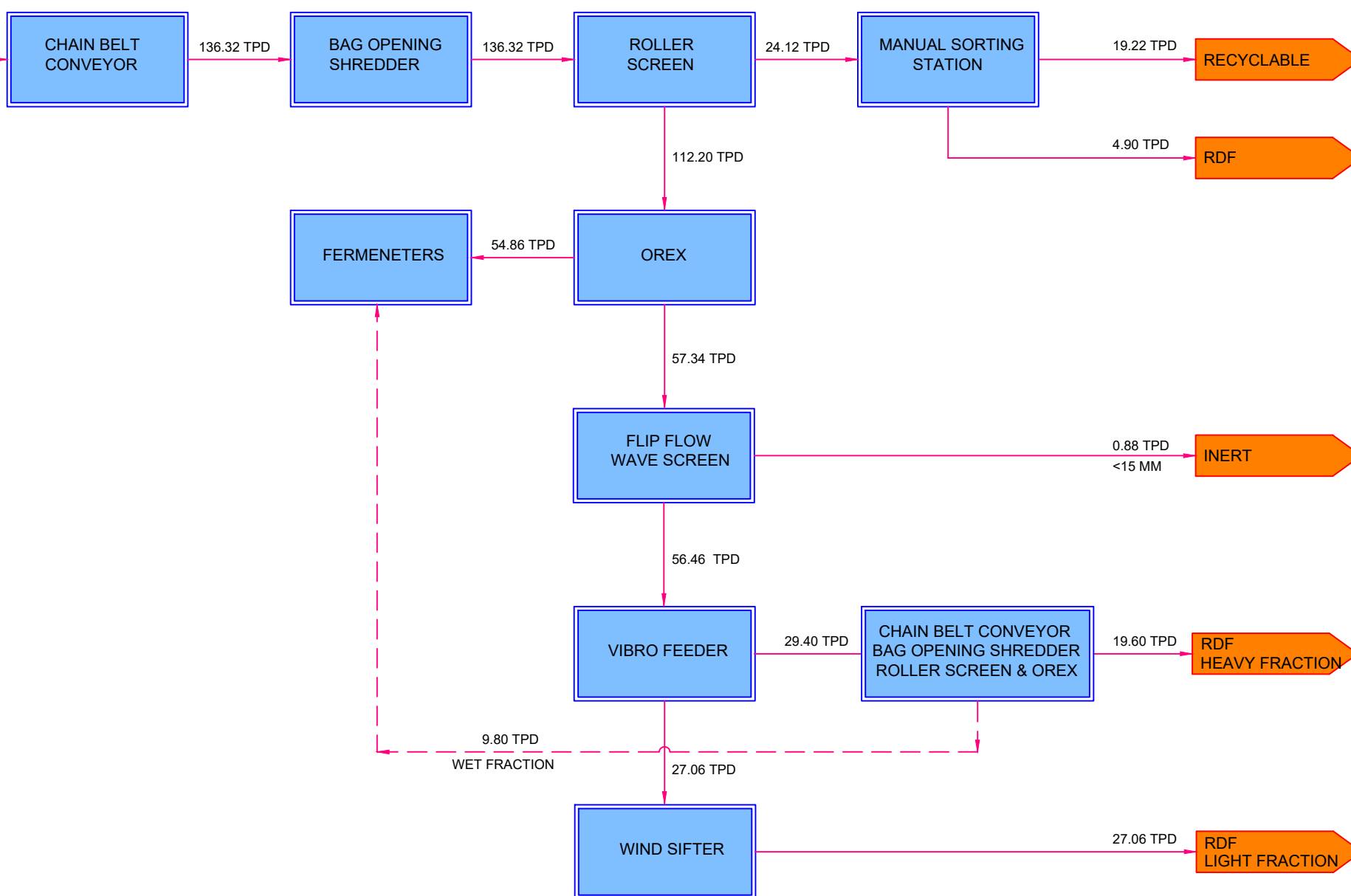
Sr. No.	Description	Unit	29-May	30-May	31-May	Weekly Average	Monthly Average
1	<u>As per Tender:</u> Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.						
2	Input Waste	TPD	158.68	152.71	144.76	152.05	136.32
3	Inert Fraction	TPD	0.000	0.000	0.000	0.000	0.880
4	% of Total Input Waste.....3/2	%	0.00%	0.00%	0.00%	0.00%	0.67%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	29-May	30-May	31-May	Weekly Average	Monthly Average
1	Hygienic Conditions	---	Accepted	Accepted	Accepted	Accepted	Accepted
2	Cleanliness	---	Accepted	Accepted	Accepted	Accepted	Accepted
3	Manpower Deployed	---	Accepted	Accepted	Accepted	Accepted	Accepted
4	Safety Norms	---	Accepted	Accepted	Accepted	Accepted	Accepted
5	Treatment Methodology	---	Accepted	Accepted	Accepted	Accepted	Accepted
6	Storage Conditions	---	Accepted	Accepted	Accepted	Accepted	Accepted

INPUT WASTE		
Sr. No.	NAME	WEIGHT (TPD)
1	RECYCLABLES	19.22
2	RDF	51.56
3	WET FRACTION	64.66
4	INERT	0.88
TOTAL		136.32

NUMBER OF RECYCLABLE FRACTIONS		
Sr. No.	NAME	WEIGHT (KG)
01	GLASS	102
02	METALS	497
03	TETRAPACK	273
04	PAPER/CARDBOARD	3,350
05	PLASTIC FILM	6,670
06	HARD PLASTIC	604
07	PET	618
08	THERMOCAL	106
09	CLOTH/RAGS/TEXTILE	2,354
10	JUTE BAGS	663
11	LEATHER/RUBBER/REXINE	543
12	COCONUT	3,443
TOTAL		19,224



OWNER:
DEPARTMENT OF SCIENCE, TECHNOLOGY & ENVIRONMENT

THE MANAGING ASSOCIATE:
GOA STATE INFRASTRUCTURE DEVELOPMENT LTD.

CONTRACTOR:
M/s HINDUSTAN WASTE TREATMENT PVT. LTD.

	NAME	SIGN	DATE
DRWN	SG		31/05/18
DSGN	SG		31/05/18
CHKD	SG		31/05/18
APPD	SG		31/05/18

TITLE :
ANNEXURE -1
MASS BALANCE: MAY 2018

SCALE
NTS

SIZE
A3

REV.
R0