

**Monthly Performance Report
(HWT-NG100-MPR-11-R0)**

**June 2017
(From 01/06/2017 to 30/06/2017)**

**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 June 2017
(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: 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: 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 117.59 TPD . Quantum of Inert is 6.75 TPD 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 0.63 MW/100 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 7.11 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 684 1403 898"> <tbody> <tr> <td>pH</td> <td>7.05</td> </tr> <tr> <td>BOD</td> <td>7 mg/l</td> </tr> <tr> <td>COD</td> <td>75 mg/l</td> </tr> <tr> <td>TSS</td> <td>8 mg/l</td> </tr> <tr> <td>TDS</td> <td>1731 mg/l</td> </tr> </tbody> </table>	pH	7.05	BOD	7 mg/l	COD	75 mg/l	TSS	8 mg/l	TDS	1731 mg/l
pH	7.05												
BOD	7 mg/l												
COD	75 mg/l												
TSS	8 mg/l												
TDS	1731 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. 										

#	Plant Performance Data: June 2017		
Sr. No.	Content	Month	Signature
1	Input Waste Composition	June 2017 From 01.06.2017 To 30.06.2017	
2	Recyclables		
3	Electricity Generation		
4	Biogas Flare		
5	Effluent Treatment Plant		
6	Disposal of Inert		
7	Housekeeping		

1 INPUT WASTE COMPOSITION:

Sr. No.	Description	Unit	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	Weekly Average	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	Weekly Average		
A	Input Waste:																			
1	Dry Waste	TPD	1.96	1.39	1.34	0.62	5.82	6.61	2.73	2.92	2.31%	2.09	3.47	2.75	0.95	2.94	5.49	3.13	2.97	2.39%
2	Wet Waste	TPD	38.03	25.94	0.00	31.26	25.13	33.74	37.74	27.41	21.65%	27.55	34.54	37.68	21.20	27.36	27.87	0.00	25.17	20.20%
3	Mixed Waste	TPD	104.51	60.12	95.34	80.59	103.12	90.13	93.37	89.60	70.78%	85.34	86.85	96.35	87.30	100.33	93.85	87.67	91.10	73.12%
4	Mulched Tree waste	TPD	0.76	1.10	39.11	1.67	2.13	0.85	0.95	6.65	5.26%	1.41	2.77	3.42	0.99	0.69	0.99	27.18	5.35	4.29%
5	Total.....1+2+3+4	TPD	145.26	88.55	135.79	114.14	136.20	131.33	134.79	126.58	100.00%	116.39	127.63	140.20	110.44	131.32	128.20	117.98	124.59	100.00%
B	Input Waste Composition:																			
1	Organic / Bio degradable Fraction	65.00%	83.91	51.91	41.66	63.82	67.41	71.86	76.49	65.29	51.58%	64.50	70.41	78.82	59.26	70.40	68.32	36.03	63.96	51.34%
2	Inorganic / Non-recyclable Fraction (RDF)		33.14	17.58	69.04	25.63	41.82	35.03	30.65	36.13	28.54%	30.06	32.40	34.67	30.93	33.83	32.61	59.89	36.34	29.17%
3	Recyclables	14.00%	21.06	13.20	17.37	17.82	18.92	15.46	19.13	17.56	13.88%	14.89	17.10	19.29	14.10	19.63	18.63	16.35	17.14	13.76%
	Glass	0.50%	0.10	0.08	0.12	0.06	0.14	0.07	0.07	0.09	0.07%	0.08	0.08	0.10	0.06	0.13	0.09	0.12	0.09	0.07%
	Metal	0.50%	0.48	0.32	0.41	0.47	0.60	0.45	0.65	0.48	0.38%	0.35	0.63	0.48	0.47	0.41	0.38	0.55	0.47	0.38%
	Paper / Cardboard / Tetrapack	4.00%	3.36	2.35	3.86	2.77	2.97	2.31	3.85	3.07	2.42%	2.00	3.48	4.04	2.14	3.43	2.92	2.63	2.95	2.37%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	8.58	5.51	4.77	7.97	7.70	6.67	8.91	7.16	5.65%	6.95	7.08	8.59	6.34	8.75	8.20	7.50	7.63	6.12%
	Thermocoal / Styrofoam	1.00%	0.12	0.04	0.14	0.10	0.08	0.12	0.07	0.10	0.08%	0.09	0.09	0.13	0.08	0.11	0.09	0.08	0.09	0.08%
	Cloth / Rags / Textiles	1.50%	2.77	2.09	3.07	2.72	3.41	2.92	2.78	2.82	2.23%	2.36	2.27	2.96	2.35	2.04	2.86	1.98	2.40	1.93%
	Rubber Items	0.50%	0.73	0.41	0.61	0.45	0.38	0.42	0.66	0.52	0.41%	0.33	0.43	0.38	0.35	0.34	0.42	0.33	0.37	0.30%
	Coconut		4.92	2.41	4.40	3.29	3.65	2.51	2.14	3.33	2.63%	2.72	3.04	2.62	2.31	4.44	3.65	3.15	3.13	2.51%
4	Inert	10.00%	7.15	5.86	7.73	6.87	8.05	8.98	8.52	7.59	6.00%	6.95	7.72	7.42	6.15	7.46	8.64	5.71	7.15	5.74%
5	Mulched Tree Waste	11.00%	0.76	1.10	39.11	1.67	2.13	0.85	0.95			1.41	2.77	3.42	0.99	0.69	0.99	27.18		
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	Weekly Average	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	Weekly Average
A	Recyclables:																	
1	Glass	Kg	102	80	122	57	136	66	67	90	81	77	98	55	131	90	118	93
2	Metal	Kg	479	319	407	468	599	447	647	481	349	625	477	475	407	385	555	468
3	Tetrapack	Kg	191	99	120	139	137	97	185	138	90	115	153	124	106	88	132	115
4	Paper / Cardboard	Kg	3,164	2,248	3,737	2,635	2,833	2,214	3,670	2,929	1,912	3,369	3,884	2,018	3,321	2,835	2,499	2,834
	Total.....3+4	Kg	3,355	2,347	3,857	2,774	2,970	2,311	3,855	3,067	2,002	3,484	4,037	2,142	3,427	2,923	2,631	2,949
5	Plastic Films	Kg	7,434	4,874	4,232	6,748	6,795	5,744	7,395	6,175	5,955	6,198	7,632	5,344	7,443	7,007	6,528	6,587
6	Hard Plastic	Kg	618	358	253	613	416	487	873	517	403	368	464	488	743	788	503	537
7	Pet	Kg	532	275	281	605	485	440	641	466	591	517	498	507	560	410	473	508
	Total.....5+6+7	Kg	8,584	5,507	4,766	7,966	7,696	6,671	8,909	7,157	6,949	7,083	8,594	6,339	8,746	8,205	7,504	7,631
8	Thermocal	Kg	116	44	136	103	82	118	67	95	93	89	126	77	105	90	83	95
9	Cloth / Rags / Textile	Kg	2,286	1,749	2,176	2,046	2,656	2,175	2,038	2,161	1,895	1,806	2,239	1,908	1,470	2,364	1,607	1,898
10	Jute Bags	Kg	488	341	893	671	749	741	739	660	468	466	719	445	566	495	375	505
	Total.....9+10	Kg	2,774	2,090	3,069	2,717	3,405	2,916	2,777	2,821	2,363	2,272	2,958	2,353	2,036	2,859	1,982	2,403
11	Leather / Rubber / Rexine	Kg	726	407	611	445	381	420	660	521	326	434	379	353	341	423	330	369
12	Coconut	Kg	4,924	2,409	4,400	3,287	3,650	2,508	2,143	3,332	2,724	3,038	2,622	2,308	4,439	3,654	3,150	3,134
13	Total	Kg	21,060	13,203	17,368	17,817	18,919	15,457	19,125	17,564	14,887	17,102	19,291	14,102	19,632	18,629	16,353	17,142
		TPD	21.06	13.20	17.37	17.82	18.92	15.46	19.13	17.56	14.89	17.10	19.29	14.10	19.63	18.63	16.35	17.14

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	Weekly Average	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	Weekly Average
A	Biogas Gensets:																	
1	Biogas Genset-I: Running Time	hr	18.00	17.35	19.60	22.46	21.26	18.38	20.62	19.67	20.82	19.83	19.80	22.47	18.94	17.26	19.62	19.82
2	Biogas Genset-I: Energy Generation	kW.hr	3,147	3,017	3,519	3,782	3,560	3,388	3,776	3,456	3,680	3,448	3,462	3,988	3,293	3,079	3,505	3,494
3	Biogas Genset-II: Running Time	hr	19.51	23.86	19.53	16.40	16.46	21.20	16.04	19.00	20.28	14.61	20.67	15.29	20.68	17.65	14.59	17.68
4	Biogas Genset-II: Energy Generation	kW.hr	3,339	4,464	3,539	3,085	2,862	3,946	2,671	3,415	3,661	2,676	3,537	2,602	3,671	3,086	2,701	3,133
5	Total.....2+4	kW.hr	6,486	7,481	7,058	6,867	6,422	7,334	6,447	6,871	7,341	6,124	6,999	6,590	6,964	6,165	6,206	6,627

Sr. No.	Description	Unit	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	Weekly Average	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	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	83.91	51.91	41.66	63.82	67.41	71.86	76.49	65.29	64.50	70.41	78.82	59.26	70.40	68.32	36.03	63.96
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	208	167	240	240	240	240	225	240	240	240	237	240	240	144	226
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	346	361	361	356	341	370	350	355	357	357	346	348	351	353	364	354
#	Surplus / Shortage	kWH	106	153	194	116	101	130	110		117	117	106	111	111	113	220	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	Weekly Average	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	Weekly Average
2	Operation Time	hr/day	6.34	4.14	4.30	7.60	5.65	8.32	7.43	6.25	6.03	7.37	8.43	8.58	8.90	8.87	9.13	8.19

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Parameter	Unit	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	Weekly Average	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	Weekly Average
A	Raw Effluent Quality:																	
1	Flow	m ³ /day	63.96	44.93	50.22	53.31	57.74	55.43	56.27	54.55	54.03	65.88	55.11	43.50	49.18	53.66	44.97	52.33
2	pH	---	6.55	6.45	7.71	7.29	7.18	7.58	6.32	7.01	7.01	6.69	7.46	7.02	6.21	7.62	6.4	6.92
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,937	1,949	2,236	1,876	1,671	2,419	2,355	2,063	2,368	2,404	2,447	2,477	1,805	2,156	2,500	2,308
4	Chemical Oxygen Demand (COD)	mg/l	4,339	6,217	6,999	5,909	3,509	6,894	8,243	6,016	5,588	5,649	4,894	8,570	4,350	7,136	5,800	5,998
5	Total Suspended Solids (TSS)	mg/l	4,765	3,898	5,322	4,446	3,309	4,330	5,016	4,441	4,618	3,798	5,946	5,499	3,754	3,730	4,675	4,574
6	Total Dissolve Solids (TDS)	mg/l	1,644	1,537	1,543	1,703	1,791	1,712	1,671	1,657	1,666	1,671	1,767	1,580	1,763	1,548	1,636	1,662
B	Treated Effluent Quality:																	
1	pH	---	6.73	7.50	6.61	7.5	7.34	6.78	6.82	7.04	6.83	6.59	7.45	7.2	6.74	7.06	6.87	6.96
2	Biochemical Oxygen Demand (BOD5)	mg/l	6	9	8	9	5	5	6	7	8	6	8	6	7	6	5	7
3	Chemical Oxygen Demand (COD)	mg/l	82	76	82	51	84	89	60	75	76	61	55	75	85	74	67	70
1	Total Suspended Solids (TSS)	mg/l	7	10	9	10	6	6	7	8	9	7	9	7	8	7	6	8
2	Total Dissolve Solids (TDS)	mg/l	1,677	1,645	1,589	1,856	1,898	1,883	1,688	1,748	1,816	1,671	1,855	1,659	1,851	1,594	1,800	1,749

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	Weekly Average	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	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	145.26	88.55	135.79	114.14	136.20	131.33	134.79	126.58	116.39	127.63	140.20	110.44	131.32	128.20	117.98	124.59
3	Inert Fraction	Kg	7,147	5,862	7,726	6,871	8,049	8,983	8,519	7,594	6,948	7,722	7,417	6,152	7,459	8,641	5,710	7,150
		TPD	7.15	5.86	7.73	6.87	8.05	8.98	8.52	7.59	6.95	7.72	7.42	6.15	7.46	8.64	5.71	7.15
4	% of Total Input Waste.....3/2	%	4.92%	6.62%	5.69%	6.02%	5.91%	6.84%	6.32%	6.05%	5.97%	6.05%	5.29%	5.57%	5.68%	6.74%	4.84%	5.73%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	1-Jun	2-Jun	3-Jun	4-Jun	5-Jun	6-Jun	7-Jun	Weekly Average	8-Jun	9-Jun	10-Jun	11-Jun	12-Jun	13-Jun	14-Jun	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

1 INPUT WASTE COMPOSITION:

Sr. No.	Description	Unit	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	Weekly Average	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	Weekly Average		
A	Input Waste:																			
1	Dry Waste	TPD	5.30	0.84	1.33	1.76	2.76	5.27	4.70	3.14	2.46%	2.64	2.82	0.18	1.02	0.98	0.92	3.25	1.69	1.64%
2	Wet Waste	TPD	23.03	39.62	30.44	35.09	0.00	0.00	41.36	24.22	19.00%	0.00	12.89	0.00	10.52	0.00	14.10	0.00	5.36	5.22%
3	Mixed Waste	TPD	99.51	82.13	92.96	75.72	92.16	93.26	85.73	88.78	69.65%	81.24	78.94	76.55	79.22	90.09	88.80	84.90	82.82	80.74%
4	Mulched Tree waste	TPD	4.68	0.87	2.46	3.50	31.93	34.48	1.36	11.33	8.89%	37.27	2.60	15.27	0.43	14.31	5.10	13.96	12.71	12.39%
5	Total.....1+2+3+4	TPD	132.52	123.46	127.19	116.07	126.85	133.01	133.15	127.46	100.00%	121.15	97.25	92.00	91.19	105.38	108.92	102.11	102.57	100.00%
B	Input Waste Composition:																			
1	Organic / Bio degradable Fraction	65.00%	62.83	75.68	68.83	65.98	37.51	37.77	79.42	61.15	47.97%	36.56	47.94	33.15	44.66	39.37	52.73	36.17	41.51	40.47%
2	Inorganic / Non-recyclable Fraction (RDF)		44.76	26.30	34.23	27.46	69.06	70.62	30.83	43.32	33.99%	65.80	33.20	40.81	29.94	48.20	35.90	43.89	42.53	41.47%
3	Recyclables	14.00%	15.88	16.51	16.79	16.33	14.00	18.87	17.74	16.59	13.01%	12.95	11.73	11.28	11.89	11.48	14.75	15.47	12.79	12.47%
	Glass	0.50%	0.11	0.11	0.13	0.06	0.10	0.07	0.12	0.10	0.08%	0.06	0.08	0.05	0.05	0.06	0.07	0.08	0.06	0.06%
	Metal	0.50%	0.61	0.43	0.53	0.53	0.41	0.61	0.57	0.53	0.41%	0.42	0.49	0.32	0.34	0.53	0.44	0.46	0.43	0.42%
	Paper / Cardboard / Tetrapack	4.00%	2.16	3.56	2.45	2.68	2.17	2.73	2.64	2.63	2.06%	2.35	1.50	2.35	1.94	2.21	3.13	2.09	2.22	2.17%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	7.75	6.74	7.31	7.28	5.11	8.38	8.77	7.34	5.76%	4.45	4.15	4.31	4.50	4.15	6.80	7.13	5.07	4.94%
	Thermocoal / Styrofoam	1.00%	0.08	0.11	0.08	0.10	0.06	0.08	0.12	0.09	0.07%	0.07	0.09	0.06	0.08	0.08	0.11	0.05	0.08	0.08%
	Cloth / Rags / Textiles	1.50%	2.11	3.00	2.93	2.15	2.00	2.55	2.94	2.53	1.98%	2.82	2.33	1.45	1.71	1.94	2.05	2.12	2.06	2.01%
	Rubber Items	0.50%	0.66	0.58	0.32	0.32	0.58	0.35	0.35	0.45	0.35%	0.55	0.29	0.32	0.36	0.31	0.50	0.51	0.40	0.39%
	Coconut		2.40	1.98	3.04	3.20	3.56	4.11	2.22	2.93	2.30%	2.23	2.80	2.42	2.90	2.19	1.67	3.02	2.46	2.40%
4	Inert	10.00%	9.05	4.98	7.34	6.30	6.28	5.75	5.17	6.41	5.03%	5.84	4.39	6.76	4.70	6.33	5.54	6.58	5.73	5.59%
5	Mulched Tree Waste	11.00%	4.68	0.87	2.46	3.50	31.93	34.48	1.36			37.27	2.60	15.27	0.43	14.31	5.10	13.96		
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	Weekly Average	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	Weekly Average
A	Recyclables:																	
1	Glass	Kg	106	111	127	58	101	67	120	99	61	78	46	55	63	65	82	64
2	Metal	Kg	610	432	534	534	406	612	573	529	424	486	322	337	527	436	459	427
3	Tetrapack	Kg	76	203	147	153	100	115	156	136	120	76	101	117	66	141	65	98
4	Paper / Cardboard	Kg	2,084	3,353	2,307	2,528	2,069	2,612	2,481	2,491	2,230	1,421	2,245	1,826	2,147	2,985	2,028	2,126
	Total.....3+4	Kg	2,160	3,556	2,454	2,681	2,169	2,727	2,637	2,626	2,350	1,497	2,346	1,943	2,213	3,126	2,093	2,224
5	Plastic Films	Kg	6,411	5,790	6,385	6,426	4,355	6,947	7,415	6,247	3,850	3,609	3,819	3,847	3,587	5,995	6,051	4,394
6	Hard Plastic	Kg	721	546	461	415	424	704	842	588	333	336	229	284	208	340	556	327
7	Pet	Kg	620	404	468	437	332	729	518	501	262	208	268	374	357	462	520	350
	Total.....5+6+7	Kg	7,752	6,740	7,314	7,278	5,111	8,380	8,775	7,336	4,445	4,153	4,316	4,505	4,152	6,797	7,127	5,071
8	Thermocal	Kg	80	111	76	104	63	80	120	91	73	88	55	82	84	109	51	77
9	Cloth / Rags / Textile	Kg	1,665	2,142	2,326	1,580	1,557	1,908	2,128	1,901	2,354	1,858	1,086	1,421	1,406	1,511	1,642	1,611
10	Jute Bags	Kg	442	858	600	567	447	646	815	625	469	476	368	293	533	536	482	451
	Total.....9+10	Kg	2,107	3,000	2,926	2,147	2,004	2,554	2,943	2,526	2,823	2,334	1,454	1,714	1,939	2,047	2,124	2,062
11	Leather / Rubber / Rexine	Kg	663	580	318	325	584	346	346	452	545	292	322	356	306	501	511	405
12	Coconut	Kg	2,399	1,975	3,040	3,204	3,564	4,110	2,224	2,931	2,229	2,801	2,420	2,900	2,192	1,666	3,022	2,461
13	Total	Kg	15,877	16,505	16,789	16,331	14,002	18,876	17,738	16,588	12,950	11,729	11,281	11,892	11,476	14,747	15,469	12,792
		TPD	15.88	16.51	16.79	16.33	14.00	18.88	17.74	16.59	12.95	11.73	11.28	11.89	11.48	14.75	15.47	12.79

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	Weekly Average	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	Weekly Average
A	Biogas Gensets:																	
1	Biogas Genset-I: Running Time	hr	18.81	22.19	20.66	20.72	17.45	22.20	21.95	20.57	18.46	17.30	19.42	20.42	20.65	17.83	22.55	19.52
2	Biogas Genset-I: Energy Generation	kW.hr	3,376	3,879	3,808	3,545	3,283	3,965	3,941	3,685	3,209	3,170	3,376	3,645	3,496	3,167	3,879	3,420
3	Biogas Genset-II: Running Time	hr	17.37	15.87	16.42	15.65	20.26	18.32	13.83	16.82	17.99	16.64	20.10	15.99	20.57	19.86	14.18	17.90
4	Biogas Genset-II: Energy Generation	kW.hr	3,217	2,758	2,856	2,780	3,581	3,446	2,341	2,997	3,128	2,878	3,310	2,916	3,445	3,486	2,439	3,086
5	Total.....2+4	kW.hr	6,593	6,637	6,664	6,325	6,864	7,411	6,282	6,682	6,337	6,048	6,686	6,561	6,941	6,653	6,318	6,506

Sr. No.	Description	Unit	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	Weekly Average	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	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	62.83	75.68	68.83	65.98	37.51	37.77	79.42	61.15	36.56	47.94	33.15	44.66	39.37	52.73	36.17	41.51
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	240	240	150	151	240	214	146	192	133	179	157	211	145	166
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	365	349	358	349	365	367	349	357	348	356	339	361	337	353	344	348
#	Surplus / Shortage	kWH	125	109	118	109	215	216	109		201	164	206	182	179	142	199	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	Weekly Average	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	Weekly Average
2	Operation Time	hr/day	6.07	10.55	11.32	11.02	6.48	6.75	8.12	8.62	8.45	6.14	6.49	6.00	5.55	5.81	7.97	6.63

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Parameter	Unit	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	Weekly Average	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	Weekly Average
A	Raw Effluent Quality:																	
1	Flow	m ³ /day	50.25	63.26	66.18	65.80	58.41	43.33	45.97	56.17	67.27	52.93	49.31	55.62	54.15	40.26	51.18	52.96
2	pH	---	6.44	6.41	6.16	6.56	7.71	6.23	6.01	6.50	6.64	6.28	7.01	6.84	6.59	7.27	7.61	6.89
3	Biochemical Oxygen Demand (BOD5)	mg/l	2,019	1,910	2,149	1,788	2,224	1,785	2,161	2,005	2,107	1,779	1,946	2,337	2,026	1,983	2,463	2,092
4	Chemical Oxygen Demand (COD)	mg/l	4,078	5,482	7,264	3,898	4,515	4,534	6,353	5,161	4,446	5,853	5,663	6,614	4,052	4,898	5,566	5,299
5	Total Suspended Solids (TSS)	mg/l	3,735	3,916	4,728	4,220	5,048	4,338	3,674	4,237	3,350	2,900	3,892	4,581	3,890	4,779	4,212	3,943
6	Total Dissolve Solids (TDS)	mg/l	1,713	1,746	1,583	1,512	1,598	1,792	1,554	1,643	1,565	1,540	1,566	1,627	1,573	1,723	1,540	1,591
B	Treated Effluent Quality:																	
1	pH	---	6.94	6.9	7.05	7.04	6.54	7.32	6.54	6.90	7.31	6.84	7.32	6.79	7.06	6.82	6.91	7.01
2	Biochemical Oxygen Demand (BOD5)	mg/l	6	9	8	9	6	9	9	8	7	9	7	6	8	6	7	7
3	Chemical Oxygen Demand (COD)	mg/l	81	56	89	77	75	89	54	74	60	67	71	81	90	54	54	68
1	Total Suspended Solids (TSS)	mg/l	7	10	9	10	7	10	10	9	8	10	8	7	9	7	8	8
2	Total Dissolve Solids (TDS)	mg/l	1,747	1,763	1,678	1,648	1,614	1,882	1,632	1,709	1,581	1,694	1,597	1,676	1,604	1,826	1,586	1,652

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	Weekly Average	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	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	132.52	123.46	127.19	116.07	126.85	133.01	133.15	127.46	121.15	97.25	92.00	91.19	105.38	108.92	102.11	102.57
3	Inert Fraction	Kg	9,051	4,975	7,339	6,303	6,279	5,746	5,166	6,408	5,839	4,386	6,762	4,696	6,333	5,544	6,576	5,734
		TPD	9.05	4.98	7.34	6.30	6.28	5.75	5.17	6.41	5.84	4.39	6.76	4.70	6.33	5.54	6.58	5.73
4	% of Total Input Waste.....3/2	%	6.83%	4.03%	5.77%	5.43%	4.95%	4.32%	3.88%	5.03%	4.82%	4.51%	7.35%	5.15%	6.01%	5.09%	6.44%	5.62%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	15-Jun	16-Jun	17-Jun	18-Jun	19-Jun	20-Jun	21-Jun	Weekly Average	22-Jun	23-Jun	24-Jun	25-Jun	26-Jun	27-Jun	28-Jun	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

1 INPUT WASTE COMPOSITION:

Sr. No.	Description	Unit	29-Jun	30-Jun	Weekly Average		Monthly Average	
A Input Waste:								
1	Dry Waste	TPD	2.84	1.24	2.04	0.02	2.55	2.14%
2	Wet Waste	TPD	8.92	12.31	10.62	0.10	18.55	15.20%
3	Mixed Waste	TPD	97.57	83.74	90.66	0.85	88.59	75.84%
4	Mulched Tree waste	TPD	1.04	5.86	3.45	0.03	7.90	6.81%
5	Total.....1+2+3+4	TPD	110.37	103.15	106.76	100.00%	117.59	100.00%
B Input Waste Composition:								
1	Organic / Bio degradable Fraction	65.00%	49.51	47.48	48.50	45.42%	56.08	47.36%
2	Inorganic / Non-recyclable Fraction (RDF)		39.97	38.14	39.06	36.58%	39.48	33.95%
3	Recyclables	14.00%	13.09	11.57	12.33	11.55%	15.28	12.93%
	Glass	0.50%	0.07	0.10	0.08	0.08%	0.09	0.07%
	Metal	0.50%	0.46	0.33	0.40	0.37%	0.46	0.39%
	Paper / Cardboard / Tetrapack	4.00%	2.21	1.89	2.05	1.92%	2.58	2.19%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	5.63	4.22	4.92	4.61%	6.42	5.42%
	Thermocoal / Styrofoam	1.00%	0.09	0.09	0.09	0.08%	0.09	0.08%
	Cloth / Rags / Textiles	1.50%	2.38	1.62	2.00	1.87%	2.36	2.00%
	Rubber Items	0.50%	0.32	0.50	0.41	0.38%	0.43	0.37%
	Coconut		1.93	2.83	2.38	2.23%	2.85	2.41%
4	Inert	10.00%	7.80	5.95	6.88	6.44%	6.75	5.76%
5	Mulched Tree Waste	11.00%	1.04	5.86				
	Total.....1+2+3+4+5	100.00%				100.00%		100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	29-Jun	30-Jun	Weekly Average		Monthly Average	
A Recyclables:								
1	Glass	Kg	66	103	85		86	
2	Metal	Kg	464	330	397		460	
3	Tetrapack	Kg	124	70	97		117	
4	Paper / Cardboard	Kg	2,084	1,818	1,951		2,466	
	Total.....3+4	Kg	2,208	1,888	2,048		2,583	
5	Plastic Films	Kg	4,869	3,514	4,192		5,519	
6	Hard Plastic	Kg	293	392	343		462	
7	Pet	Kg	467	312	390		443	
	Total.....5+6+7	Kg	5,629	4,218	4,924		6,424	
8	Thermocal	Kg	88	93	91		90	
9	Cloth / Rags / Textile	Kg	1,881	1,151	1,516		1,817	
10	Jute Bags	Kg	503	468	486		545	
	Total.....9+10	Kg	2,384	1,619	2,002		2,363	
11	Leather / Rubber / Rexine	Kg	320	495	408		431	
12	Coconut	Kg	1,931	2,826	2,379		2,847	
13	Total	Kg	13,090	11,572	12,331		15,284	
		TPD	13.09	11.57	12.33		15.28	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	29-Jun	30-Jun	Weekly Average		Monthly Average	
A Biogas Gensets:								
1	Biogas Genset-I: Running Time	hr	21.80	20.74	21.27		20.17	
2	Biogas Genset-I: Energy Generation	kW.hr	3,853	3,881	3,867		3,584	
3	Biogas Genset-II: Running Time	hr	14.32	13.83	14.08		17.10	
4	Biogas Genset-II: Energy Generation	kW.hr	2,463	2,328	2,396		3,005	
5	Total.....2+4	kW.hr	6,316	6,209	6,263		6,590	

Sr. No.	Description	Unit	29-Jun	30-Jun	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	49.51	47.48	48.50	56.08
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	198	190	194	205
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	349	355	352	353
#	Surplus / Shortage	kWH	151	166		

4 BIOGAS FLARE:

Sr. No.	Description	Unit	29-Jun	30-Jun	Weekly Average	Monthly Average
2	Operation Time	hr/day	4.83	6.88	5.86	7.11

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Parameter	Unit	29-Jun	30-Jun	Weekly Average	Monthly Average
A	Raw Effluent Quality:					
1	Flow	m ³ /day	50.77	69.85	60.31	55.27
2	pH	---	6.84	6.26	6.55	6.77
3	Biochemical Oxygen Demand (BOD5)	mg/l	2,125	1,954	2,040	2,102
4	Chemical Oxygen Demand (COD)	mg/l	6,056	5,471	5,764	5,647
5	Total Suspended Solids (TSS)	mg/l	4,165	4,084	4,125	4,264
6	Total Dissolve Solids (TDS)	mg/l	1,620	1,696	1,658	1,642
B	Treated Effluent Quality:					
1	pH	---	7.49	7.17	7.33	7.05
2	Biochemical Oxygen Demand (BOD5)	mg/l	5	7	6	7
3	Chemical Oxygen Demand (COD)	mg/l	86	85	86	75
1	Total Suspended Solids (TSS)	mg/l	6	8	7	8
2	Total Dissolve Solids (TDS)	mg/l	1,782	1,815	1,799	1,731

6 DISPOSAL OF INERT:

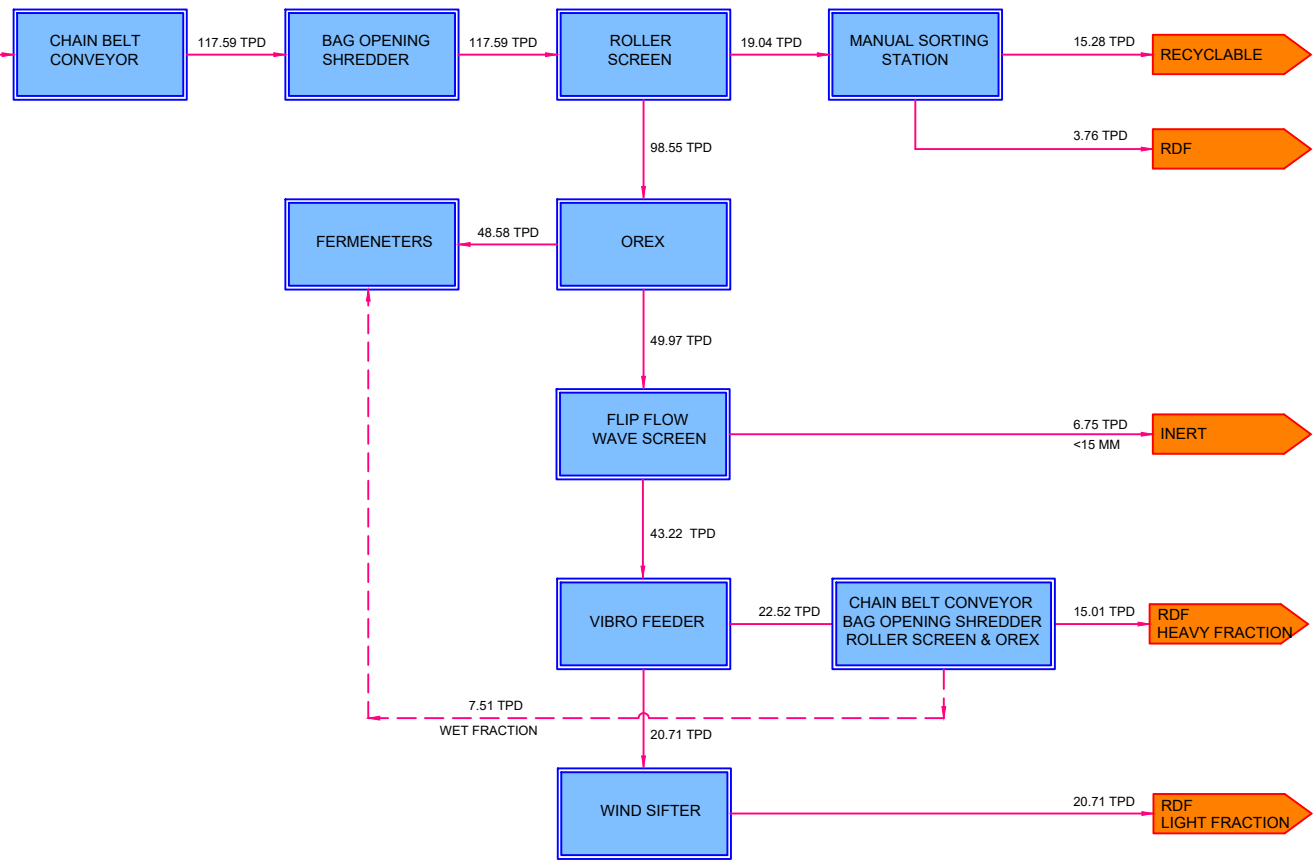
Sr. No.	Description	Unit	29-Jun	30-Jun	Weekly Average	Monthly Average
1	<u>As per Tender:</u> Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.					
2	Input Waste	TPD	110.37	103.15	106.76	117.59
3	Inert Fraction	Kg	7,803	5,952	6,877	6,753
		TPD	7.80	5.95	6.88	6.75
4	% of Total Input Waste.....3/2	%	7.07%	5.77%	6.42%	5.77%

7 HOUSEKEEPING:

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

INPUT WASTE		
SR. NO.	NAME	WEIGHT (TPD)
1	RECYCLABLES	15.28
2	RDF	39.48
3	WET FRACTION	56.08
4	INERT	6.75
TOTAL		117.59

NUMBER OF RECYCLABLE FRACTIONS		
SR. NO.	NAME	WEIGHT (KG)
01	GLASS	86
02	METALS	460
03	TETRAPACK	117
04	PAPER/CARDBOARD	2466
05	PLASTIC FILM	5519
06	HARD PLASTIC	462
07	PET	443
08	THERMOCAL	90
09	CLOTH/RAGS/TEXTILE	1817
10	JUTE BAGS	545
11	LEATHER/RUBBER/REXINE	431
12	COCONUT	2847
TOTAL		15284



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	CS		30/06/17
DSGN	SG		30/06/17
CHKD	SG		30/06/17
APPD	GK		30/06/17

TITLE :	ANNEXURE -1: MASS BALANCE JUNE 2017 (01-06-2017 TO 30-06-2017)
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SCALE	NTS
SIZE	REV
A3	RO