

**Monthly Performance Report
(HWT-NG100-MPR-12-R0)**

**July 2017
(From 01/07/2017 to 31/07/2017)**

**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 July 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: <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>113.42</u> TPD. Quantum of Inert is <u>7.27</u> 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 <u>0.52</u> 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 3.58 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>7.01</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>1800 mg/l</td> </tr> </tbody> </table>	pH	7.01	BOD	7 mg/l	COD	75 mg/l	TSS	8 mg/l	TDS	1800 mg/l
pH	7.01												
BOD	7 mg/l												
COD	75 mg/l												
TSS	8 mg/l												
TDS	1800 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: July 2017		
Sr. No.	Content	Month	Signature
1	Input Waste Composition	July 2017 From 01.07.2017 To 31.07.2017	
2	Recyclables		
3	Electricity Generation		
4	Biogas Flare		
5	Effluent Treatment Plant		
6	Inert		
7	Housekeeping		

1 INPUT WASTE COMPOSITION:

Sr. No.	Description	Unit	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	Weekly Average	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	Weekly Average		
A	Input Waste:																			
1	Dry Waste	TPD	5.550	0.000	1.210	3.500	3.630	10.970	4.120	4.14	3.73%	2.750	2.380	3.130	3.790	2.900	2.600	1.920	2.78	2.36%
2	Wet Waste	TPD	12.960	6.120	17.970	15.200	14.840	26.430	25.520	17.01	15.33%	25.690	18.880	28.550	25.570	25.060	28.970	34.830	26.79	22.76%
3	Mixed Waste	TPD	95.600	80.630	94.260	93.920	83.900	78.370	91.130	88.26	79.58%	82.190	75.210	93.260	95.500	83.660	84.790	78.410	84.72	71.96%
4	Mulched Tree Waste	TPD	1.290	0.000	1.510	1.300	1.230	3.160	2.060	1.51	1.36%	2.280	4.770	3.110	6.610	2.000	2.840	2.470	3.44	2.92%
5	Total.....1+2+3+4	TPD	115.40	86.75	114.95	113.92	103.60	118.93	122.83	110.91	100.00%	112.91	101.24	128.05	131.47	113.62	119.20	117.63	117.73	100.00%
B	Input Waste Composition:																			
1	Organic / Bio degradable Fraction	65.00%	51.39	39.90	56.24	53.43	49.49	59.27	62.70	53.20	47.97%	59.31	50.99	68.09	66.44	59.70	63.14	67.53	62.17	52.81%
2	Inorganic / Non-recyclable Fraction (RDF)		39.44	30.91	35.97	36.94	33.57	36.16	38.32	35.90	32.37%	31.48	29.58	35.69	40.87	32.43	34.89	27.14	33.15	28.16%
3	Recyclables	14.00%	15.98	10.19	15.75	15.55	13.20	16.40	12.65	14.25	12.84%	14.95	13.23	15.30	16.68	14.05	13.68	14.74	14.66	12.46%
	Glass	0.50%	0.08	0.06	0.09	0.07	0.09	0.08	0.06	0.08	0.07%	0.11	0.08	0.13	0.11	0.11	0.11	0.07	0.10	0.09%
	Metal	0.50%	0.39	0.40	0.43	0.35	0.39	0.56	0.59	0.44	0.40%	0.47	0.43	0.63	0.47	0.51	0.45	0.36	0.48	0.40%
	Paper / Cardboard / Tetrapack	4.00%	3.27	1.59	2.38	3.11	2.18	2.26	1.85	2.38	2.14%	3.04	2.83	3.61	2.06	1.77	2.55	2.38	2.61	2.21%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	6.49	4.45	7.38	6.20	6.37	7.97	4.89	6.25	5.63%	4.92	5.58	5.31	6.95	6.52	4.22	7.39	5.84	4.96%
	Thermocoal / Styrofoam	1.00%	0.12	0.09	0.10	0.11	0.08	0.11	0.11	0.10	0.09%	0.11	0.08	0.12	0.09	0.07	0.06	0.11	0.09	0.08%
	Cloth / Rags / Textiles	1.50%	2.77	1.41	2.47	2.52	1.88	2.77	1.89	2.24	2.02%	2.04	2.33	2.79	2.47	2.41	2.57	2.09	2.39	2.03%
	Rubber Items	0.50%	0.42	0.41	0.32	0.32	0.29	0.30	0.58	0.38	0.34%	0.29	0.28	0.60	0.62	0.50	0.38	0.48	0.45	0.38%
	Coconut		2.46	1.80	2.57	2.87	1.92	2.35	2.68	2.38	2.14%	3.95	1.62	2.11	3.90	2.16	3.34	1.86	2.71	2.30%
4	Inert	10.00%	8.59	5.74	6.99	8.00	7.35	7.10	9.16	7.56	6.82%	7.17	7.44	8.96	7.48	7.43	7.49	8.22	7.74	6.58%
5	Mulched Tree Waste	11.00%	1.29	0.00	1.51	1.30	1.23	3.16	2.06			2.28	4.77	3.11	6.61	2.00	2.84	2.47		
	Total.....1+2+3+4+5	100.00%								100.00%										100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	Weekly Average	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	Weekly Average
A	Recyclables:																	
1	Glass	Kg	81	61	92	68	93	83	61	77	113	81	128	105	114	107	71	103
2	Metal	Kg	392	399	425	353	394	559	590	445	474	425	627	473	511	453	365	475
3	Tetrapack	Kg	140	71	133	115	65	115	85	103	100	153	134	80	60	148	88	109
4	Paper / Cardboard	Kg	3,125	1,516	2,246	2,995	2,110	2,144	1,769	2,272	2,937	2,682	3,477	1,984	1,712	2,403	2,288	2,498
	Total.....3+4	Kg	3,265	1,587	2,379	3,110	2,175	2,259	1,854	2,376	3,037	2,835	3,611	2,064	1,772	2,551	2,376	2,607
5	Plastic Films	Kg	5,681	3,885	6,324	5,237	5,632	6,829	4,204	5,399	4,125	4,563	4,575	5,912	5,785	3,667	6,434	5,009
6	Hard Plastic	Kg	331	294	649	583	319	669	411	465	478	469	298	431	365	304	524	410
7	Pet	Kg	473	271	406	378	421	470	274	385	320	547	441	612	372	249	428	424
	Total.....5+6+7	Kg	6,485	4,450	7,379	6,198	6,372	7,968	4,889	6,249	4,923	5,579	5,314	6,955	6,522	4,220	7,386	5,843
8	Thermocal	Kg	115	87	103	114	83	107	111	103	113	81	115	92	68	60	106	91
9	Cloth / Rags / Textile	Kg	2,321	1,130	1,747	1,923	1,380	2,264	1,341	1,729	1,494	1,777	1,962	2,093	1,802	1,810	1,595	1,790
10	Jute Bags	Kg	449	275	724	594	495	507	550	513	550	552	829	378	607	765	498	597
	Total.....9+10	Kg	2,770	1,405	2,471	2,517	1,875	2,771	1,891	2,243	2,044	2,329	2,791	2,471	2,409	2,575	2,093	2,387
11	Leather / Rubber / Rexine	Kg	415	408	322	319	290	297	577	375	294	283	602	618	500	381	482	451
12	Coconut	Kg	2,458	1,796	2,575	2,871	1,917	2,355	2,678	2,379	3,952	1,620	2,113	3,905	2,159	3,338	1,859	2,707
13	Total	Kg	15,981	10,193	15,746	15,550	13,199	16,399	12,651	14,246	14,950	13,233	15,301	16,683	14,055	13,685	14,738	14,664
		TPD	15.98	10.19	15.75	15.55	13.20	16.40	12.65	14.25	14.95	13.23	15.30	16.68	14.06	13.69	14.74	14.66

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	Weekly Average	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	Weekly Average
A	Biogas Gensets:																	
1	Biogas Genset-I: Running Time	hr	13.50	16.55	10.30	23.60	23.80	15.10	22.85	17.96	23.35	23.80	22.35	23.75	23.80	21.20	23.75	23.14
2	Biogas Genset-I: Energy Generation	kW.hr	1,290	2,300	1,010	3,490	3,690	2,240	3,080	2,443	3,740	3,870	3,540	3,820	3,430	3,200	3,440	3,577
3	Biogas Genset-II: Running Time	hr	13.85	10.20	14.85	23.65	23.80	15.00	23.10	17.78	23.40	23.80	22.00	23.75	23.80	23.20	23.75	23.39
4	Biogas Genset-II: Energy Generation	kW.hr	1,250	1,350	1,660	3,550	3,750	2,240	3,160	2,423	3,810	3,930	3,540	3,880	3,490	3,620	3,530	3,686
5	Total.....2+4	kW.hr	2,540	3,650	2,670	7,040	7,440	4,480	6,240	4,866	7,550	7,800	7,080	7,700	6,920	6,820	6,970	7,263

Sr. No.	Description	Unit	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	Weekly Average	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	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	51.39	39.90	56.24	53.43	49.49	59.27	62.70	53.20	59.31	50.99	68.09	66.44	59.70	63.14	67.53	62.17
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	206	160	225	214	198	237	240	211	237	204	240	240	239	240	240	234
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	186	271	210	298	313	298	272	264	323	328	319	324	291	307	293	312
#	Surplus / Shortage	kWH	20	112	15	84	115	61	32		86	124	79	84	52	67	53	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	Weekly Average	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	Weekly Average
2	Operation Time	hr/day	6.57	2.27	1.83	0.48	0.68	5.33	1.92	2.73	4.18	4.63	4.63	3.22	2.67	5.45	4.67	4.21

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Parameter	Unit	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	Weekly Average	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	Weekly Average
A	Raw Effluent Quality:																	
1	Flow	m ³ /day	42.84	53.97	60.11	61.69	63.46	58.73	43.37	54.88	45.13	59.51	53.23	69.19	50.77	61.08	58.41	56.76
2	pH	---	7.92	6.62	6.23	7.04	6.74	7.08	6.07	6.81	6.48	6.7	7.79	6.65	7.28	6.29	6.63	6.83
3	Biochemical Oxygen Demand (BOD5)	mg/l	2,481	1,714	2,282	1,633	1,684	2,341	1,644	1,968	2,391	2,252	1,653	1,654	1,685	1,646	2,008	1,898
4	Chemical Oxygen Demand (COD)	mg/l	7,766	4,148	6,070	3,380	4,311	6,227	5,475	5,340	5,643	6,418	5,422	5,541	3,505	5,201	5,843	5,368
5	Total Suspended Solids (TSS)	mg/l	3,895	2,640	4,861	2,727	2,661	5,782	3,124	3,670	4,041	3,873	3,223	3,655	3,774	2,913	4,116	3,656
6	Total Dissolve Solids (TDS)	mg/l	1,740	1,897	1,688	1,645	1,662	1,523	1,839	1,713	1,655	1,749	1,528	1,815	1,658	1,507	1,644	1,651
B	Treated Effluent Quality:																	
1	pH	---	6.85	7.09	7.23	6.75	6.8	6.92	6.59	6.89	7.16	6.97	7.35	6.97	7.2	7.16	7.29	7.16
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	9	8	5	7	7	9	7	7	7	6	8	6	8	5	7
3	Chemical Oxygen Demand (COD)	mg/l	61	88	83	87	77	71	60	75	68	61	71	89	83	73	86	76
1	Total Suspended Solids (TSS)	mg/l	8	10	9	6	8	8	10	8	8	8	7	9	7	9	6	8
2	Total Dissolve Solids (TDS)	mg/l	1,792	1,935	1,739	1,744	1,812	1,523	1,857	1,772	1,821	1,784	1,574	1,960	1,691	1,552	1,660	1,720

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	Weekly Average	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	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	115.40	86.75	114.95	113.92	103.60	118.93	122.83	110.91	112.91	101.24	128.05	131.47	113.62	119.20	117.63	117.73
3	Inert Fraction	Kg	8,586	5,743	6,989	7,997	7,345	7,100	9,163	7,560	7,170	7,441	8,964	7,481	7,431	7,486	8,222	7,742
		TPD	8.59	5.74	6.99	8.00	7.35	7.10	9.16	7.56	7.17	7.44	8.96	7.48	7.43	7.49	8.22	7.74
4	% of Total Input Waste.....3/2	%	7.44%	6.62%	6.08%	7.02%	7.09%	5.97%	7.46%	6.81%	6.35%	7.35%	7.00%	5.69%	6.54%	6.28%	6.99%	6.60%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	1-Jul	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	Weekly Average	8-Jul	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	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-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	Weekly Average		22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	Weekly Average	
A	Input Waste:																			
1	Dry Waste	TPD	3.430	0.930	6.550	1.930	4.250	2.720	2.260	3.15	2.69%	2.270	0.000	4.190	3.000	2.970	0.590	1.340	2.05	1.77%
2	Wet Waste	TPD	35.470	22.910	32.030	36.100	28.540	25.440	38.490	31.28	26.66%	28.380	25.250	28.630	33.130	25.070	31.730	28.680	28.70	24.71%
3	Mixed Waste	TPD	77.180	72.770	89.790	77.940	75.110	85.640	75.580	79.14	67.46%	78.090	73.660	88.750	80.630	83.090	77.490	78.390	80.01	68.90%
4	Mulched Tree Waste	TPD	0.000	2.000	0.870	7.150	8.660	3.330	4.230	3.75	3.19%	4.230	4.120	5.610	6.580	7.440	4.480	5.130	5.37	4.62%
5	Total.....1+2+3+4	TPD	116.08	98.61	129.24	123.12	116.56	117.13	120.56	117.33	100.00%	112.97	103.03	127.18	123.34	118.57	114.29	113.54	116.13	100.00%
B	Input Waste Composition:																			
1	Organic / Bio degradable Fraction	65.00%	66.34	52.82	68.93	67.98	59.71	59.70	70.76	63.75	54.33%	61.57	56.85	64.13	66.11	59.47	63.50	62.31	61.99	53.38%
2	Inorganic / Non-recyclable Fraction (RDF)		27.51	25.58	36.78	32.14	31.30	33.23	28.15	30.67	26.14%	30.42	26.78	39.75	33.56	33.49	26.65	28.84	31.36	27.00%
3	Recyclables	14.00%	15.57	14.41	14.13	15.53	17.69	16.78	14.43	15.50	13.21%	14.71	13.13	16.27	16.03	17.01	16.86	14.82	15.55	13.39%
	Glass	0.50%	0.12	0.06	0.12	0.07	0.07	0.06	0.12	0.09	0.07%	0.07	0.09	0.06	0.07	0.06	0.11	0.07	0.08	0.07%
	Metal	0.50%	0.35	0.46	0.40	0.39	0.57	0.40	0.55	0.45	0.38%	0.34	0.49	0.45	0.52	0.52	0.39	0.45	0.45	0.39%
	Paper / Cardboard / Tetrapack	4.00%	2.05	2.87	2.42	2.14	2.10	2.75	2.95	2.47	2.10%	3.28	3.02	3.37	3.15	2.37	2.39	3.36	2.99	2.57%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	6.04	5.51	5.35	7.25	8.10	8.19	5.03	6.50	5.54%	6.28	4.95	4.65	8.00	7.41	7.75	5.06	6.30	5.43%
	Thermocoal / Styrofoam	1.00%	0.12	0.09	0.06	0.09	0.09	0.06	0.11	0.09	0.07%	0.11	0.07	0.06	0.12	0.11	0.08	0.09	0.09	0.08%
	Cloth / Rags / Textiles	1.50%	2.40	1.93	2.33	3.04	2.91	2.64	2.21	2.49	2.13%	2.49	2.10	3.18	1.87	2.51	2.23	2.54	2.42	2.08%
	Rubber Items	0.50%	0.48	0.41	0.53	0.39	0.40	0.37	0.46	0.43	0.37%	0.31	0.32	0.39	0.33	0.51	0.50	0.45	0.40	0.35%
	Coconut		4.02	3.07	2.92	2.14	3.45	2.32	3.00	2.99	2.55%	1.84	2.08	4.10	1.96	3.52	3.41	2.78	2.81	2.42%
4	Inert	10.00%	6.66	5.80	9.41	7.47	7.86	7.41	7.22	7.41	6.31%	6.27	6.27	7.03	7.63	8.60	7.28	7.57	7.24	6.23%
5	Mulched Tree Waste	11.00%	0.00	2.00	0.87	7.15	8.66	3.33	4.23			4.23	4.12	5.61	6.58	7.44	4.48	5.13		
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	Weekly Average		22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	Weekly Average	
A	Recyclables:																			
1	Glass	Kg	116	59	116	74	70	59	121	88		68	93	64	74	59	114	68	77	
2	Metal	Kg	348	463	401	394	571	398	555	447		339	495	445	518	522	389	454	452	
3	Tetrapack	Kg	103	164	135	105	82	140	121	121		98	112	175	138	97	143	145	130	
4	Paper / Cardboard	Kg	1,952	2,706	2,281	2,037	2,016	2,612	2,833	2,348		3,178	2,907	3,195	3,007	2,274	2,245	3,216	2,860	
	Total.....3+4	Kg	2,055	2,870	2,416	2,142	2,098	2,752	2,954	2,470		3,276	3,019	3,370	3,145	2,371	2,388	3,361	2,990	
5	Plastic Films	Kg	5,101	4,454	4,516	6,440	7,040	7,131	4,263	5,564		5,565	4,085	3,989	7,028	6,343	6,548	4,269	5,404	
6	Hard Plastic	Kg	592	546	519	428	470	598	332	498		352	430	382	440	489	465	430	427	
7	Pet	Kg	344	513	316	384	591	458	432	434		364	430	284	536	578	736	365	470	
	Total.....5+6+7	Kg	6,037	5,513	5,351	7,252	8,101	8,187	5,027	6,495		6,281	4,945	4,655	8,004	7,410	7,749	5,064	6,301	
8	Thermocal	Kg	116	89	65	86	93	59	109	88		113	72	64	123	107	80	91	93	
9	Cloth / Rags / Textile	Kg	1,812	1,448	1,773	2,174	2,223	1,990	1,551	1,853		2,095	1,566	2,283	1,419	1,938	1,585	2,063	1,850	
10	Jute Bags	Kg	591	485	554	867	691	646	655	641		390	536	897	456	576	644	481	569	
	Total.....9+10	Kg	2,403	1,933	2,327	3,041	2,914	2,636	2,206	2,494		2,485	2,102	3,180	1,875	2,514	2,229	2,544	2,418	
11	Leather / Rubber / Rexine	Kg	476	414	530	394	396	375	458	435		305	319	394	333	510	503	454	403	
12	Coconut	Kg	4,016	3,067	2,921	2,142	3,450	2,319	3,002	2,988		1,841	2,081	4,095	1,961	3,522	3,406	2,782	2,813	
13	Total	Kg	15,567	14,408	14,127	15,525	17,693	16,785	14,432	15,505		14,708	13,126	16,267	16,033	17,015	16,858	14,818	15,546	
		TPD	15.57	14.41	14.13	15.53	17.69	16.79	14.43	15.51		14.71	13.13	16.27	16.03	17.02	16.86	14.82	15.55	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	Weekly Average		22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	Weekly Average	
A	Biogas Gensets:																			
1	Biogas Genset-I: Running Time	hr	22.15	16.30	21.55	22.40	23.55	22.90	19.55	21.20		10.43	20.53	22.48	14.28	12.73	19.89	23.84	17.74	
2	Biogas Genset-I: Energy Generation	kW.hr	3,340	2,540	2,920	3,280	3,490	3,310	2,590	3,067		1,622	3,082	3,412	2,205	1,803	3,017	3,356	2,642	
3	Biogas Genset-II: Running Time	hr	22.60	16.45	22.50	22.05	23.55	22.90	19.65	21.39		22.32	14.89	18.02	20.33	17.04	10.83	10.06	16.21	
4	Biogas Genset-II: Energy Generation	kW.hr	3,520	2,610	3,260	3,360	3,600	3,440	2,760	3,221		3,392	2,391	2,654	3,226	2,623	1,574	1,586	2,492	
5	Total.....2+4	kW.hr	6,860	5,150	6,180	6,640	7,090	6,750	5,350	6,289		5,014	5,473	6,066	5,431	4,426	4,591	4,942	5,135	

Sr. No.	Description	Unit	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	Weekly Average	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	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	66.34	52.82	68.93	67.98	59.71	59.70	70.76	63.75	61.57	56.85	64.13	66.11	59.47	63.50	62.31	61.99
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	211	240	240	239	239	240	236	240	227	240	240	238	240	240	238
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	307	314	280	299	301	295	273	296	307	311	299	313	296	297	298	303
#	Surplus / Shortage	kWH	67	103	40	59	62	56	33		67	83	59	73	58	57	58	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	Weekly Average	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	Weekly Average
2	Operation Time	hr/day	4.62	6.67	1.08	2.87	0.90	1.27	1.87	2.75	1.75	5.35	4.72	4.43	3.63	3.25	3.30	3.78

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Parameter	Unit	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	Weekly Average	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	Weekly Average
A	Raw Effluent Quality:																	
1	Flow	m ³ /day	46.32	59.35	61.31	64.16	65.02	58.61	41.01	56.54	50.14	66.31	45.43	59.43	55.84	57.63	54.00	55.54
2	pH	---	6.06	7	7.87	7.7	6.05	7.15	6.34	6.88	6.08	6.23	7.87	7.17	7	6.76	7.02	6.88
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,935	2,298	2,315	2,035	2,485	1,647	1,902	2,088	2,018	2,379	2,315	1,866	1,816	1,701	2,231	2,047
4	Chemical Oxygen Demand (COD)	mg/l	4,760	7,767	5,857	6,573	7,604	5,682	6,486	6,390	6,437	6,780	7,246	3,844	5,266	3,742	6,515	5,690
5	Total Suspended Solids (TSS)	mg/l	4,005	4,619	3,496	4,090	5,840	3,492	3,880	4,203	4,016	4,520	5,417	3,788	4,377	2,756	5,578	4,350
6	Total Dissolve Solids (TDS)	mg/l	1,801	1,598	1,677	1,815	1,734	1,639	1,811	1,725	1,522	1,638	1,777	1,767	1,730	1,871	1,797	1,729
B	Treated Effluent Quality:																	
1	pH	---	6.74	6.59	7.14	6.98	6.93	6.63	6.53	6.79	7.37	7.41	7.37	7.06	6.79	7.46	7.45	7.27
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	8	6	7	6	5	7	7	8	5	6	6	7	8	7	7
3	Chemical Oxygen Demand (COD)	mg/l	89	90	74	74	70	72	73	77	64	78	84	76	60	78	81	74
1	Total Suspended Solids (TSS)	mg/l	8	9	7	8	7	6	8	8	9	6	7	7	8	9	8	8
2	Total Dissolve Solids (TDS)	mg/l	1,855	1,758	1,845	1,851	1,769	1,655	1,938	1,810	1,583	1,802	1,830	1,944	1,782	1,946	1,869	1,822

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	Weekly Average	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	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	116.08	98.61	129.24	123.12	116.56	117.13	120.56	117.33	112.97	103.03	127.18	123.34	118.57	114.29	113.54	116.13
3	Inert Fraction	Kg	6,663	5,798	9,409	7,473	7,856	7,414	7,222	7,405	6,270	6,275	7,033	7,635	8,596	7,280	7,573	7,237
		TPD	6.66	5.80	9.41	7.47	7.86	7.41	7.22	7.41	6.27	6.27	7.03	7.63	8.60	7.28	7.57	7.24
4	% of Total Input Waste.....3/2	%	5.74%	5.88%	7.28%	6.07%	6.74%	6.33%	5.99%	6.29%	5.55%	6.09%	5.53%	6.19%	7.25%	6.37%	6.67%	6.24%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	15-Jul	16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	Weekly Average	22-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	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-Jul	30-Jul	31-Jul	Weekly Average		Monthly Average	
A	Input Waste:								
1	Dry Waste	TPD	5.810	4.290	16.130	8.74	0.08	4.17	3.78%
2	Wet Waste	TPD	15.570	6.010	16.590	12.72	0.12	23.30	20.32%
3	Mixed Waste	TPD	75.350	79.540	87.500	80.80	0.77	82.59	72.97%
4	Mulched Tree Waste	TPD	2.750	3.930	1.520	2.73	0.03	3.36	2.94%
5	Total.....1+2+3+4	TPD	99.48	93.77	121.74	105.00	100.00%	113.42	100.00%
B	Input Waste Composition:								
1	Organic / Bio degradable Fraction	65.00%	47.37	38.14	52.64	46.05	43.86%	57.43	50.47%
2	Inorganic / Non-recyclable Fraction (RDF)		34.67	37.99	44.35	39.00	37.15%	34.02	30.16%
3	Recyclables	14.00%	11.26	11.44	17.93	13.54	12.90%	14.70	12.96%
	Glass	0.50%	0.07	0.05	0.09	0.07	0.06%	0.08	0.07%
	Metal	0.50%	0.45	0.30	0.41	0.39	0.37%	0.44	0.39%
	Paper / Cardboard / Tetrapack	4.00%	2.10	2.51	1.90	2.17	2.07%	2.52	2.22%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	4.25	3.38	8.28	5.30	5.05%	6.04	5.32%
	Thermocoal / Styrofoam	1.00%	0.09	0.05	0.11	0.08	0.08%	0.09	0.08%
	Cloth / Rags / Textiles	1.50%	2.20	1.93	2.92	2.35	2.24%	2.38	2.10%
	Rubber Items	0.50%	0.47	0.26	0.55	0.43	0.41%	0.42	0.37%
	Coconut		1.64	2.96	3.68	2.76	2.63%	2.73	2.41%
4	Inert	10.00%	6.18	6.20	6.82	6.40	6.09%	7.27	6.41%
5	Mulched Tree Waste	11.00%	2.75	3.93	1.52				
	Total.....1+2+3+4+5	100.00%					100.00%		100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	29-Jul	30-Jul	31-Jul	Weekly Average		Monthly Average	
A	Recyclables:								
1	Glass	Kg	70	47	85	67		82	
2	Metal	Kg	448	300	414	387		441	
3	Tetrapack	Kg	69	101	103	91		111	
4	Paper / Cardboard	Kg	2,030	2,413	1,797	2,080		2,412	
	Total.....3+4	Kg	2,099	2,514	1,900	2,171		2,523	
5	Plastic Films	Kg	3,517	2,944	7,061	4,507		5,176	
6	Hard Plastic	Kg	404	246	447	366		433	
7	Pet	Kg	327	186	770	428		428	
	Total.....5+6+7	Kg	4,248	3,376	8,278	5,301		6,038	
8	Thermocal	Kg	90	47	110	82		91	
9	Cloth / Rags / Textile	Kg	1,776	1,572	2,437	1,928		1,830	
10	Jute Bags	Kg	422	359	485	422		548	
	Total.....9+10	Kg	2,198	1,931	2,922	2,350		2,379	
11	Leather / Rubber / Rexine	Kg	468	263	548	426		418	
12	Coconut	Kg	1,641	2,963	3,677	2,760		2,729	
13	Total	Kg	11,262	11,441	17,934	13,546		14,701	
		TPD	11.26	11.44	17.93	13.55		14.70	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	29-Jul	30-Jul	31-Jul	Weekly Average		Monthly Average	
A	Biogas Gensets:								
1	Biogas Genset-I: Running Time	hr	10.84	11.84	19.59	14.09		18.83	
2	Biogas Genset-I: Energy Generation	kW.hr	1,607	1,863	3,258	2,243		2,794	
3	Biogas Genset-II: Running Time	hr	12.88	19.76	14.79	15.81		18.91	
4	Biogas Genset-II: Energy Generation	kW.hr	1,860	2,947	2,234	2,347		2,834	
5	Total.....2+4	kW.hr	3,467	4,810	5,492	4,590		5,628	

Sr. No.	Description	Unit	29-Jul	30-Jul	31-Jul	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	47.37	38.14	52.64	46.05	57.43
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	189	153	211	184	221
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	293	306	317	306	296
#	Surplus / Shortage	kWH	103	154	107		

4 BIOGAS FLARE:

Sr. No.	Description	Unit	29-Jul	30-Jul	31-Jul	Weekly Average	Monthly Average
2	Operation Time	hr/day	5.22	3.95	4.18	4.45	3.58

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Parameter	Unit	29-Jul	30-Jul	31-Jul	Weekly Average	Monthly Average
A	Raw Effluent Quality:						
1	Flow	m ³ /day	54.75	67.10	58.36	60.07	56.76
2	pH	---	6.97	7.62	6.57	7.05	6.89
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,954	1,533	2,133	1,873	1,975
4	Chemical Oxygen Demand (COD)	mg/l	4,768	4,108	7,103	5,326	5,623
5	Total Suspended Solids (TSS)	mg/l	3,654	2,391	4,458	3,501	3,876
6	Total Dissolve Solids (TDS)	mg/l	1,860	1,732	1,790	1,794	1,722
B	Treated Effluent Quality:						
1	pH	---	7.41	6.65	6.79	6.95	7.01
2	Biochemical Oxygen Demand (BOD5)	mg/l	9	7	7	8	7
3	Chemical Oxygen Demand (COD)	mg/l	90	62	67	73	75
1	Total Suspended Solids (TSS)	mg/l	10	8	8	9	8
2	Total Dissolve Solids (TDS)	mg/l	1,916	1,888	1,826	1,877	1,800

6 DISPOSAL OF INERT:

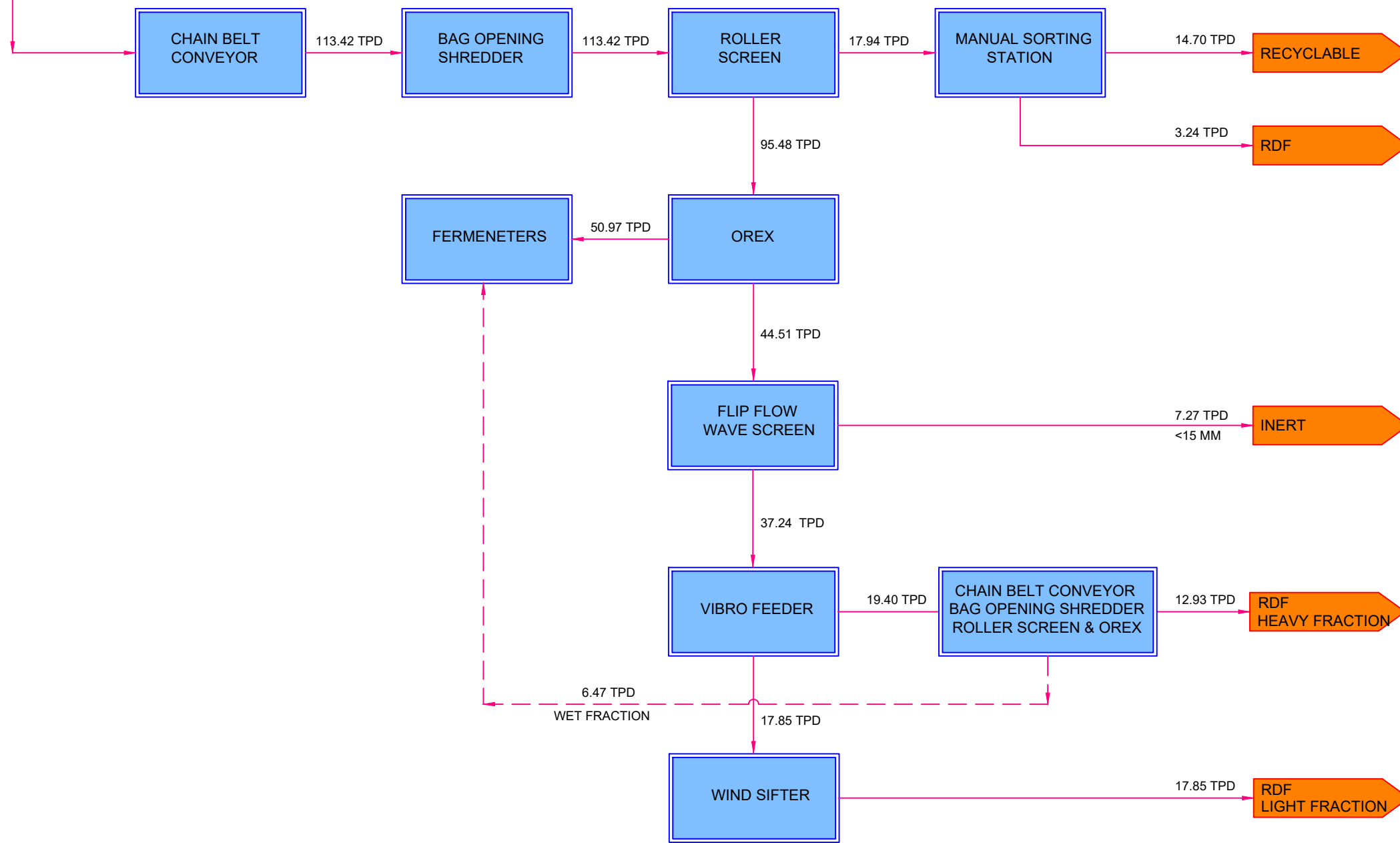
Sr. No.	Description	Unit	29-Jul	30-Jul	31-Jul	Weekly Average	Monthly Average
1	<u>As per Tender:</u> Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.						
2	Input Waste	TPD	99.48	93.77	121.74	105.00	113.42
3	Inert Fraction	Kg	6,178	6,198	6,817	6,398	7,269
		TPD	6.18	6.20	6.82	6.40	7.27
4	% of Total Input Waste.....3/2	%	6.21%	6.61%	5.60%	6.14%	6.42%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	29-Jul	30-Jul	31-Jul	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	14.70
2	RDF	34.02
3	WET FRACTION	57.43
4	INERT	7.27
TOTAL		113.42

NUMBER OF RECYCLABLE FRACTIONS		
SR. NO.	NAME	WEIGHT (KG)
01	GLASS	82
02	METALS	441
03	TETRAPACK	111
04	PAPER/CARDBOARD	2412
05	PLASTIC FILM	5176
06	HARD PLASTIC	433
07	PET	428
08	THERMOCAL	91
09	CLOTH/RAGS/TEXTILE	1830
10	JUTE BAGS	548
11	LEATHER/RUBBER/REXINE	418
12	COCONUT	2729
TOTAL		14701



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		01/08/17
DSGN	SG		01/08/17
CHKD	SG		01/08/17
APPD	GK		01/08/17

TITLE :
 ANNEXURE -1:
 MASS BALANCE
 JULY 2017 (01-07-2017 TO 31-07-2017)

SCALE
 NTS
 SIZE
 A3
 REV.
 R0