

**Monthly Performance Report
(HWT-NG100-MPR-21-R0)**

**April 2018
(From 01/04/2018 to 30/04/2018)**

**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 April 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>130.86 TPD</u> . Quantum of Inert is <u>0.86 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 0.03 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>6.98</td> </tr> <tr> <td>BOD</td> <td>7 mg/l</td> </tr> <tr> <td>COD</td> <td>73 mg/l</td> </tr> <tr> <td>TSS</td> <td>8 mg/l</td> </tr> <tr> <td>TDS</td> <td>1,659 mg/l</td> </tr> </tbody> </table>	pH	6.98	BOD	7 mg/l	COD	73 mg/l	TSS	8 mg/l	TDS	1,659 mg/l
pH	6.98												
BOD	7 mg/l												
COD	73 mg/l												
TSS	8 mg/l												
TDS	1,659 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: April 2018		
Sr. No.	Content	Month	Signature
1	Input Waste Composition	From 01.04.2018 To 30.04.2018	
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-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	Weekly Average	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	Weekly Average		
A Input Waste:																				
1	Dry Waste	TPD	55.13	70.03	63.08	57.05	69.37	54.16	62.29	61.59	44.53%	54.12	77.75	61.23	67.87	63.64	64.68	58.63	63.99	48.10%
2	Wet Waste	TPD	76.33	89.40	70.55	70.55	71.68	73.34	69.95	74.54	53.90%	72.91	65.09	66.13	65.59	67.23	64.35	66.19	66.78	50.21%
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	Tree Waste	TPD	2.57	2.47	1.00	1.11	3.57	2.17	2.29	2.17	1.57%	0.39	3.08	1.33	2.94	3.51	2.28	2.21	2.25	1.69%
5	Total.....1+2+3+4	TPD	134.03	161.90	134.63	128.71	144.62	129.67	134.53	138.30	100.00%	127.42	145.92	128.69	136.40	134.38	131.31	127.03	133.02	100.00%
B Input Waste Composition:																				
1	Organic / Bio degradable Fraction	65.00%	76.33	89.40	70.55	70.55	71.68	73.34	69.95	74.54	53.90%	72.91	65.09	66.13	65.59	67.23	64.35	66.19	66.78	50.21%
2	Inorganic / Non-recyclable Fraction (RDF)		39.22	49.90	47.39	38.81	52.95	38.71	41.44	44.06	31.86%	40.80	59.72	42.95	50.56	51.66	50.98	40.43	48.16	36.20%
3	Recyclables	14.00%	18.48	19.85	16.69	17.35	17.96	17.62	20.37	18.33	13.26%	13.71	21.11	19.61	16.45	15.49	15.98	18.19	17.22	12.95%
	Glass	0.50%	0.08	0.15	0.12	0.13	0.13	0.08	0.12	0.12	0.08%	0.13	0.10	0.08	0.12	0.13	0.08	0.06	0.10	0.08%
	Metal	0.50%	0.44	0.53	0.46	0.55	0.52	0.52	0.51	0.51	0.37%	0.47	0.57	0.58	0.53	0.46	0.47	0.47	0.51	0.38%
	Paper / Cardboard / Tetrapack	4.00%	2.79	3.82	2.34	3.19	4.18	2.67	3.07	3.15	2.28%	2.34	3.33	3.08	2.18	3.87	3.53	4.05	3.20	2.40%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	8.28	7.14	7.55	7.67	5.50	7.88	9.23	7.61	5.50%	4.83	8.86	9.52	5.31	4.92	5.41	6.91	6.54	4.91%
	Thermocoal / Styrofoam	1.00%	0.09	0.16	0.11	0.06	0.14	0.10	0.07	0.11	0.08%	0.11	0.10	0.10	0.11	0.07	0.11	0.11	0.10	0.08%
	Cloth / Rags / Textiles	1.50%	3.48	2.74	2.54	3.13	2.56	3.60	4.02	3.15	2.28%	2.66	2.58	2.02	3.26	3.08	2.17	3.25	2.72	2.04%
	Rubber Items	0.50%	0.48	0.81	0.36	0.32	0.38	0.38	0.43	0.45	0.33%	0.43	0.66	0.36	0.63	0.63	0.43	0.42	0.51	0.38%
	Coconut		2.83	4.50	3.20	2.29	4.56	2.39	2.92	3.24	2.34%	2.73	4.92	3.87	4.31	2.34	3.78	2.91	3.55	2.67%
4	Inert	10.00%	0.00	2.75	0.00	2.00	2.03	0.00	2.77	1.36	0.99%	0.00	0.00	0.00	3.80	0.00	0.00	2.22	0.86	0.65%
5	Mulched Tree Waste	11.00%	2.57	2.47	1.00	1.11	3.57	2.17	2.29			0.39	3.08	1.33	2.94	3.51	2.28	2.21		
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	Weekly Average	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	Weekly Average	
A Recyclables:																			
1	Glass	Kg	80	146	121	129	130	78	121	115	127	102	77	123	134	79	64	101	
2	Metal	Kg	442	534	458	553	521	519	511	505	471	569	579	532	457	473	470	507	
3	Tetrapack	Kg	231	306	119	176	414	184	163	228	129	309	231	186	201	332	328	245	
4	Paper / Cardboard	Kg	2,556	3,515	2,223	3,016	3,766	2,487	2,905	2,924	2,216	3,018	2,845	1,997	3,669	3,200	3,724	2,953	
	Total.....3+4	Kg	2,787	3,821	2,342	3,192	4,180	2,671	3,068	3,152	2,345	3,327	3,076	2,183	3,870	3,532	4,052	3,198	
5	Plastic Films	Kg	7,181	5,983	6,178	6,145	4,666	6,607	7,826	6,369	3,960	7,546	7,895	4,579	4,205	4,772	5,902	5,551	
6	Hard Plastic	Kg	489	707	634	759	308	733	868	643	410	664	895	446	452	276	636	540	
7	Pet	Kg	613	450	740	767	522	544	535	596	459	647	733	281	261	362	373	445	
	Total.....5+6+7	Kg	8,283	7,140	7,552	7,671	5,496	7,884	9,229	7,608	4,829	8,857	9,523	5,306	4,918	5,410	6,911	6,536	
8	Thermocal	Kg	94	162	108	64	145	104	67	106	115	102	103	109	67	105	114	102	
9	Cloth / Rags / Textile	Kg	2,471	2,307	2,125	2,393	2,004	2,743	2,860	2,415	1,875	1,984	1,562	2,487	2,243	1,649	2,660	2,066	
10	Jute Bags	Kg	1,014	430	420	735	555	862	1,162	740	788	599	459	773	834	518	592	652	
	Total.....9+10	Kg	3,485	2,737	2,545	3,128	2,559	3,605	4,022	3,154	2,663	2,583	2,021	3,260	3,077	2,167	3,252	2,718	
11	Leather / Rubber / Rexine	Kg	483	810	364	322	376	376	430	452	433	657	360	627	632	433	419	509	
12	Coconut	Kg	2,828	4,501	3,204	2,291	4,556	2,386	2,919	3,241	2,727	4,918	3,874	4,310	2,338	3,782	2,909	3,551	
13	Total	Kg	18,482	19,851	16,694	17,350	17,963	17,623	20,367	18,333	13,710	21,115	19,613	16,450	15,493	15,981	18,191	17,222	
		TPD	18.48	19.85	16.69	17.35	17.96	17.62	20.37	18.33	13.71	21.12	19.61	16.45	15.49	15.98	18.19	17.22	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	Weekly Average	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	Weekly Average	
A Biogas Gensets:																			
1	Biogas Genset-I: Running Time	hr	23.87	23.18	22.24	22.13	23.47	21.72	18.19	22.11	21.18	22.43	20.80	19.75	22.88	20.27	22.72	21.43	
2	Biogas Genset-I: Energy Generation	kW.hr	3,708	3,655	3,633	3,746	3,601	3,698	3,048	3,584	3,315	3,764	3,245	3,133	3,734	3,402	3,823	3,488	
3	Biogas Genset-II: Running Time	hr	18.09	20.98	19.97	18.48	21.71	18.30	22.81	20.05	21.60	19.11	22.59	20.12	17.94	22.52	18.66	20.36	
4	Biogas Genset-II: Energy Generation	kW.hr	2,956	3,301	3,163	2,808	3,319	3,013	3,811	3,196	3,657	3,210	3,578	3,485	2,966	3,585	3,109	3,370	
5	Total.....2+4	kW.hr	6,664	6,956	6,796	6,554	6,920	6,711	6,859	6,780	6,972	6,974	6,823	6,618	6,700	6,987	6,932	6,858	

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

Sr. No.	Description	Unit	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	Weekly Average	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	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	76.33	89.40	70.55	70.55	71.68	73.34	69.95	74.54	72.91	65.09	66.13	65.59	67.23	64.35	66.19	66.78
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	319	315	322	321	306	335	335	322	326	336	314	332	329	327	335	328

4 BIOGAS FLARE:

Sr. No.	Description	Unit	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	Weekly Average	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	Weekly Average
1	Operation Time	hr/day	0.00	0.00	0.45	0.37	0.12	0.00	0.00	0.13	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-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	Weekly Average	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	Weekly Average
A Raw Effluent Quality:																		
1	Flow	m ³ /day	87.00	61.10	75.48	76.56	77.15	79.22	82.85	77.05	79.45	84.03	86.87	89.76	81.25	73.95	74.62	81.42
2	pH	---	6.36	6.13	7.13	6.20	7.90	7.15	6.92	6.83	6.42	7.07	7.15	7.02	7.48	6.85	7.09	7.01
3	Biochemical Oxygen Demand (BOD5)	mg/l	2,143	2,075	2,019	1,595	1,810	2,301	1,610	1,936	2,144	1,660	1,515	1,577	2,059	2,329	2,343	1,947
4	Chemical Oxygen Demand (COD)	mg/l	4,865	5,001	4,745	4,115	4,000	7,317	3,961	4,858	5,253	3,453	3,227	5,109	5,189	6,009	7,802	5,149
5	Total Suspended Solids (TSS)	mg/l	4,072	4,212	4,603	3,669	3,294	4,372	3,945	4,024	4,803	2,706	3,575	3,864	3,377	5,194	3,819	3,905
6	Total Dissolve Solids (TDS)	mg/l	1,519	1,702	1,318	1,460	1,645	1,463	1,795	1,557	1,364	1,349	1,668	1,464	1,768	1,390	1,476	1,497
B Treated Effluent Quality:																		
1	pH	---	6.91	6.80	6.83	7.08	6.57	7.16	6.93	6.90	6.96	7.26	7.19	7.18	6.89	6.94	6.88	7.04
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	8	5	6	6	5	6	6	8	5	6	5	9	5	8	7
3	Chemical Oxygen Demand (COD)	mg/l	91	81	59	85	67	66	78	75	80	64	81	66	86	59	52	70
4	Total Suspended Solids (TSS)	mg/l	8	9	6	7	7	6	7	7	9	6	7	6	10	6	9	8
5	Total Dissolve Solids (TDS)	mg/l	1,671	1,736	1,397	1,562	1,760	1,536	1,903	1,652	1,432	1,470	1,818	1,625	1,909	1,501	1,565	1,617

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	Weekly Average	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	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	134.03	161.90	134.63	128.71	144.62	129.67	134.53	138.30	127.42	145.92	128.69	136.40	134.38	131.31	127.03	133.02
3	Inert Fraction	TPD	0.000	2.750	0.000	2.000	2.030	0.000	2.770	1.364	0.000	0.000	0.000	3.800	0.000	0.000	2.220	0.860
4	% of Total Input Waste.....3/2	%	0.00%	1.70%	0.00%	1.55%	1.40%	0.00%	2.06%	0.96%	0.00%	0.00%	0.00%	2.79%	0.00%	0.00%	1.75%	0.65%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	1-Apr	2-Apr	3-Apr	4-Apr	5-Apr	6-Apr	7-Apr	Weekly Average	8-Apr	9-Apr	10-Apr	11-Apr	12-Apr	13-Apr	14-Apr	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-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Weekly Average	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	Weekly Average	
A Input Waste:																			
1	Dry Waste	TPD	59.49	68.39	57.70	59.44	58.34	65.46	60.24	61.29	48.63	68.00	59.26	61.16	57.51	58.81	60.42	59.11	47.86%
2	Wet Waste	TPD	63.96	72.41	67.15	82.75	73.10	73.18	62.82	70.77	70.41	70.64	69.09	56.12	62.26	57.10	57.09	63.24	51.20%
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%
4	Tree Waste	TPD	0.00	3.09	0.78	1.36	1.20	0.99	0.77	1.17	3.50	0.00	0.84	1.81	0.44	0.55	1.01	1.16	0.94%
5	Total.....1+2+3+4	TPD	123.45	143.89	125.63	143.55	132.64	139.63	123.83	133.23	122.54	138.64	129.19	119.09	120.21	116.46	118.52	123.52	100.00%
B Input Waste Composition:																			
1	Organic / Bio degradable Fraction	65.00%	63.96	72.41	67.15	82.75	73.10	73.18	62.82	70.77	70.41	70.64	69.09	56.12	62.26	57.10	57.09	63.24	51.20%
2	Inorganic / Non-recyclable Fraction (RDF)		42.18	49.35	41.71	37.69	39.32	49.89	39.86	42.86	35.57	47.43	44.55	49.16	40.82	42.69	42.07	43.18	34.96%
3	Recyclables	14.00%	17.31	22.13	16.77	21.02	19.02	16.56	19.13	18.85	15.48	20.57	13.67	13.81	15.33	16.67	17.74	16.18	13.10%
	Glass	0.50%	0.12	0.13	0.09	0.14	0.09	0.07	0.09	0.10	0.12	0.12	0.09	0.08	0.11	0.12	0.08	0.10	0.08%
	Metal	0.50%	0.47	0.53	0.45	0.60	0.57	0.63	0.48	0.53	0.37	0.42	0.44	0.36	0.52	0.44	0.39	0.42	0.34%
	Paper / Cardboard / Tetrapack	4.00%	3.20	4.13	3.47	4.48	4.03	2.29	3.32	3.56	2.61	2.56	2.08	3.25	4.12	3.09	3.29	3.00	2.43%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	6.12	10.04	6.97	7.59	8.57	7.51	7.11	7.70	6.85	9.00	5.40	5.07	4.40	7.71	8.75	6.74	5.46%
	Thermocoal / Styrofoam	1.00%	0.10	0.13	0.09	0.11	0.09	0.11	0.07	0.10	0.06	0.12	0.08	0.07	0.10	0.12	0.06	0.09	0.07%
	Cloth / Rags / Textiles	1.50%	2.91	4.03	2.14	3.00	2.76	2.33	3.47	2.95	3.00	3.73	2.04	2.69	3.28	2.06	2.68	2.78	2.25%
	Rubber Items	0.50%	0.47	0.40	0.39	0.60	0.50	0.64	0.61	0.52	0.39	0.53	0.49	0.48	0.40	0.43	0.53	0.46	0.38%
	Coconut		3.91	2.73	3.18	4.48	2.40	2.97	3.99	3.38	2.07	4.09	3.05	1.81	2.40	2.70	1.96	2.58	2.09%
4	Inert	10.00%	0.00	0.00	0.00	2.09	1.20	0.00	2.02	0.76	1.08	0.00	1.88	0.00	1.80	0.00	1.62	0.91	0.74%
5	Mulched Tree Waste	11.00%	0.00	3.09	0.78	1.36	1.20	0.99	0.77		3.50	0.00	0.84	1.81	0.44	0.55	1.01		
	Total.....1+2+3+4+5	100.00%								100.00%									100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Weekly Average	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	Weekly Average	
A Recyclables:																			
1	Glass	Kg	123	130	88	144	93	70	87	105	123	125	90	83	108	116	83	104	
2	Metal	Kg	469	532	452	603	570	628	483	534	368	416	439	357	517	443	391	419	
3	Tetrapack	Kg	208	235	225	282	202	229	329	244	261	254	175	325	338	306	168	261	
4	Paper / Cardboard	Kg	2,990	3,894	3,242	4,197	3,831	2,061	2,990	3,315	2,349	2,311	1,905	2,926	3,785	2,781	3,127	2,741	
	Total.....3+4	Kg	3,198	4,129	3,467	4,479	4,033	2,290	3,319	3,559	2,610	2,565	2,080	3,251	4,123	3,087	3,295	3,002	
5	Plastic Films	Kg	5,205	8,858	5,934	6,280	7,292	6,122	6,056	6,535	5,775	8,053	4,520	4,089	3,691	6,291	7,365	5,683	
6	Hard Plastic	Kg	539	663	481	645	506	646	455	562	521	459	400	492	431	663	525	499	
7	Pet	Kg	380	522	558	668	771	744	597	606	555	486	481	492	277	756	857	558	
	Total.....5+6+7	Kg	6,124	10,043	6,973	7,593	8,569	7,512	7,108	7,703	6,851	8,998	5,401	5,073	4,399	7,710	8,747	6,740	
8	Thermocal	Kg	99	130	88	115	93	112	74	102	61	125	78	71	96	116	59	87	
9	Cloth / Rags / Textile	Kg	2,074	2,865	1,642	2,517	2,279	1,919	2,472	2,253	2,519	2,857	1,492	2,245	2,330	1,612	1,955	2,144	
10	Jute Bags	Kg	839	1,164	493	483	480	413	995	695	483	873	549	447	952	449	723	639	
	Total.....9+10	Kg	2,913	4,029	2,135	3,000	2,759	2,332	3,467	2,948	3,002	3,730	2,041	2,692	3,282	2,061	2,678	2,784	
11	Leather / Rubber / Rexine	Kg	469	403	389	603	504	642	607	517	392	527	491	476	397	431	533	464	
12	Coconut	Kg	3,913	2,734	3,178	4,479	2,401	2,974	3,987	3,381	2,071	4,090	3,049	1,810	2,404	2,702	1,956	2,583	
13	Total	Kg	17,308	22,130	16,770	21,016	19,022	16,560	19,132	18,848	15,478	20,576	13,669	13,813	15,326	16,666	17,742	16,181	
		TPD	17.31	22.13	16.77	21.02	19.02	16.56	19.13	18.85	15.48	20.58	13.67	13.81	15.33	16.67	17.74	16.18	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Weekly Average	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	Weekly Average	
A Biogas Gensets:																			
1	Biogas Genset-I: Running Time	hr	21.31	22.43	19.04	19.67	19.00	23.32	22.33	21.01	18.69	21.48	21.74	22.95	23.36	19.57	22.79	21.51	
2	Biogas Genset-I: Energy Generation	kW.hr	3,406	3,426	2,978	3,213	3,069	3,845	3,846	3,398	3,219	3,429	3,324	3,663	3,885	3,170	3,790	3,497	
3	Biogas Genset-II: Running Time	hr	22.47	21.73	23.48	19.85	22.86	18.46	19.37	21.17	23.11	21.34				20.56	17.86	20.72	
4	Biogas Genset-II: Energy Generation	kW.hr	3,573	3,438	4,021	3,439	3,870	2,946	2,926	3,459	3,660	3,436				3,435	2,911	3,361	
5	Total.....2+4	kW.hr	6,979	6,864	6,999	6,652	6,939	6,791	6,772	6,857	6,879	6,865	3,324	3,663	3,885	6,605	6,701	5,417	

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

Sr. No.	Description	Unit	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Weekly Average	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	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	63.96	72.41	67.15	82.75	73.10	73.18	62.82	70.77	70.41	70.64	69.09	56.12	62.26	57.10	57.09	63.24
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	240	240	240	240	240	240	240	240	240	224	240	228	228	234
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	319	311	328	337	331	324	323	325	331	321	153	160	166	329	329	255

4 BIOGAS FLARE:

Sr. No.	Description	Unit	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Weekly Average	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	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	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Weekly Average	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	Weekly Average
A Raw Effluent Quality:																		
1	Flow	m ³ /day	75.33	75.42	80.22	85.43	86.12	82.01	85.25	81.40	84.41	61.54	62.05	74.52	77.25	78.51	75.08	73.34
2	pH	---	7.11	6.62	6.39	7.33	6.36	6.32	6.36	6.64	7.96	6.86	6.8	6.73	6.37	6.88	6.94	6.93
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,954	2,291	2,187	2,066	2,250	2,303	1,754	2,115	2,109	1,998	1,602	2,194	2,093	2,496	1,595	2,012
4	Chemical Oxygen Demand (COD)	mg/l	4,611	5,590	5,511	4,814	7,088	6,333	4,859	5,544	4,956	5,095	3,701	6,867	5,316	7,388	4,578	5,414
5	Total Suspended Solids (TSS)	mg/l	4,709	4,032	3,630	4,649	5,040	4,790	3,824	4,382	5,167	4,955	3,973	3,554	3,328	6,140	2,616	4,248
6	Total Dissolve Solids (TDS)	mg/l	1,689	1,635	1,683	1,336	1,692	1,400	1,358	1,542	1,553	1,563	1,795	1,656	1,412	1,533	1,598	1,587
B Treated Effluent Quality:																		
1	pH	---	7.02	7.37	6.54	6.53	6.83	6.67	7.44	6.91	7.45	7.17	7.05	6.66	6.71	7.49	6.64	7.02
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	6	6	8	6	8	8	7	6	7	5	9	8	9	9	8
3	Chemical Oxygen Demand (COD)	mg/l	65	82	59	80	91	53	85	74	75	89	83	74	91	58	61	76
4	Total Suspended Solids (TSS)	mg/l	8	7	7	9	7	9	9	8	7	8	6	10	9	10	10	9
5	Total Dissolve Solids (TDS)	mg/l	1,773	1,733	1,784	1,376	1,861	1,554	1,467	1,650	1,631	1,579	1,885	1,838	1,539	1,594	1,758	1,689

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Weekly Average	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	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	123.45	143.89	125.63	143.55	132.64	139.63	123.83	133.23	122.54	138.64	129.19	119.09	120.21	116.46	118.52	123.52
3	Inert Fraction	TPD	0.000	0.000	0.000	2.090	1.200	0.000	2.020	0.759	1.080	0.000	1.880	0.000	1.800	0.000	1.620	0.911
4	% of Total Input Waste.....3/2	%	0.00%	0.00%	0.00%	1.46%	0.90%	0.00%	1.63%	0.57%	0.88%	0.00%	1.46%	0.00%	1.50%	0.00%	1.37%	0.74%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	15-Apr	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	Weekly Average	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	27-Apr	28-Apr	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-Apr	30-Apr	Weekly Average		Monthly Average	
A Input Waste:								
1	Dry Waste	TPD	50.11	69.90	60.01	47.53%	61.20	46.81%
2	Wet Waste	TPD	63.63	68.60	66.12	52.37%	68.29	52.16%
3	Mixed Waste	TPD	0.00	0.00	0.00	0.00%	0.00	0.00%
4	Tree Waste	TPD	0.00	0.24	0.12	0.10%	1.37	1.03%
5	Total.....1+2+3+4	TPD	113.74	138.74	126.24	100.00%	130.86	100.00%
B Input Waste Composition:								
1	Organic / Bio degradable Fraction	65.00%	63.63	68.60	66.12	52.37%	68.29	52.16%
2	Inorganic / Non-recyclable Fraction (RDF)		34.91	48.64	41.77	33.09%	44.01	33.66%
3	Recyclables	14.00%	14.40	21.50	17.95	14.22%	17.71	13.53%
	Glass	0.50%	0.10	0.11	0.11	0.08%	0.11	0.08%
	Metal	0.50%	0.42	0.46	0.44	0.35%	0.48	0.37%
	Paper / Cardboard / Tetrapack	4.00%	1.96	3.54	2.75	2.18%	3.13	2.39%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	5.87	10.38	8.12	6.43%	7.34	5.62%
	Thermocoal / Styrofoam	1.00%	0.10	0.11	0.11	0.08%	0.10	0.08%
	Cloth / Rags / Textiles	1.50%	3.08	2.28	2.68	2.12%	2.86	2.18%
	Rubber Items	0.50%	0.48	0.49	0.48	0.38%	0.48	0.37%
	Coconut		2.39	4.15	3.27	2.59%	3.20	2.45%
4	Inert	10.00%	0.80	0.00	0.40	0.32%	0.86	0.65%
5	Mulched Tree Waste	11.00%	0.00	0.24				
	Total.....1+2+3+4+5	100.00%				100.00%		100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	29-Apr	30-Apr	Weekly Average		Monthly Average	
A Recyclables:								
1	Glass	Kg	102	111	107		106	
2	Metal	Kg	421	458	440		481	
3	Tetrapack	Kg	131	258	195		235	
4	Paper / Cardboard	Kg	1,825	3,280	2,553		2,897	
	Total.....3+4	Kg	1,956	3,538	2,747		3,131	
5	Plastic Films	Kg	4,760	8,645	6,703		6,168	
6	Hard Plastic	Kg	563	976	770		603	
7	Pet	Kg	546	758	652		571	
	Total.....5+6+7	Kg	5,869	10,379	8,124		7,342	
8	Thermocal	Kg	102	111	107		101	
9	Cloth / Rags / Textile	Kg	2,401	1,595	1,998		2,175	
10	Jute Bags	Kg	681	680	681		681	
	Total.....9+10	Kg	3,082	2,275	2,679		2,856	
11	Leather / Rubber / Rexine	Kg	478	486	482		485	
12	Coconut	Kg	2,389	4,148	3,269		3,205	
13	Total	Kg	14,399	21,506	17,953		17,707	
		TPD	14.40	21.51	17.95		17.71	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	29-Apr	30-Apr	Weekly Average		Monthly Average	
A Biogas Gensets:								
1	Biogas Genset-I: Running Time	hr	20.31	18.02	19.17		21.05	
2	Biogas Genset-I: Energy Generation	kW.hr	3,222	2,902	3,062		3,406	
3	Biogas Genset-II: Running Time	hr	21.63	22.28	21.96		20.85	
4	Biogas Genset-II: Energy Generation	kW.hr	3,633	3,712	3,673		3,412	
5	Total.....2+4	kW.hr	6,855	6,614	6,735		6,529	

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

Sr. No.	Description	Unit	29-Apr	30-Apr	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	63.63	68.60	66.12	68.29
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	240	239
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	327	328	327	311

4 BIOGAS FLARE:

Sr. No.	Description	Unit	29-Apr	30-Apr	Weekly Average	Monthly Average
1	Operation Time	hr/day	0.00	0.00	0.00	0.03

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	29-Apr	30-Apr	Weekly Average	Monthly Average
A Raw Effluent Quality:						
1	Flow	m ³ /day	78.02	81.00	79.51	78.54
2	pH	---	6.01	7.63	6.82	6.85
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,759	2,465	2,112	2,024
4	Chemical Oxygen Demand (COD)	mg/l	3,588	8,036	5,812	5,355
5	Total Suspended Solids (TSS)	mg/l	3,184	4,264	3,724	4,057
6	Total Dissolve Solids (TDS)	mg/l	1,751	1,503	1,627	1,562
B Treated Effluent Quality:						
1	pH	---	7.08	6.95	7.02	6.98
2	Biochemical Oxygen Demand (BOD5)	mg/l	9	6	8	7
3	Chemical Oxygen Demand (COD)	mg/l	80	59	70	73
4	Total Suspended Solids (TSS)	mg/l	10	7	9	8
5	Total Dissolve Solids (TDS)	mg/l	1,769	1,608	1,689	1,659

6 DISPOSAL OF INERT:

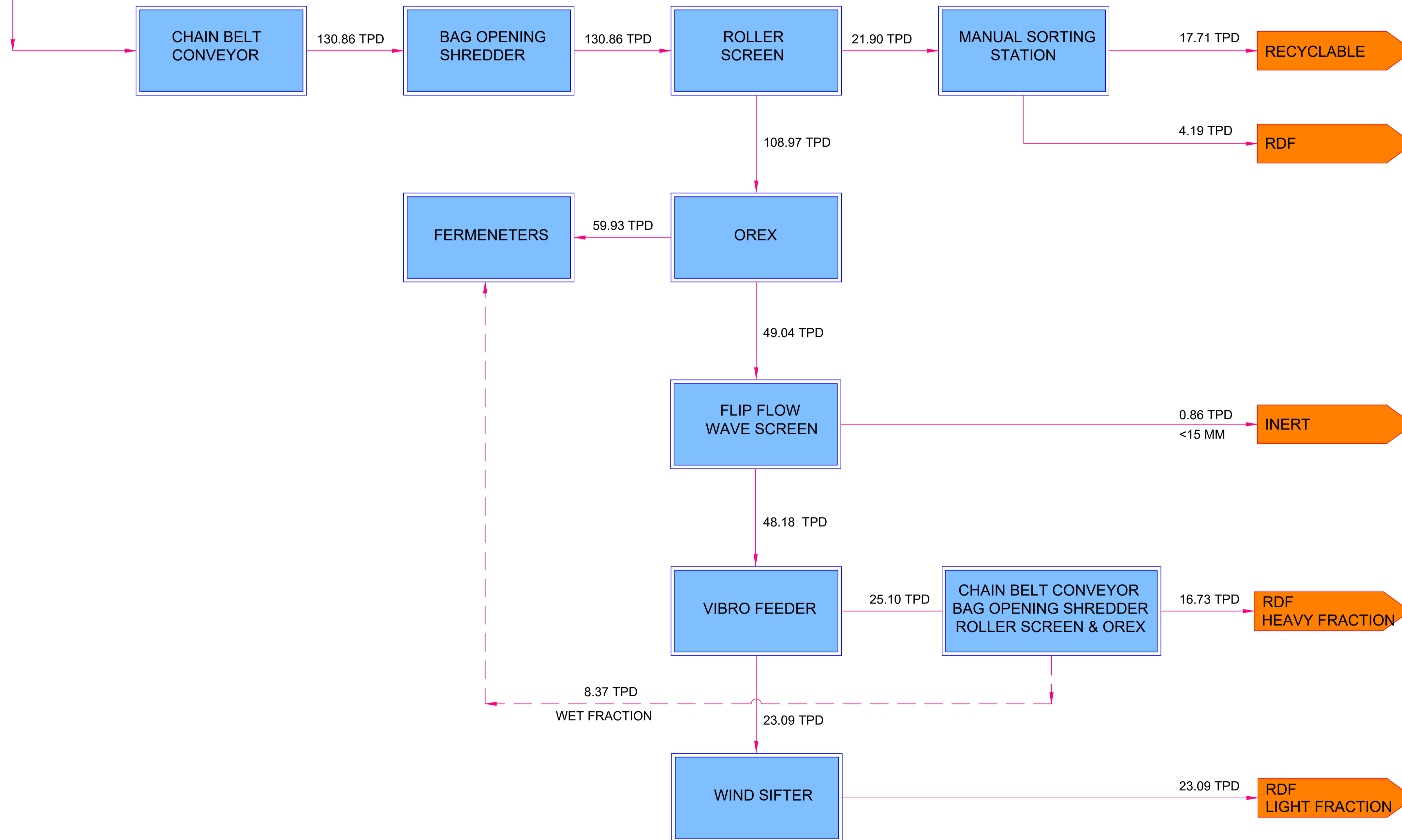
Sr. No.	Description	Unit	29-Apr	30-Apr	Weekly Average	Monthly Average
1	<u>As per Tender:</u> Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.					
2	Input Waste	TPD	113.74	138.74	126.24	130.86
3	Inert Fraction	TPD	0.800	0.000	0.400	0.859
4	% of Total Input Waste.....3/2	%	0.70%	0.00%	0.35%	0.65%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	29-Apr	30-Apr	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	17.71
2	RDF	44.01
3	WET FRACTION	68.29
4	INERT	0.86
TOTAL		130.86

NUMBER OF RECYCLABLE FRACTIONS		
SR. NO.	NAME	WEIGHT (KG)
01	GLASS	106
02	METALS	481
03	TETRAPACK	235
04	PAPER/CARDBOARD	2,897
05	PLASTIC FILM	6,168
06	HARD PLASTIC	603
07	PET	571
08	THERMOCAL	101
09	CLOTH/RAGS/TEXTILE	2,175
10	JUTE BAGS	681
11	LEATHER/RUBBER/REXINE	485
12	COCONUT	3,205
TOTAL		17,707



OWNER:
DEPARTMENT OF SCIENCE, TECHNOLOGY & ENVIRONMENT

THE MANAGING ASSOCIATE:
GOA STATE INFRASTRUCTURE DEVELOPMENT LTD.

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

TITLE :
ANNEXURE -1
MASS BALANCE: APRIL 2018

SCALE
NTS

SIZE
A3

REV.
R0