

**Monthly Performance Report
(HWT-NG100-MPR-15-R0)**

**October 2017
(From 01/10/2017 to 31/10/2017)**

**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 October 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 136.456 TPD . Quantum of Inert is 8.878 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 0.49 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 5.12 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>6.93</td> </tr> <tr> <td>BOD</td> <td>7 mg/l</td> </tr> <tr> <td>COD</td> <td>70 mg/l</td> </tr> <tr> <td>TSS</td> <td>8 mg/l</td> </tr> <tr> <td>TDS</td> <td>1641 mg/l</td> </tr> </tbody> </table>	pH	6.93	BOD	7 mg/l	COD	70 mg/l	TSS	8 mg/l	TDS	1641 mg/l
pH	6.93												
BOD	7 mg/l												
COD	70 mg/l												
TSS	8 mg/l												
TDS	1641 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: October 2017		
Sr. No.	Content	Month	Signature
1	Input Waste Composition	From 01.10.2017 To 31.10.2017	
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-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	Weekly Average		8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	Weekly Average		
A Input Waste:																					
1	Dry Waste	TPD	0.510	1.390	8.370	9.110	9.200	10.700	9.170	6.921	5.26%	2.230	11.060	9.560	11.500	8.460	11.380	9.930	9.160	7.21%	
2	Wet Waste	TPD	32.400	34.070	44.310	41.280	46.400	47.590	48.730	42.111	31.99%	40.180	57.940	54.630	53.070	43.330	58.890	54.730	51.824	40.82%	
3	Mixed Waste	TPD	90.960	102.970	102.860	71.870	72.110	62.750	63.990	81.073	61.58%	62.520	66.430	58.560	61.250	69.500	55.700	71.340	63.614	50.10%	
4	Mulched Tree Waste	TPD	0.410	1.270	1.780	0.650	3.430	3.250	0.000	1.541	1.17%	4.440	1.220	4.880	0.000	2.530	1.850	1.650	2.367	1.86%	
5	Total.....1+2+3+4	TPD	124.280	139.700	157.320	122.910	131.140	124.290	121.890	131.647	100.00%	109.370	136.650	127.630	125.820	123.820	127.820	137.650	126.966	100.00%	
B Input Waste Composition:																					
1	Organic / Bio degradable Fraction	65.00%	68.69	71.35	82.37	67.80	71.93	72.06	73.43	72.52	55.09%	64.56	82.72	76.00	77.20	68.91	80.11	81.70	75.89	59.77%	
2	Inorganic / Non-recyclable Fraction (RDF)		31.14	39.71	43.77	30.37	29.14	25.45	24.07	31.95	24.27%	22.65	25.22	28.34	23.66	29.07	22.39	30.68	26.00	20.48%	
3	Recyclables	14.00%	15.54	20.42	21.25	15.88	21.17	19.51	17.39	18.74	14.23%	14.55	20.40	14.50	16.61	18.55	16.11	16.64	16.76	13.20%	
4	Inert	10.00%	8.91	8.21	9.93	8.86	8.90	7.27	7.00	8.44	6.41%	7.61	8.31	8.79	8.35	7.29	9.22	8.63	8.32	6.55%	
5	Mulched Tree Waste	11.00%	0.41	1.27	1.78	0.65	3.43	3.25	0.00			4.44	1.22	4.88	0.00	2.53	1.85	1.65			
	Total.....1+2+3+4+5	100.00%								100.00%										100.00%	

2 RECYCLABLES:

Sr. No.	Description	Unit	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	Weekly Average		8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	Weekly Average		
A Recyclables:																					
1	Glass	Kg	112	112	157	61	131	87	85	106		55	123	64	63	111	102	83	86		
2	Metal	Kg	423	629	519	529	564	547	366	511		437	574	511	453	471	511	592	507		
3	Tetrapack	Kg	383	246	334	138	214	267	236	260		212	242	144	291	312	203	149	222		
4	Paper / Cardboard	Kg	3,482	3,219	3,599	1,915	3,602	2,989	3,457	3,180		3,321	2,669	2,038	3,219	3,539	3,363	2,136	2,898		
	Total.....3+4	Kg	3,865	3,465	3,933	2,053	3,816	3,256	3,693	3,440		3,533	2,911	2,182	3,510	3,851	3,566	2,285	3,120		
5	Plastic Films	Kg	3,771	8,581	7,353	5,850	7,716	7,548	6,945	6,823		4,194	7,713	4,621	6,640	7,531	6,209	4,446	5,908		
6	Hard Plastic	Kg	328	736	464	588	872	598	680	609		309	721	399	660	584	466	293	490		
7	Pet	Kg	276	490	616	567	500	641	773	552		408	927	442	652	601	725	395	593		
	Total.....5+6+7	Kg	4,375	9,807	8,433	7,005	9,088	8,787	8,398	7,985		4,911	9,361	5,462	7,952	8,716	7,400	5,134	6,991		
8	Thermocal	Kg	112	84	94	61	79	99	98	90		77	109	115	75	87	89	96	93		
9	Cloth / Rags / Textile	Kg	1,819	2,782	2,137	2,278	2,154	2,459	1,741	2,196		2,124	2,090	1,494	1,394	1,436	1,731	2,904	1,882		
10	Jute Bags	Kg	754	683	679	967	508	698	587	697		501	383	587	518	545	417	744	528		
	Total.....9+10	Kg	2,573	3,465	2,816	3,245	2,662	3,157	2,328	2,892		2,625	2,473	2,081	1,912	1,981	2,148	3,648	2,410		
11	Leather / Rubber / Rexine	Kg	323	517	472	406	446	447	573	455		350	465	523	554	421	320	399	433		
12	Coconut	Kg	3,753	2,347	4,830	2,520	4,380	3,132	1,853	3,259		2,559	4,386	3,561	2,089	2,910	1,968	4,405	3,125		
13	Total	Kg	15,536	20,426	21,254	15,880	21,166	19,512	17,394	18,738		14,547	20,402	14,499	16,608	18,548	16,104	16,642	16,764		
		TPD	15.54	20.43	21.25	15.88	21.17	19.51	17.39	18.74		14.55	20.40	14.50	16.61	18.55	16.10	16.64	16.76		

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	Weekly Average		8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	Weekly Average		
A Biogas Gensets:																					
1	Biogas Genset-I: Running Time	hr	12.17	16.80	21.77	17.71	12.40	19.67	20.25	17.25		13.05	18.55	23.25	18.05	23.75	21.50	20.15	19.76		
2	Biogas Genset-I: Energy Generation	kW.hr	2,016	2,624	3,185	2,431	1,806	2,756	2,683	2,500		1,450	2,750	3,440	2,870	3,670	3,140	2,810	2,876		
3	Biogas Genset-II: Running Time	hr	23.38	12.80	22.09	20.57	22.83	22.59	14.48	19.82		12.90	18.60	23.15	18.25	23.80	21.50	20.15	19.76		
4	Biogas Genset-II: Energy Generation	kW.hr	3,414	1,812	3,156	3,112	3,096	3,046	2,182	2,831		1,460	2,860	3,480	2,990	3,710	3,160	2,850	2,930		
5	Total.....2+4	kW.hr	5,430	4,436	6,341	5,543	4,902	5,802	4,865	5,331		2,910	5,610	6,920	5,860	7,380	6,300	5,660	5,806		

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

Sr. No.	Description	Unit	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	Weekly Average	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	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	68.69	71.35	82.37	67.80	71.93	72.06	73.43	72.52	64.56	82.72	76.00	77.20	68.91	80.11	81.70	75.89
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	312	298	289	289	281	275	283	290	224	302	298	323	310	293	281	290

4 BIOGAS FLARE:

Sr. No.	Description	Unit	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	Weekly Average	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	Weekly Average
1	Operation Time	hr/day	6.78	7.38	6.23	5.09	5.33	6.78	5.81	6.20	5.10	5.13	3.79	6.70	4.38	3.69	4.32	4.73

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	Weekly Average	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	Weekly Average
A Raw Effluent Quality:																		
1	Flow	m ³ /day	63.33	45.48	48.95	50.74	53.04	45.41	49.17	50.87	60.88	58.09	50.07	64.82	60.98	50.08	49.83	56.39
2	pH	---	8.02	8.04	7.5	7.92	7.58	7.74	6.98	7.68	8.33	8.35	6.98	8.17	6.72	7.23	6.76	7.51
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,765	2,058	1,591	1,594	1,653	1,765	1,773	1,743	2,444	1,555	2,233	2,072	1,659	2,102	1,506	1,939
4	Chemical Oxygen Demand (COD)	mg/l	3,883	5,474	3,198	4,081	3,537	3,742	4,167	4,012	5,719	4,494	4,779	4,911	3,700	4,835	4,187	4,661
5	Total Suspended Solids (TSS)	mg/l	2,700	4,075	2,657	2,949	3,207	2,877	3,351	3,117	4,766	2,675	4,086	3,730	3,102	3,279	2,500	3,448
6	Total Dissolve Solids (TDS)	mg/l	1,490	1,280	1,535	1,767	1,528	1,350	1,751	1,529	1,676	1,251	1,647	1,310	1,566	1,348	1,361	1,451
B Treated Effluent Quality:																		
1	pH	---	7.21	6.84	7.36	6.58	6.98	6.64	7.19	6.97	6.51	6.76	7.04	7.24	6.52	6.98	6.57	6.80
2	Biochemical Oxygen Demand (BOD5)	mg/l	8	9	8	8	6	9	5	8	6	7	9	7	5	9	7	7
3	Chemical Oxygen Demand (COD)	mg/l	83	52	52	61	72	91	64	68	62	79	58	93	60	54	67	68
4	Total Suspended Solids (TSS)	mg/l	9	10	9	9	7	10	6	9	7	8	10	8	6	10	8	8
5	Total Dissolve Solids (TDS)	mg/l	1,579	1,370	1,550	1,908	1,742	1,364	1,996	1,644	1,844	1,351	1,779	1,402	1,801	1,361	1,552	1,584

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	Weekly Average	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	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	124.28	139.70	157.32	122.91	131.14	124.29	121.89	131.65	109.37	136.65	127.63	125.82	123.82	127.82	137.65	126.97
3	Inert Fraction	TPD	8.911	8.214	9.927	8.862	8.904	7.271	6.996	8.441	7.612	8.308	8.794	8.354	7.293	9.216	8.631	8.315
4	% of Total Input Waste.....3/2	%	7.17%	5.88%	6.31%	7.21%	6.79%	5.85%	5.74%	6.42%	6.96%	6.08%	6.89%	6.64%	5.89%	7.21%	6.27%	6.56%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	1-Oct	2-Oct	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct	Weekly Average	8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct	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-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	Weekly Average		22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	Weekly Average		
A Input Waste:																					
1	Dry Waste	TPD	2.880	7.630	14.680	10.240	12.030	7.470	9.950	9.269	7.27%	8.280	5.990	14.710	24.320	16.960	18.950	19.050	15.466	10.26%	
2	Wet Waste	TPD	46.980	43.090	59.090	29.150	57.450	57.260	50.500	49.074	38.48%	58.880	76.200	62.980	61.820	56.960	71.860	70.970	65.667	43.56%	
3	Mixed Waste	TPD	66.830	72.900	63.040	61.930	65.780	72.510	69.610	67.514	52.94%	61.090	68.220	78.610	66.010	72.740	56.680	74.220	68.224	45.26%	
4	Mulched Tree Waste	TPD	0.820	0.000	1.790	2.460	1.170	2.580	2.820	1.663	1.30%	1.440	0.000	3.380	1.640	0.770	0.000	2.470	1.386	0.92%	
5	Total.....1+2+3+4	TPD	117.510	123.620	138.600	103.780	136.430	139.820	132.880	127.520	100.00%	129.690	150.410	159.680	153.790	147.430	147.490	166.710	150.743	100.00%	
B Input Waste Composition:																					
1	Organic / Bio degradable Fraction	65.00%	73.18	71.52	82.60	52.25	82.31	84.38	74.86	74.44	58.38%	81.36	100.62	93.80	86.44	84.82	92.15	97.69	90.98	60.36%	
2	Inorganic / Non-recyclable Fraction (RDF)		17.56	29.91	30.47	31.36	26.64	30.90	29.25	28.01	21.97%	18.71	18.49	37.27	39.51	29.92	23.94	34.48	28.90	19.17%	
3	Recyclables	14.00%	19.11	15.32	16.62	13.46	19.67	16.67	20.01	17.26	13.54%	19.89	21.21	17.84	17.32	24.49	21.58	22.07	20.63	13.68%	
4	Inert	10.00%	7.66	6.87	8.91	6.71	7.80	7.87	8.76	7.80	6.12%	9.73	10.09	10.78	10.52	8.20	9.82	12.47	10.23	6.79%	
5	Mulched Tree Waste	11.00%	0.82	0.00	1.79	2.46	1.17	2.58	2.82			1.44	0.00	3.38	1.64	0.77	0.00	2.47			
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%	

2 RECYCLABLES:

Sr. No.	Description	Unit	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	Weekly Average		22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	Weekly Average		
A Recyclables:																					
1	Glass	Kg	82	62	139	62	136	84	106	96		104	105	96	154	118	74	150	114		
2	Metal	Kg	435	556	485	384	532	517	439	478		454	647	655	631	663	560	517	590		
3	Tetrapack	Kg	211	134	270	311	244	187	248	229		423	456	151	167	337	412	206	307		
4	Paper / Cardboard	Kg	2,492	2,537	2,987	2,896	3,576	2,567	4,098	3,022		3,935	4,147	2,404	2,370	4,764	3,924	3,478	3,575		
	Total.....3+4	Kg	2,703	2,671	3,257	3,207	3,820	2,754	4,346	3,251		4,358	4,603	2,555	2,537	5,101	4,336	3,684	3,882		
5	Plastic Films	Kg	7,480	6,357	4,430	3,355	6,925	4,500	7,622	5,810		7,500	5,407	5,816	4,861	9,229	7,773	6,271	6,694		
6	Hard Plastic	Kg	694	486	508	290	736	495	505	531		551	509	369	474	725	896	383	558		
7	Pet	Kg	615	414	412	216	429	500	736	475		691	371	649	371	557	476	447	509		
	Total.....5+6+7	Kg	8,789	7,257	5,350	3,861	8,090	5,495	8,863	6,815		8,742	6,287	6,834	5,706	10,511	9,145	7,101	7,761		
8	Thermocal	Kg	71	87	139	62	96	140	106	100		104	75	144	138	103	103	133	114		
9	Cloth / Rags / Textile	Kg	2,419	1,767	2,593	1,617	3,040	2,151	2,132	2,246		2,495	3,125	2,562	3,059	2,026	3,110	3,618	2,856		
10	Jute Bags	Kg	706	347	1,039	562	562	702	406	618		643	1,221	744	924	392	887	933	821		
	Total.....9+10	Kg	3,125	2,114	3,632	2,179	3,602	2,853	2,538	2,863		3,138	4,346	3,306	3,983	2,418	3,997	4,551	3,677		
11	Leather / Rubber / Rexine	Kg	458	358	347	477	614	699	385	477		363	752	655	446	442	693	650	572		
12	Coconut	Kg	3,443	2,213	3,271	3,228	2,783	4,125	3,229	3,185		2,633	4,392	3,593	3,722	5,131	2,670	5,285	3,918		
13	Total	Kg	19,106	15,318	16,620	13,460	19,673	16,667	20,012	17,265		19,896	21,207	17,838	17,317	24,487	21,578	22,071	20,628		
		TPD	19.11	15.32	16.62	13.46	19.67	16.67	20.01	17.27		19.90	21.21	17.84	17.32	24.49	21.58	22.07	20.63		

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	Weekly Average		22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	Weekly Average		
A Biogas Gensets:																					
1	Biogas Genset-I: Running Time	hr	23.35	23.75	23.60	23.70	20.80	21.25	22.20	22.66		18.65	23.20	23.00	23.05	23.40	23.70	20.50	22.21		
2	Biogas Genset-I: Energy Generation	kW.hr	3,570	3,770	3,820	3,730	3,210	3,090	3,630	3,546		1,890	3,220	3,200	3,260	3,710	3,500	2,750	3,076		
3	Biogas Genset-II: Running Time	hr	23.35	23.75	23.55	23.70	23.30	21.30	14.45	21.91		12.02	23.15	22.80	22.90	23.25	23.65	20.40	21.17		
4	Biogas Genset-II: Energy Generation	kW.hr	3,620	3,830	3,880	3,790	3,750	3,160	2,410	3,491		1,633	3,290	3,240	3,370	3,750	3,590	2,810	3,098		
5	Total.....2+4	kW.hr	7,190	7,600	7,700	7,520	6,960	6,250	6,040	7,037		3,523	6,510	6,440	6,630	7,460	7,090	5,560	6,173		

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

Sr. No.	Description	Unit	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	Weekly Average	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	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	73.18	71.52	82.60	52.25	82.31	84.38	74.86	74.44	81.36	100.62	93.80	86.44	84.82	92.15	97.69	90.98
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	240	209	240	240	240	236	240	240	240	240	240	240	240	240
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	308	320	327	317	315	294	330	316	237	281	281	289	320	299	272	283

4 BIOGAS FLARE:

Sr. No.	Description	Unit	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	Weekly Average	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	Weekly Average
1	Operation Time	hr/day	5.12	5.16	4.89	3.85	4.82	4.93	4.25	4.72	7.39	5.95	4.41	5.05	3.77	5.84	6.06	5.50

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	Weekly Average	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	Weekly Average
A Raw Effluent Quality:																		
1	Flow	m ³ /day	59.99	48.51	63.25	49.93	60.07	46.50	51.72	54.28	53.31	54.11	60.08	63.25	47.98	47.00	62.62	55.48
2	pH	---	7.74	7.78	7.26	8.46	7.33	8.11	6.96	7.66	6.56	7.07	7.75	8.31	6.98	6.66	7.11	7.21
3	Biochemical Oxygen Demand (BOD5)	mg/l	2,040	2,326	1,968	2,103	1,969	1,973	2,067	2,064	2,295	1,727	1,598	1,637	2,349	1,947	1,890	1,920
4	Chemical Oxygen Demand (COD)	mg/l	4,366	4,675	5,904	5,426	5,356	5,485	5,043	5,179	4,797	4,197	3,548	3,814	5,802	4,829	4,649	4,519
5	Total Suspended Solids (TSS)	mg/l	3,203	4,024	3,680	3,155	3,643	3,295	4,134	3,591	3,810	3,040	2,781	3,176	3,617	3,368	3,232	3,289
6	Total Dissolve Solids (TDS)	mg/l	1,778	1,583	1,451	1,474	1,708	1,771	1,679	1,635	1,728	1,464	1,585	1,791	1,340	1,333	1,591	1,547
B Treated Effluent Quality:																		
1	pH	---	7.12	7.37	7.37	6.59	6.65	7.39	6.94	7.06	6.57	6.94	7.04	6.76	6.75	7.21	6.77	6.86
2	Biochemical Oxygen Demand (BOD5)	mg/l	6	9	8	5	5	7	7	7	5	6	9	9	9	6	9	8
3	Chemical Oxygen Demand (COD)	mg/l	68	78	56	71	78	59	82	70	81	70	66	80	56	86	51	70
4	Total Suspended Solids (TSS)	mg/l	7	10	9	6	6	8	8	8	6	7	10	10	10	7	10	9
5	Total Dissolve Solids (TDS)	mg/l	1,885	1,678	1,524	1,548	1,725	2,037	1,813	1,744	1,728	1,654	1,664	1,970	1,420	1,440	1,766	1,663

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	Weekly Average	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	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	117.51	123.62	138.60	103.78	136.43	139.82	132.88	127.52	129.69	150.41	159.68	153.79	147.43	147.49	166.71	150.74
3	Inert Fraction	TPD	7.662	6.873	8.912	6.715	7.804	7.872	8.757	7.799	9.727	10.093	10.778	10.519	8.197	9.823	12.470	10.230
4	% of Total Input Waste.....3/2	%	6.52%	5.56%	6.43%	6.47%	5.72%	5.63%	6.59%	6.13%	7.50%	6.71%	6.75%	6.84%	5.56%	6.66%	7.48%	6.79%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct	Weekly Average	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct	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-Oct	30-Oct	31-Oct	Weekly Average		Monthly Average	
A Input Waste:									
1	Dry Waste	TPD	13.930	16.140	18.250	16.107	11.08%	11.384	8.22%
2	Wet Waste	TPD	54.030	68.040	61.380	61.150	42.06%	53.965	39.38%
3	Mixed Waste	TPD	73.410	68.960	57.200	66.523	45.75%	69.390	51.13%
4	Mulched Tree Waste	TPD	2.680	1.400	0.790	1.623	1.12%	1.716	1.27%
5	Total.....1+2+3+4	TPD	144.050	154.540	137.620	145.403	100.00%	136.456	100.00%
B Input Waste Composition:									
1	Organic / Bio degradable Fraction	65.00%	80.60	93.62	82.72	85.65	58.90%	79.895	58.50%
2	Inorganic / Non-recyclable Fraction (RDF)		34.22	26.41	26.99	29.21	20.09%	28.815	21.20%
3	Recyclables	14.00%	19.33	25.11	18.39	20.94	14.40%	18.868	13.81%
4	Inert	10.00%	9.90	9.40	9.52	9.61	6.61%	8.878	6.49%
5	Mulched Tree Waste	11.00%	2.68	1.40	0.79				
	Total.....1+2+3+4+5	100.00%					100.00%		100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	29-Oct	30-Oct	31-Oct	Weekly Average		Monthly Average	
A Recyclables:									
1	Glass	Kg	101	124	69	98		100	
2	Metal	Kg	562	680	509	584		534	
3	Tetrapack	Kg	391	435	348	391		282	
4	Paper / Cardboard	Kg	4,205	4,294	4,001	4,167		3,368	
	Total.....3+4	Kg	4,596	4,729	4,349	4,558		3,650	
5	Plastic Films	Kg	5,302	8,158	5,945	6,468		6,341	
6	Hard Plastic	Kg	353	747	403	501		538	
7	Pet	Kg	539	924	478	647		555	
	Total.....5+6+7	Kg	6,194	9,829	6,826	7,616		7,434	
8	Thermocal	Kg	130	139	110	126		105	
9	Cloth / Rags / Textile	Kg	2,105	3,370	1,573	2,349		2,306	
10	Jute Bags	Kg	560	973	519	684		669	
	Total.....9+10	Kg	2,665	4,343	2,092	3,033		2,975	
11	Leather / Rubber / Rexine	Kg	720	742	385	616		510	
12	Coconut	Kg	4,365	4,528	4,046	4,313		3,560	
13	Total	Kg	19,333	25,114	18,386	20,944		18,868	
		TPD	19.33	25.11	18.39	20.94		18.87	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	29-Oct	30-Oct	31-Oct	Weekly Average		Monthly Average	
A Biogas Gensets:									
1	Biogas Genset-I: Running Time	hr	20.50	21.55	13.15	18.40		20.06	
2	Biogas Genset-I: Energy Generation	kW.hr	2,750	3,070	1,790	2,537		2,907	
3	Biogas Genset-II: Running Time	hr	20.40	20.75	17.80	19.65		20.46	
4	Biogas Genset-II: Energy Generation	kW.hr	2,810	3,090	2,830	2,910		3,052	
5	Total.....2+4	kW.hr	5,560	6,160	4,620	5,447		5,959	

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

Sr. No.	Description	Unit	29-Oct	30-Oct	31-Oct	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	80.60	93.62	82.72	85.65	79.90
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	240	240	239
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	272	291	295	286	293

4 BIOGAS FLARE:

Sr. No.	Description	Unit	29-Oct	30-Oct	31-Oct	Weekly Average	Monthly Average
1	Operation Time	hr/day	4.01	3.98	5.39	4.46	5.12

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	29-Oct	30-Oct	31-Oct	Weekly Average	Monthly Average
A Raw Effluent Quality:							
1	Flow	m ³ /day	53.29	61.57	61.48	58.78	55.16
2	pH	---	6.58	7.51	7.35	7.15	7.44
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,713	2,027	2,040	1,927	1,918
4	Chemical Oxygen Demand (COD)	mg/l	4,094	5,676	5,488	5,086	4,691
5	Total Suspended Solids (TSS)	mg/l	2,929	3,385	3,631	3,315	3,352
6	Total Dissolve Solids (TDS)	mg/l	1,400	1,463	1,635	1,499	1,532
B Treated Effluent Quality:							
1	pH	---	6.82	6.94	7.03	6.93	6.93
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	7	7	7	7
3	Chemical Oxygen Demand (COD)	mg/l	81	80	55	72	70
4	Total Suspended Solids (TSS)	mg/l	8	8	8	8	8
5	Total Dissolve Solids (TDS)	mg/l	1,442	1,478	1,782	1,567	1,641

6 DISPOSAL OF INERT:

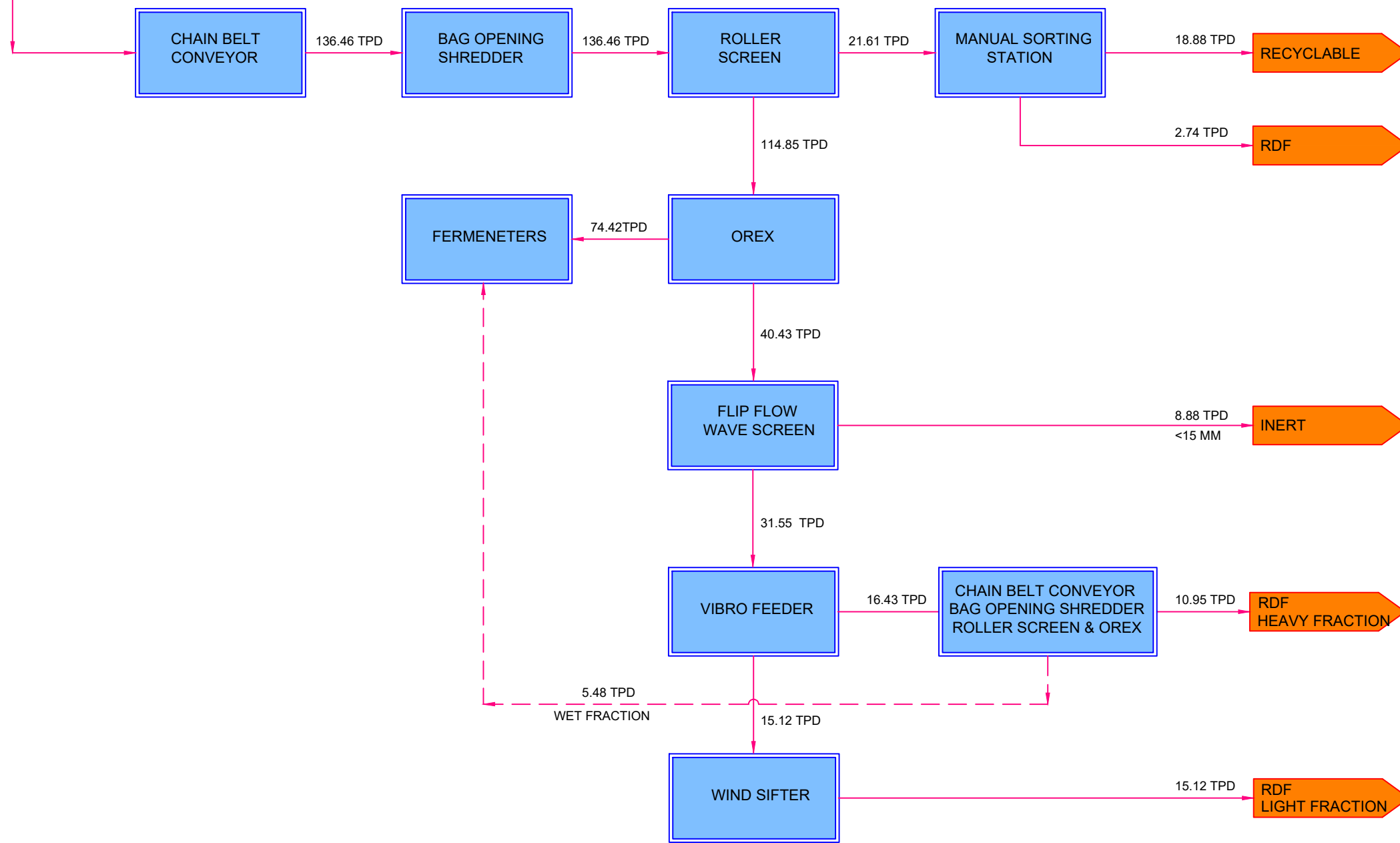
Sr. No.	Description	Unit	29-Oct	30-Oct	31-Oct	Weekly Average	Monthly Average
1	<u>As per Tender:</u> Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.						
2	Input Waste	TPD	144.05	154.54	137.62	145.40	136.46
3	Inert Fraction	TPD	9.896	9.396	9.523	9.605	8.878
4	% of Total Input Waste.....3/2	%	6.87%	6.08%	6.92%	6.62%	6.50%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	29-Oct	30-Oct	31-Oct	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	18.87
2	RDF	28.81
3	WET FRACTION	79.90
4	INERT	8.88
TOTAL		136.46

NUMBER OF RECYCLABLE FRACTIONS		
SR. NO.	NAME	WEIGHT (KG)
01	GLASS	100
02	METALS	534
03	TETRAPACK	282
04	PAPER/CARDBOARD	3368
05	PLASTIC FILM	6341
06	HARD PLASTIC	538
07	PET	555
08	THERMOCAL	105
09	CLOTH/RAGS/TEXTILE	2306
10	JUTE BAGS	669
11	LEATHER/RUBBER/REXINE	510
12	COCONUT	3560
TOTAL		18868



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		01/11/17
DSGN SG		01/11/17
CHKD SG		01/11/17
APPD GK		01/11/17

TITLE :
 ANNEXURE -1
 MASS BALANCE
 OCTOBER 2017

SCALE
 NTS

SIZE
 A3

REV.
 R0