

**Monthly Performance Report
(HWT-NG100-MPR-20-R0)**

**March 2018
(From 01/03/2018 to 31/03/2018)**

**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 March 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>157.33 TPD</u> . Quantum of Inert is <u>1.22 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>0.56 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 0.67 hours/day .										
5.	Discharge of treated effluent conforming to regulatory norms	Effluent Treatment Plant shall be operated under all conditions.	<p>Effluent Treatment Plant is being operated continuously and is meeting all statutory conditions. The Treated Effluent Characteristics are as follows:</p> <table border="1" data-bbox="1032 726 1403 940"> <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>66 mg/l</td> </tr> <tr> <td>TSS</td> <td>8 mg/l</td> </tr> <tr> <td>TDS</td> <td>1,697 mg/l</td> </tr> </tbody> </table>	pH	7.05	BOD	7 mg/l	COD	66 mg/l	TSS	8 mg/l	TDS	1,697 mg/l
pH	7.05												
BOD	7 mg/l												
COD	66 mg/l												
TSS	8 mg/l												
TDS	1,697 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: March 2018		
Sr. No.	Content	Month	Signature
1	Input Waste Composition	From 01.03.2018 To 31.03.2018	
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-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	Weekly Average		8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	Weekly Average		
A	Input Waste:																				
1	Dry Waste	TPD	61.88	43.42	66.30	59.19	72.51	66.31	59.39	61.29	36.59%	62.63	64.92	55.50	43.78	65.12	61.76	64.83	59.79	35.75%	
2	Wet Waste	TPD	111.33	69.47	106.31	100.24	110.50	109.63	117.46	103.56	61.82%	109.07	100.05	105.20	97.97	115.66	110.56	96.39	104.99	62.78%	
3	Mixed Waste	TPD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	
4	Mulched Tree Waste	TPD	1.97	3.03	0.00	2.46	1.38	4.33	5.49	2.67	1.59%	4.10	2.76	4.42	0.49	3.07	1.75	0.60	2.46	1.47%	
5	Total.....1+2+3+4	TPD	175.18	115.92	172.61	161.89	184.39	180.27	182.34	167.51	100.00%	175.80	167.73	165.12	142.24	183.85	174.07	161.82	167.23	100.00%	
B	Input Waste Composition:																				
1	Organic / Bio degradable Fraction	65.00%	111.33	69.47	106.31	100.24	110.50	109.63	117.46	103.56	61.82%	109.07	100.05	105.20	97.97	115.66	110.56	96.39	104.99	62.78%	
2	Inorganic / Non-recyclable Fraction (RDF)		37.84	31.72	41.44	34.35	46.78	43.51	41.21	39.55	23.61%	40.94	44.34	38.04	19.19	44.44	38.79	42.05	38.26	22.88%	
3	Recyclables	14.00%	24.42	13.48	22.92	26.05	25.17	25.09	21.63	22.68	13.54%	23.31	21.34	19.78	23.38	23.75	23.12	21.88	22.37	13.37%	
	Glass	0.50%	0.11	0.12	0.17	0.16	0.15	0.16	0.15	0.14	0.09%	0.18	0.17	0.10	0.07	0.13	0.14	0.13	0.13	0.08%	
	Metal	0.50%	0.68	0.44	0.54	0.62	0.70	0.65	0.55	0.60	0.36%	0.53	0.75	0.69	0.44	0.66	0.68	0.71	0.64	0.38%	
	Paper / Cardboard / Tetrapack	4.00%	4.91	3.01	3.28	4.78	5.24	4.96	3.39	4.22	2.52%	4.57	3.67	5.12	4.68	5.68	3.93	4.64	4.61	2.76%	
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	9.14	4.64	10.55	11.64	8.11	8.82	7.15	8.58	5.12%	9.46	8.77	5.86	9.71	8.82	8.84	7.93	8.49	5.07%	
	Thermocoal / Styrofoam	1.00%	0.12	0.09	0.09	0.16	0.15	0.14	0.15	0.13	0.08%	0.11	0.12	0.17	0.09	0.11	0.10	0.16	0.12	0.07%	
	Cloth / Rags / Textiles	1.50%	3.10	2.94	4.90	4.27	4.50	3.98	4.69	4.06	2.42%	3.71	3.92	3.72	3.64	3.42	3.97	4.08	3.78	2.26%	
	Rubber Items	0.50%	0.60	0.45	0.79	0.63	0.65	0.85	0.88	0.69	0.41%	0.79	0.81	0.66	0.37	0.85	0.68	0.55	0.67	0.40%	
	Coconut		5.76	1.79	2.61	3.79	5.68	5.53	4.69	4.26	2.55%	3.97	3.12	3.47	4.38	4.08	4.77	3.67	3.92	2.35%	
4	Inert	10.00%	1.59	1.25	1.94	1.25	1.94	2.04	2.04	1.72	1.03%	2.48	2.00	2.10	1.70	0.00	1.60	1.50	1.63	0.97%	
5	Mulched Tree Waste	11.00%	1.97	3.03	0.00	2.46	1.38	4.33	5.49			4.10	2.76	4.42	0.49	3.07	1.75	0.60			
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%	

2 RECYCLABLES:

Sr. No.	Description	Unit	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	Weekly Average		8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	Weekly Average	
A	Recyclables:																			
1	Glass	Kg	105	116	173	162	148	162	146	145		176	168	99	71	129	139	129	130	
2	Metal	Kg	683	440	535	615	701	649	547	596		527	755	694	441	662	679	712	639	
3	Tetrapack	Kg	324	190	167	435	356	436	237	306		311	331	271	234	545	228	441	337	
4	Paper / Cardboard	Kg	4,581	2,824	3,112	4,341	4,881	4,521	3,154	3,916		4,260	3,343	4,847	4,446	5,136	3,706	4,203	4,277	
	Total.....3+4	Kg	4,905	3,014	3,279	4,776	5,237	4,957	3,391	4,223		4,571	3,674	5,118	4,680	5,681	3,934	4,644	4,615	
5	Plastic Films	Kg	7,800	3,904	9,218	9,754	6,848	7,334	6,233	7,299		8,276	7,632	4,766	8,471	7,783	7,746	6,708	7,340	
6	Hard Plastic	Kg	741	385	643	943	771	652	493	661		634	553	522	670	494	548	468	556	
7	Pet	Kg	604	348	686	943	495	829	422	618		549	588	574	573	547	548	753	590	
	Total.....5+6+7	Kg	9,145	4,637	10,547	11,640	8,114	8,815	7,148	8,578		9,459	8,773	5,862	9,714	8,824	8,842	7,929	8,486	
8	Thermocoal	Kg	123	93	86	162	148	144	146	129		105	117	165	85	110	104	162	121	
9	Cloth / Rags / Textile	Kg	2,453	2,338	4,147	3,355	3,208	3,255	3,904	3,237		2,745	3,234	2,894	3,095	2,876	3,370	3,230	3,063	
10	Jute Bags	Kg	648	607	755	919	1,291	729	783	819		964	691	821	546	544	599	848	716	
	Total.....9+10	Kg	3,101	2,945	4,902	4,274	4,499	3,984	4,687	4,056		3,709	3,925	3,715	3,641	3,420	3,969	4,078	3,780	
11	Leather / Rubber / Rexine	Kg	596	452	794	631	645	847	875	691		791	805	660	370	846	679	550	672	
12	Coconut	Kg	5,763	1,785	2,606	3,788	5,679	5,534	4,686	4,263		3,973	3,120	3,468	4,381	4,081	4,770	3,673	3,924	
13	Total	Kg	24,421	13,482	22,922	26,048	25,171	25,092	21,626	22,680		23,311	21,337	19,781	23,383	23,753	23,116	21,877	22,365	
		TPD	24.42	13.48	22.92	26.05	25.17	25.09	21.63	22.68		23.31	21.34	19.78	23.38	23.75	23.12	21.88	22.37	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	Weekly Average		8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	Weekly Average	
A	Biogas Gensets:																			
1	Biogas Genset-I: Running Time	hr	23.95	23.70	23.20	23.85	22.35	23.70	23.35	23.44		18.66	23.50	21.60	24.00	23.80	23.70	22.28	22.51	
2	Biogas Genset-I: Energy Generation	kW.hr	3,920	3,070	3,850	3,720	3,330	3,500	3,270	3,523		3,639	3,840	3,600	3,890	3,960	3,110	3,823	3,695	
3	Biogas Genset-II: Running Time	hr	24.00	23.60	22.65	23.90	22.80	23.30	23.35	23.37		18.41	23.50	21.80	24.00	23.80	23.80	21.93	22.46	
4	Biogas Genset-II: Energy Generation	kW.hr	4,040	3,320	3,720	3,830	3,600	3,610	3,540	3,666		2,951	3,860	3,670	4,040	4,040	3,460	2,737	3,537	
5	Total.....2+4	kW.hr	7,960	6,390	7,570	7,550	6,930	7,110	6,810	7,189		6,590	7,700	7,270	7,930	8,000	6,570	6,560	7,231	

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

Sr. No.	Description	Unit	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	Weekly Average	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	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	111.33	69.47	106.31	100.24	110.50	109.63	117.46	103.56	109.07	100.05	105.20	97.97	115.66	110.56	96.39	104.99
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	332	270	330	316	307	303	292	307	355	328	335	330	336	277	296	323
#	Surplus / Shortage	kWH	92	30	90	76	67	63	52		115	88	95	90	96	37	56	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	Weekly Average	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	Weekly Average
1	Operation Time	hr/day	0.66	0.83	0.16	0.79	1.41	3.03	6.35	1.89	3.05	0.70	0.10	0.37	2.80	0.00	0.00	1.00

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	Weekly Average	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	Weekly Average
A	Raw Effluent Quality:																	
1	Flow	m ³ /day	73.80	74.00	76.20	77.40	72.20	79.70	78.60	75.99	78.60	46.50	44.70	70.90	75.02	75.57	74.41	66.53
2	pH	---	6.87	6.35	6.53	7.99	6.17	7.01	6.28	6.74	7.83	6.10	6.72	7.61	6.76	7.48	6.79	7.04
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,874	1,785	1,884	2,207	2,082	1,550	1,630	1,859	2,154	1,612	2,119	1,901	2,373	1,996	1,580	1,962
4	Chemical Oxygen Demand (COD)	mg/l	6,278	6,123	3,975	5,738	6,308	4,883	4,629	5,419	7,431	4,691	4,916	4,106	5,434	6,587	3,192	5,194
5	Total Suspended Solids (TSS)	mg/l	3,898	4,248	3,052	4,083	3,873	2,558	3,928	3,663	4,114	2,950	4,704	3,935	4,912	4,870	3,239	4,103
6	Total Dissolve Solids (TDS)	mg/l	1,654	1,497	1,564	1,696	1,369	1,614	1,414	1,544	1,602	1,463	1,510	1,791	1,657	1,754	1,696	1,639
B	Treated Effluent Quality:																	
1	pH	---	6.78	7.20	7.08	7.24	7.12	6.54	7.30	7.04	7.07	6.86	7.01	6.89	7.20	6.83	7.49	7.05
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	7	5	8	6	9	9	7	9	8	9	5	8	6	6	7
3	Chemical Oxygen Demand (COD)	mg/l	69	88	73	62	65	74	76	72	52	62	81	52	67	51	53	60
4	Total Suspended Solids (TSS)	mg/l	8	8	6	9	7	10	10	8	10	9	10	6	9	7	7	8
5	Total Dissolve Solids (TDS)	mg/l	1,786	1,647	1,705	1,781	1,520	1,695	1,499	1,662	1,714	1,580	1,586	1,845	1,723	1,842	1,713	1,715

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	Weekly Average	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	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	175.18	115.92	172.61	161.89	184.39	180.27	182.34	167.51	175.80	167.73	165.12	142.24	183.85	174.07	161.82	167.23
3	Inert Fraction	TPD	1.590	1.250	1.940	1.250	1.940	2.040	2.040	1.721	2.480	2.000	2.100	1.700	0.000	1.600	1.500	1.626
4	% of Total Input Waste.....3/2	%	0.91%	1.08%	1.12%	0.77%	1.05%	1.13%	1.12%	1.03%	1.41%	1.19%	1.27%	1.20%	0.00%	0.92%	0.93%	0.99%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	1-Mar	2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	Weekly Average	8-Mar	9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	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-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	Weekly Average		22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	Weekly Average	
A	Input Waste:																			
1	Dry Waste	TPD	67.05	55.90	56.40	47.91	66.95	59.32	64.29	59.69	37.05%	53.62	65.71	59.08	51.86	62.48	65.49	66.38	60.66	40.47%
2	Wet Waste	TPD	103.30	107.13	84.40	90.13	88.42	115.08	110.18	99.81	61.95%	96.01	95.00	98.69	94.78	87.84	74.94	65.69	87.56	58.41%
3	Mixed Waste	TPD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%
4	Mulched Tree Waste	TPD	0.00	3.60	0.91	0.24	0.38	3.79	2.45	1.62	1.01%	1.17	4.12	2.34	1.87	1.06	0.00	1.22	1.68	1.12%
5	Total.....1+2+3+4	TPD	170.35	166.63	141.71	138.28	155.75	178.19	176.92	161.12	100.00%	150.80	164.83	160.11	148.51	151.38	140.43	133.29	149.91	100.00%
B	Input Waste Composition:																			
1	Organic / Bio degradable Fraction	65.00%	103.30	107.13	84.40	90.13	88.42	115.08	110.18	99.81	61.95%	96.01	95.00	98.69	94.78	87.84	74.94	65.69	87.56	58.41%
2	Inorganic / Non-recyclable Fraction (RDF)		48.40	36.08	33.68	28.88	47.32	35.51	39.17	38.43	23.85%	37.35	45.11	41.58	36.90	43.56	45.62	49.01	42.73	28.51%
3	Recyclables	14.00%	17.15	21.96	20.31	18.31	19.59	27.60	27.17	21.73	13.49%	17.19	24.72	19.41	16.83	18.71	19.87	18.59	19.33	12.90%
	Glass	0.50%	0.15	0.17	0.09	0.07	0.14	0.11	0.12	0.12	0.07%	0.15	0.12	0.08	0.12	0.09	0.11	0.09	0.11	0.07%
	Metal	0.50%	0.60	0.63	0.47	0.61	0.62	0.53	0.74	0.60	0.37%	0.48	0.68	0.59	0.64	0.65	0.53	0.51	0.58	0.39%
	Paper / Cardboard / Tetrapack	4.00%	2.81	4.92	2.69	2.59	2.90	4.35	3.75	3.43	2.13%	3.21	5.52	3.51	2.45	2.47	4.20	3.25	3.52	2.35%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	5.96	7.86	8.63	8.97	8.82	11.67	12.76	9.24	5.73%	5.31	9.51	5.92	5.20	8.95	8.44	8.96	7.47	4.98%
	Thermocoal / Styrofoam	1.00%	0.14	0.08	0.14	0.11	0.09	0.18	0.11	0.12	0.08%	0.11	0.15	0.14	0.09	0.12	0.08	0.12	0.12	0.08%
	Cloth / Rags / Textiles	1.50%	3.70	4.68	3.93	2.78	3.61	5.11	4.51	4.05	2.51%	2.68	4.15	4.61	2.67	2.59	2.98	2.55	3.18	2.12%
	Rubber Items	0.50%	0.77	0.47	0.43	0.64	0.45	0.69	0.80	0.61	0.38%	0.71	0.53	0.45	0.50	0.51	0.67	0.33	0.53	0.35%
	Coconut		3.03	3.15	3.94	2.54	2.96	4.95	4.39	3.57	2.21%	4.54	4.07	4.10	5.15	3.33	2.85	2.79	3.83	2.56%
4	Inert	10.00%	1.50	1.46	3.32	0.96	0.42	0.00	0.40	1.15	0.71%	0.25	0.00	0.43	0.00	1.27	0.00	0.00	0.28	0.19%
5	Mulched Tree Waste	11.00%	0.00	3.60	0.91	0.24	0.38	3.79	2.45			1.17	4.12	2.34	1.87	1.06	0.00	1.22		
	Total.....1+2+3+4+5	100.00%									100.00%									100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	Weekly Average		22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	Weekly Average	
A	Recyclables:																			
1	Glass	Kg	153	167	85	69	140	107	124	121		151	115	80	119	91	112	93	109	
2	Metal	Kg	596	633	468	608	623	535	743	601		483	676	592	639	651	534	507	583	
3	Tetrapack	Kg	230	413	186	158	206	248	233	239		267	453	309	208	215	248	257	280	
4	Paper / Cardboard	Kg	2,580	4,503	2,507	2,428	2,691	4,100	3,518	3,190		2,945	5,069	3,198	2,242	2,253	3,951	2,995	3,236	
	Total.....3+4	Kg	2,810	4,916	2,693	2,586	2,897	4,348	3,751	3,429		3,212	5,522	3,507	2,450	2,468	4,199	3,252	3,516	
5	Plastic Films	Kg	5,145	6,960	7,344	7,368	7,220	9,722	10,664	7,775		4,549	7,713	5,095	4,335	7,685	6,887	7,766	6,290	
6	Hard Plastic	Kg	447	433	811	897	837	1,167	1,250	835		467	846	444	416	474	709	591	564	
7	Pet	Kg	370	472	475	709	758	782	842	630		292	951	385	447	787	844	600	615	
	Total.....5+6+7	Kg	5,962	7,865	8,630	8,974	8,815	11,671	12,756	9,239		5,308	9,510	5,924	5,198	8,946	8,440	8,957	7,469	
8	Thermocoal	Kg	136	83	142	111	93	178	106	121		106	148	144	89	121	84	120	116	
9	Cloth / Rags / Textile	Kg	2,706	3,699	2,866	1,965	2,710	3,754	3,492	3,027		2,008	2,987	3,274	2,120	2,092	2,367	1,828	2,382	
10	Jute Bags	Kg	991	983	1,060	814	903	1,360	1,020	1,019		676	1,167	1,337	553	497	610	718	794	
	Total.....9+10	Kg	3,697	4,682	3,926	2,779	3,613	5,114	4,512	4,046		2,684	4,154	4,611	2,673	2,589	2,977	2,546	3,176	
11	Leather / Rubber / Rexine	Kg	767	467	425	636	452	695	796	605		709	527	448	505	515	674	333	530	
12	Coconut	Kg	3,032	3,149	3,940	2,544	2,959	4,954	4,388	3,567		4,539	4,071	4,099	5,153	3,330	2,851	2,786	3,833	
13	Total	Kg	17,153	21,962	20,309	18,307	19,592	27,602	27,176	21,729		17,192	24,723	19,405	16,826	18,711	19,871	18,594	19,332	
		TPD	17.15	21.96	20.31	18.31	19.59	27.60	27.18	21.73		17.19	24.72	19.41	16.83	18.71	19.87	18.59	19.33	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	Weekly Average		22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	Weekly Average	
A	Biogas Gensets:																			
1	Biogas Genset-I: Running Time	hr	21.40	23.50	23.00	24.00	23.20	21.80	23.10	22.86		21.00	21.20	17.26	15.47	18.01	16.83	15.21	17.85	
2	Biogas Genset-I: Energy Generation	kW.hr	3,350	3,650	3,300	3,490	3,710	3,280	3,140	3,417		3,030	2,880	3,199	3,688	3,474	3,373	3,756	3,343	
3	Biogas Genset-II: Running Time	hr	21.40	23.60	23.00	24.00	23.30	21.90	23.20	22.91		22.00	23.90	20.72	23.80	21.56	22.38	20.51	22.12	
4	Biogas Genset-II: Energy Generation	kW.hr	3,500	3,860	3,580	3,760	3,890	3,490	3,490	3,653		3,440	3,570	3,479	3,211	3,847	3,434	3,209	3,456	
5	Total.....2+4	kW.hr	6,850	7,510	6,880	7,250	7,600	6,770	6,630	7,070		6,470	6,450	6,678	6,899	7,321	6,807	6,965	6,799	

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

Sr. No.	Description	Unit	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	Weekly Average	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	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	103.30	107.13	84.40	90.13	88.42	115.08	110.18	99.81	96.01	95.00	98.69	94.78	87.84	74.94	65.69	87.56
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	320	319	299	302	327	310	286	309	301	285	353	373	371	354	403	349
#	Surplus / Shortage	kWH	80	79	59	62	87	70	46		61	45	113	133	131	114	163	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	Weekly Average	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	Weekly Average
1	Operation Time	hr/day	2.50	0.00	0.00	0.30	0.50	0.00	0.00	0.47	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-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	Weekly Average	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	Weekly Average
A	Raw Effluent Quality:																	
1	Flow	m ³ /day	75.62	76.46	78.26	80.49	71.30	72.46	79.89	76.35	79.18	77.22	77.31	78.15	78.71	80.89	78.15	78.52
2	pH	---	6.79	7.05	6.78	7.58	6.52	7.92	6.72	7.05	7	6.24	7.05	6.62	6.02	7.59	7.85	6.91
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,692	2,094	1,818	1,732	2,162	2,203	1,693	1,913	1,891	1,660	2,315	2,489	1,999	2,355	1,731	2,063
4	Chemical Oxygen Demand (COD)	mg/l	3,858	5,654	4,781	4,850	4,908	4,758	5,722	4,933	4,160	4,200	5,278	7,567	4,518	7,560	5,228	5,502
5	Total Suspended Solids (TSS)	mg/l	3,063	3,832	3,927	3,551	4,259	4,098	3,014	3,678	3,177	3,320	3,797	4,306	4,478	5,793	3,635	4,072
6	Total Dissolve Solids (TDS)	mg/l	1,514	1,657	1,506	1,410	1,494	1,755	1,430	1,538	1,337	1,306	1,531	1,703	1,721	1,721	1,751	1,581
B	Treated Effluent Quality:																	
1	pH	---	6.96	6.71	6.68	6.83	6.7	7.08	6.61	6.80	7.2	7.42	7.06	7.23	7.43	7.36	7.2	7.27
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	9	6	7	6	5	8	7	8	7	5	7	9	9	6	7
3	Chemical Oxygen Demand (COD)	mg/l	76	77	61	73	85	82	67	74	67	70	63	90	54	73	61	68
4	Total Suspended Solids (TSS)	mg/l	8	10	7	8	7	6	9	8	9	8	6	8	10	10	7	8
5	Total Dissolve Solids (TDS)	mg/l	1,620	1,790	1,626	1,495	1,614	1,808	1,516	1,638	1,364	1,437	1,608	1,822	1,773	1,893	1,874	1,682

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	Weekly Average	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	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	170.35	166.63	141.71	138.28	155.75	178.19	176.92	161.12	150.80	164.83	160.11	148.51	151.38	140.43	133.29	149.91
3	Inert Fraction	TPD	1.500	1.460	3.320	0.960	0.420	0.000	0.400	1.151	0.250	0.000	0.430	0.000	1.270	0.000	0.000	0.279
4	% of Total Input Waste.....3/2	%	0.88%	0.88%	2.34%	0.69%	0.27%	0.00%	0.23%	0.76%	0.17%	0.00%	0.27%	0.00%	0.84%	0.00%	0.00%	0.18%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	Weekly Average	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	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-Mar	30-Mar	31-Mar	Weekly Average		Monthly Average	
A	Input Waste:								
1	Dry Waste	TPD	63.34	58.37	67.00	62.90	44.65%	60.87	38.90%
2	Wet Waste	TPD	81.60	65.12	78.86	75.19	53.37%	94.22	59.67%
3	Mixed Waste	TPD	0.00	0.00	0.00	0.00	0.00%	0.00	0.00%
4	Mulched Tree Waste	TPD	3.35	2.46	2.57	2.79	1.98%	2.24	1.43%
5	Total.....1+2+3+4	TPD	148.29	125.95	148.43	140.89	100.00%	157.33	100.00%
B	Input Waste Composition:								
1	Organic / Bio degradable Fraction	65.00%	81.60	65.12	78.86	75.19	53.37%	94.22	59.67%
2	Inorganic / Non-recyclable Fraction (RDF)		45.66	40.18	49.07	44.97	31.92%	40.79	26.15%
3	Recyclables	14.00%	18.79	18.88	20.50	19.39	13.76%	21.10	13.41%
	Glass	0.50%	0.10	0.10	0.12	0.11	0.08%	0.12	0.08%
	Metal	0.50%	0.58	0.42	0.61	0.53	0.38%	0.59	0.38%
	Paper / Cardboard / Tetrapack	4.00%	3.91	3.68	4.39	4.00	2.84%	3.96	2.52%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	6.00%	5.71	7.03	9.01	7.25	5.15%	8.20	5.21%
	Thermocoal / Styrofoam	1.00%	0.13	0.06	0.07	0.09	0.06%	0.12	0.07%
	Cloth / Rags / Textiles	1.50%	4.05	2.93	2.78	3.25	2.31%	3.66	2.32%
	Rubber Items	0.50%	0.61	0.50	0.37	0.49	0.35%	0.60	0.38%
	Coconut		3.69	4.16	3.15	3.67	2.60%	3.85	2.45%
4	Inert	10.00%	2.24	1.77	0.00	1.34	0.95%	1.22	0.77%
5	Mulched Tree Waste	11.00%	3.35	2.46	2.57				
	Total.....1+2+3+4+5	100.00%					100.00%		100.00%

2 RECYCLABLES:

Sr. No.	Description	Unit	29-Mar	30-Mar	31-Mar	Weekly Average		Monthly Average	
A	Recyclables:								
1	Glass	Kg	104	101	119	108		122	
2	Metal	Kg	578	416	609	534		591	
3	Tetrapack	Kg	384	272	351	336		300	
4	Paper / Cardboard	Kg	3,531	3,406	4,042	3,660		3,656	
	Total.....3+4	Kg	3,915	3,678	4,393	3,995		3,955	
5	Plastic Films	Kg	4,739	5,693	7,649	6,027		6,946	
6	Hard Plastic	Kg	445	675	631	584		640	
7	Pet	Kg	525	661	730	639		618	
	Total.....5+6+7	Kg	5,709	7,029	9,010	7,249		8,204	
8	Thermocal	Kg	133	63	74	90		115	
9	Cloth / Rags / Textile	Kg	2,963	2,110	2,023	2,365		2,815	
10	Jute Bags	Kg	1,085	825	752	887		847	
	Total.....9+10	Kg	4,048	2,935	2,775	3,253		3,662	
11	Leather / Rubber / Rexine	Kg	608	504	371	494		599	
12	Coconut	Kg	3,692	4,156	3,147	3,665		3,850	
13	Total	Kg	18,787	18,882	20,498	19,389		21,099	
		TPD	18.79	18.88	20.50	19.39		21.10	

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	29-Mar	30-Mar	31-Mar	Weekly Average		Monthly Average	
A	Biogas Gensets:								
1	Biogas Genset-I: Running Time	hr	18.73	18.68	15.37	17.59		20.85	
2	Biogas Genset-I: Energy Generation	kW.hr	3,877	3,614	3,155	3,549		3,505	
3	Biogas Genset-II: Running Time	hr	22.87	17.28	19.18	19.78		22.13	
4	Biogas Genset-II: Energy Generation	kW.hr	3,081	3,665	4,280	3,675		3,597	
5	Total.....2+4	kW.hr	6,958	7,279	7,435	7,224		7,103	

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

Sr. No.	Description	Unit	29-Mar	30-Mar	31-Mar	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	81.60	65.12	78.86	75.19	94.22
3	Electricity Generation required as per Tender.....0.4 x 1000 x B2/100	kWH	240	240	240	240	240
4	Electricity generated..... (A2/A1) + (A4/A3)	kWH	342	406	428	392	336
#	Surplus / Shortage	kWH	102	166	188		

4 BIOGAS FLARE:

Sr. No.	Description	Unit	29-Mar	30-Mar	31-Mar	Weekly Average	Monthly Average
1	Operation Time	hr/day	0.00	0.00	0.00	0.00	0.67

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	29-Mar	30-Mar	31-Mar	Weekly Average	Monthly Average
A	Raw Effluent Quality:						
1	Flow	m ³ /day	75.28	64.95	66.86	69.03	73.28
2	pH	---	7.92	6.67	7.66	7.42	7.03
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,740	1,963	1,728	1,810	1,922
4	Chemical Oxygen Demand (COD)	mg/l	4,019	4,692	4,545	4,419	5,093
5	Total Suspended Solids (TSS)	mg/l	3,202	3,573	3,266	3,347	3,773
6	Total Dissolve Solids (TDS)	mg/l	1,746	1,496	1,785	1,676	1,596
B	Treated Effluent Quality:						
1	pH	---	7.09	7.31	6.96	7.12	7.05
2	Biochemical Oxygen Demand (BOD5)	mg/l	6	6	5	6	7
3	Chemical Oxygen Demand (COD)	mg/l	53	52	53	53	66
4	Total Suspended Solids (TSS)	mg/l	7	7	6	7	8
5	Total Dissolve Solids (TDS)	mg/l	1,798	1,586	1,981	1,788	1,697

6 DISPOSAL OF INERT:

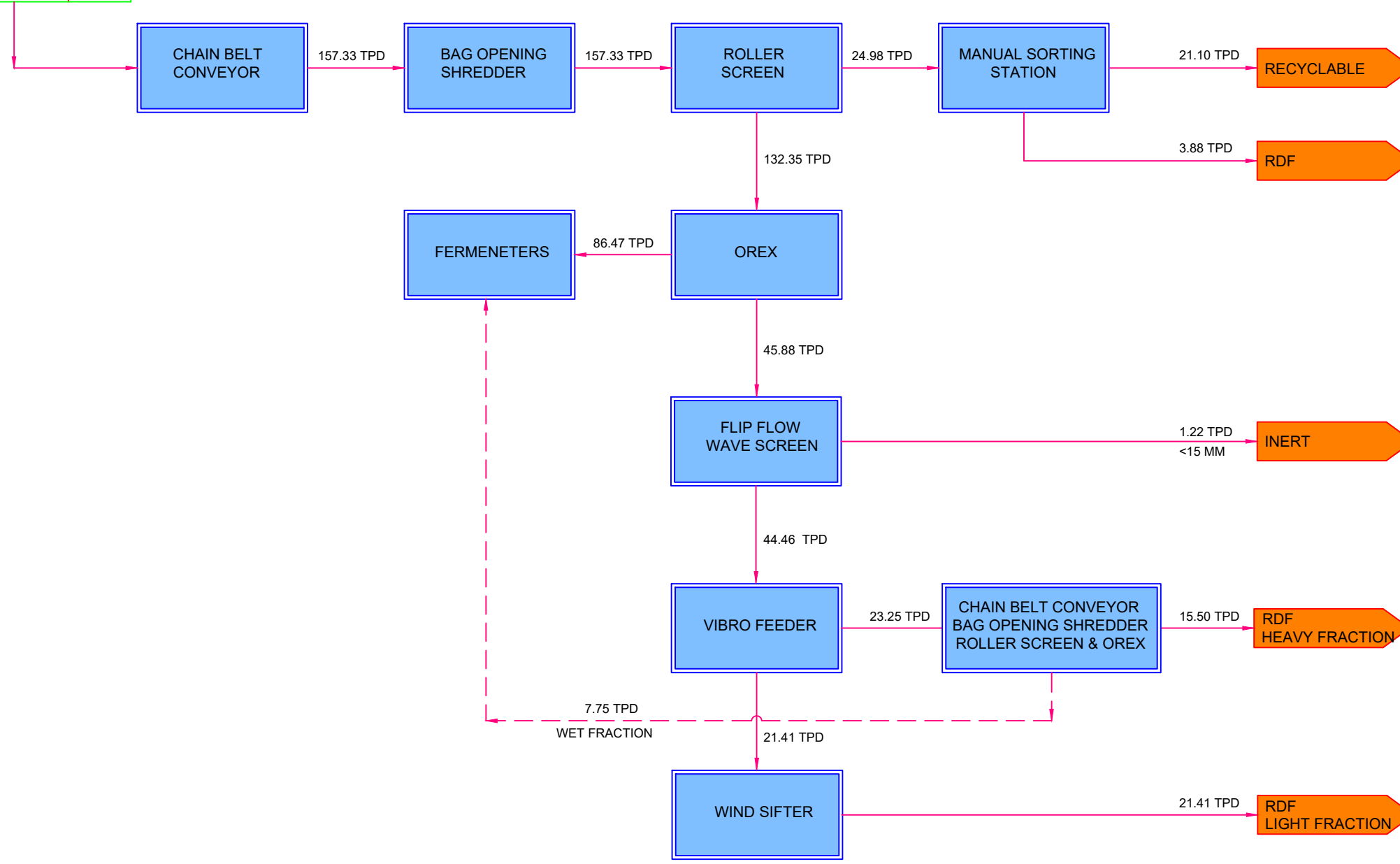
Sr. No.	Description	Unit	29-Mar	30-Mar	31-Mar	Weekly Average	Monthly Average
1	<u>As per Tender:</u> Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.						
2	Input Waste	TPD	148.29	125.95	148.43	140.89	157.33
3	Inert Fraction	TPD	2.240	1.770	0.000	1.337	1.223
4	% of Total Input Waste.....3/2	%	1.51%	1.41%	0.00%	0.97%	0.78%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	29-Mar	30-Mar	31-Mar	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	21.10
2	RDF	40.79
3	WET FRACTION	94.22
4	INERT	1.22
TOTAL		157.33

NUMBER OF RECYCLABLE FRACTIONS		
SR. NO.	NAME	WEIGHT (KG)
01	GLASS	122
02	METALS	591
03	TETRAPACK	300
04	PAPER/CARDBOARD	3,656
05	PLASTIC FILM	6,946
06	HARD PLASTIC	640
07	PET	618
08	THERMOCAL	115
09	CLOTH/RAGS/TEXTILE	2,815
10	JUTE BAGS	847
11	LEATHER/RUBBER/REXINE	599
12	COCONUT	3,850
TOTAL		21,099



OWNER:
DEPARTMENT OF SCIENCE, TECHNOLOGY & ENVIRONMENT

THE MANAGING ASSOCIATE:
GOA STATE INFRASTRUCTURE DEVELOPMENT LTD.

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

	NAME	SIGN	DATE
DRWN	SG		02/04/18
DSGN	SG		02/04/18
CHKD	SG		02/04/18
APPD	SG		02/04/18

TITLE :
ANNEXURE -1
MASS BALANCE: MARCH 2018

SCALE
NTS

SIZE
A3

REV
R0