Monthly Performance Report
(HWT-NG100-MPR-25-R0)

August 2018
(From 01/08/2018 to 31/08/2018)

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 August 2018

(As compared to Schedule – 7: Performance Standards, Volume – I of RFP)

Sr. No.	Parameter	Performance Standard As per Schedule – 7	Actual Performace 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 **133.30 TPD**. Quantum of Inert is **0.32 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 **0.50 MW/100** tons of Input Biodegradable Waste as received in the Facility (in TPD).

<table>
<tr><th>Sr. No.</th><th>Parameter</th><th>Performance Standard
As per Schedule – 7</th><th>Actual Performace at Plant
(Monthly Average)</th></tr>
<tr><td>4.</td><td>Biogas Flaring System</td><td>The Biogas Flaring System shall strictly be used only in case of emergency and not as a routine practice.</td><td>Biogas is being flared strictly, only under emergency and not as a routine practice. The average running time of Biogas Flaring System is <u>0.01</u> hours/day.</td></tr>
<tr><td>5.</td><td>Discharge of treated effluent conforming to regulatory norms</td><td>Effluent Treatment Plant shall be operated under all conditions.</td><td>Effluent Treatment Plant is being operated continuously and is meeting all statutory conditions. The Treated Effluent Characteristics are as follows:

<table><tr><td>pH</td><td>6.90</td></tr><tr><td>BOD</td><td>7 mg/l</td></tr><tr><td>COD</td><td>71 mg/l</td></tr><tr><td>TSS</td><td>8 mg/l</td></tr><tr><td>TDS</td><td>1,686 mg/l</td></tr></table></td></tr>
<tr><td>6.</td><td>General Housekeeping, hygienic conditions, cleanliness, safety norms, adequate manpower, treatment methodology for plant operation & maintenance and storage conditions in the plant.</td><td>Minimum housekeeping, safety norms and cleanliness conditions shall be maintained at all times as per the Bid Document requirement.</td><td>• 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.</td></tr>
</table>

#	**Plant Performance Data: August 2018**		
Sr. No.	**Content**	**Month**	**Signature**
1	Input Waste Composition	From 01.08.2018 To 31.08.2018	
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-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	Weekly Average		8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	Weekly Average	
A	**Input Waste:**																			
1	Dry Waste	TPD	49.93	54.13	44.29	44.00	42.17	55.63	62.53	50.38	36.89%	50.20	50.49	48.41	57.13	47.87	57.52	67.28	54.13	39.53%
2	Wet Waste	TPD	77.68	59.09	65.51	74.03	68.32	78.24	75.69	71.22	52.14%	72.75	62.22	66.83	70.32	74.06	76.41	68.40	70.14	51.22%
3	Mixed Waste	TPD	2.08	14.11	13.91	10.88	10.90	13.25	5.01	10.02	7.34%	5.91	8.60	12.95	4.52	2.66	6.40	11.27	7.47	5.46%
4	Slaughter Waste	TPD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	1.60	1.50	2.02	1.53	2.31	1.28	0.93%
5	**Sub Total.....(1) + (2) + (3) + (4)**	**TPD**	**129.69**	**127.33**	**123.71**	**128.91**	**121.39**	**147.12**	**143.23**	**131.63**	**96.36%**	**128.86**	**121.31**	**129.79**	**133.47**	**126.61**	**141.86**	**149.26**	**133.02**	**97.14%**
6	Tree Waste	TPD	5.33	2.71	7.30	4.43	7.51	6.24	1.24	4.97	3.64%	1.36	4.20	3.18	7.65	2.19	6.49	2.39	3.92	2.86%
7	**Total.....(5) + (6)**	**TPD**	**135.02**	**130.04**	**131.01**	**133.34**	**128.90**	**153.36**	**144.47**	**136.59**	**100.00%**	**130.22**	**125.51**	**132.97**	**141.12**	**128.80**	**148.35**	**151.65**	**136.95**	**100.00%**
B	**Input Waste Composition:**																			
1	Organic / Bio-degradable Fraction	TPD	81.93	74.13	74.95	80.32	78.02	90.67	85.34	80.77	59.13%	80.39	72.31	81.79	82.04	78.65	87.56	84.41	81.02	59.16%
2	Inorganic / Non-recyclable Fraction (RDF)	TPD	31.64	30.35	32.70	29.76	28.77	36.00	39.87	32.73	23.96%	33.16	32.46	28.12	34.29	30.33	34.31	40.70	33.34	24.34%
3	Recyclables:	TPD	16.12	20.74	16.06	18.83	14.60	20.45	18.02	17.83	13.06%	15.31	16.23	19.88	17.14	16.75	19.99	23.46	18.39	13.43%
	Glass	TPD	0.10	0.10	0.11	0.12	0.07	0.07	0.10	0.10	0.07%	0.08	0.06	0.10	0.12	0.09	0.11	0.10	0.10	0.07%
	Metal	TPD	0.57	0.57	0.56	0.40	0.53	0.46	0.50	0.51	0.39%	0.58	0.53	0.47	0.47	0.42	0.55	0.58	0.51	0.39%
	Paper / Cardboard / Tetra Pack	TPD	1.96	2.94	3.66	2.49	2.19	3.60	3.54	2.91	2.21%	2.63	2.04	3.95	3.70	4.24	2.75	5.22	3.50	2.63%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	TPD	7.85	8.96	7.05	7.19	4.76	8.09	8.51	7.49	5.69%	6.21	5.13	7.37	6.41	4.62	10.07	7.58	6.77	5.09%
	Thermocol / Styrofoam	TPD	0.13	0.06	0.10	0.09	0.06	0.15	0.10	0.10	0.07%	0.12	0.08	0.09	0.09	0.09	0.09	0.12	0.10	0.07%
	Cloth / Rags / Textiles	TPD	2.71	3.39	2.16	3.79	2.55	4.22	2.41	3.03	2.30%	2.77	3.58	3.39	2.16	3.56	2.13	4.00	3.08	2.32%
	Rubber	TPD	0.35	0.59	0.47	0.46	0.34	0.49	0.46	0.45	0.34%	0.37	0.58	0.52	0.37	0.49	0.40	0.67	0.49	0.37%
	Coconut	TPD	2.45	4.13	1.94	4.29	4.10	3.37	2.41	3.24	2.46%	2.55	4.22	4.00	3.82	3.24	3.89	5.18	3.84	2.89%
4	Inert	TPD	0.00	2.11	0.00	0.00	0.00	0.00	0.00	0.30	0.22%	0.00	0.31	0.00	0.00	0.88	0.00	0.69	0.27	0.20%
5	Tree Waste	TPD	5.33	2.71	7.30	4.43	7.51	6.24	1.24	4.97	3.64%	1.36	4.20	3.18	7.65	2.19	6.49	2.39	3.92	2.86%
	Total.....(1) + (2) + (3) + (4) + (5)	**TPD**	**135.02**	**130.04**	**131.01**	**133.34**	**128.90**	**153.36**	**144.47**	**136.59**	**100.00%**	**130.22**	**125.51**	**132.97**	**141.12**	**128.80**	**148.35**	**151.65**	**136.95**	**100.00%**

2 RECYCLABLES:

Sr. No.	Description	Unit	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	Weekly Average	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	Weekly Average
1	Glass	Kg	104	102	111	116	73	74	100	97	77	61	104	120	89	113	104	95
2	Metal	Kg	571	573	557	400	534	456	501	513	580	534	467	467	418	553	582	514
3	Tetra Pack	Kg	108	241	330	187	203	274	248	227	176	194	229	270	416	154	261	243
4	Paper / Cardboard	Kg	1,851	2,700	3,332	2,301	1,982	3,331	3,290	2,684	2,453	1,844	3,717	3,427	3,826	2,598	4,963	3,261
	Total.....(3) + (4)	**Kg**	**1,959**	**2,941**	**3,662**	**2,488**	**2,185**	**3,605**	**3,538**	**2,911**	**2,629**	**2,038**	**3,946**	**3,697**	**4,242**	**2,752**	**5,224**	**3,504**
5	Plastic Films	Kg	6,473	7,207	5,902	6,100	4,054	6,570	6,985	6,184	5,472	4,197	6,001	5,625	4,099	8,612	6,437	5,778
6	Hard Plastic	Kg	643	861	599	460	385	736	757	634	366	513	730	455	254	937	584	548
7	PET	Kg	730	896	550	633	319	785	766	668	373	421	641	327	268	524	561	445
	Total.....(5) + (6) + (7)	**Kg**	**7,846**	**8,964**	**7,051**	**7,193**	**4,758**	**8,091**	**8,508**	**7,487**	**6,211**	**5,131**	**7,372**	**6,407**	**4,621**	**10,073**	**7,582**	**6,771**
8	Thermocol	Kg	130	64	99	90	61	147	100	99	116	85	91	93	89	85	119	97
9	Cloth / Rags / Textile	Kg	1,946	2,557	1,630	3,043	2,134	3,141	1,889	2,334	2,244	2,845	2,849	1,827	2,718	1,615	2,808	2,415
10	Jute Bags	Kg	764	830	535	747	416	1,081	517	699	526	734	539	335	840	513	1,192	668
	Total.....(9) + (10)	**Kg**	**2,710**	**3,387**	**2,165**	**3,790**	**2,550**	**4,222**	**2,406**	**3,033**	**2,770**	**3,579**	**3,388**	**2,162**	**3,558**	**2,128**	**4,000**	**3,084**
11	Leather / Rubber / Rexine	Kg	350	586	470	464	340	485	458	450	374	582	519	374	494	397	672	487
12	Coconut	Kg	2,451	4,125	1,942	4,293	4,103	3,369	2,406	3,241	2,551	4,222	3,998	3,817	3,241	3,887	5,179	3,842
13	**Total**	**Kg**	**16,121**	**20,742**	**16,057**	**18,834**	**14,604**	**20,449**	**18,017**	**17,832**	**15,308**	**16,232**	**19,885**	**17,137**	**16,752**	**19,988**	**23,462**	**18,395**
		TPD	**16.12**	**20.74**	**16.06**	**18.83**	**14.60**	**20.45**	**18.02**	**17.83**	**15.31**	**16.23**	**19.89**	**17.14**	**16.75**	**19.99**	**23.46**	**18.39**

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	Weekly Average	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	Weekly Average
A	**Biogas Gensets:**																	
1	Biogas Genset-I: Running Time	hr	24.00	24.00	24.00	23.75	15.40	17.18	18.62	20.99	17.55	23.75	24.00	21.50	22.50	23.85	21.50	22.09
2	Biogas Genset-I: Energy Generation	kW.hr	4,070	3,880	4,000	3,960	2,555	2,774	2,874	3,445	2,710	3,480	3,380	3,090	3,260	3,600	2,840	3,194
3	Biogas Genset-II: Running Time	hr	24.00	24.00	24.00	23.75	20.77	23.45	21.56	23.08	22.51	23.80	24.00	21.75	22.55	23.80	21.65	22.87
4	Biogas Genset-II: Energy Generation	kW.hr	3,560	3,860	3,930	3,950	3,466	3,831	3,449	3,721	3,601	3,570	3,590	3,570	3,180	3,710	3,250	3,496
5	**Total.....(2) + (4)**	**kW.hr**	**7,630**	**7,740**	**7,930**	**7,910**	**6,021**	**6,605**	**6,323**	**7,166**	**6,311**	**7,050**	**6,970**	**6,660**	**6,440**	**7,310**	**6,090**	**6,690**
B	**Electricty Generation:**																	
1	As per Tender: 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.(B1)**	Tons	81.93	74.13	74.95	80.32	78.02	90.67	85.34	80.77	80.39	72.31	81.79	82.04	78.65	87.56	84.41	81.02
3	Electricity Generation required as per Tender = 0.4 x 1000 x (2) ÷ 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	318	323	330	333	333	325	314	325	314	297	290	308	286	307	282	298
#	Surplus / Shortage	kWH	78	83	90	93	93	85	74		74	57	50	68	46	67	42	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	Weekly Average	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	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	0.02	0.00	0.02	0.00	0.00	0.00	0.01

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	Weekly Average	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	Weekly Average
A	**Raw Effluent Quality:**																	
1	Flow	m^3/day	102.00	103.80	104.10	96.20	103.50	102.20	63.10	96.41	101.80	101.40	112.50	104.80	82.40	85.80	90.90	97.09
2	pH	---	8.00	6.80	7.37	6.97	6.05	7.05	6.94	7.03	7.07	6.13	6.66	6.02	7.43	7.17	6.50	6.71
3	Biochemical Oxygen Demand (BOD5)	mg/l	2,468	1,707	2,159	1,791	1,535	2,040	1,556	1,894	2,157	2,280	2,008	1,920	2,419	1,531	1,882	2,028
4	Chemical Oxygen Demand (COD)	mg/l	6,145	5,240	4,577	5,051	5,081	5,753	3,439	5,041	5,242	5,905	6,887	5,280	8,370	3,429	4,216	5,618
5	Total Suspended Solids (TSS)	mg/l	5,948	3,346	3,346	3,922	3,484	4,876	2,894	3,974	4,573	5,016	3,815	3,168	5,588	2,404	3,726	4,041
6	Total Dissolve Solids (TDS)	mg/l	1,688	1,657	1,720	1,337	1,502	1,776	1,487	1,595	1,654	1,589	1,770	1,450	1,556	1,545	1,731	1,614
B	**Treated Effluent Quality:**																	
1	pH	---	6.78	7.19	6.76	6.79	7.29	7.37	7.27	7.06	7.06	7.15	7.04	7.26	6.95	6.84	6.79	7.01
2	Biochemical Oxygen Demand (BOD5)	mg/l	7	5	9	8	9	9	6	8	5	5	9	9	5	8	7	7
3	Chemical Oxygen Demand (COD)	mg/l	52	66	69	70	71	73	75	68	74	75	85	55	58	89	53	70
4	Total Suspended Solids (TSS)	mg/l	8	6	10	9	10	10	7	9	6	6	10	10	6	9	8	8
5	Total Dissolve Solids (TDS)	mg/l	1,823	1,773	1,737	1,404	1,517	1,900	1,606	1,680	1,737	1,684	1,788	1,552	1,712	1,715	1,818	1,715

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	Weekly Average	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	Weekly Average
1	As per Tender: Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.																	
2	Input Waste	TPD	129.69	127.33	123.71	128.91	121.39	147.12	143.23	131.63	128.86	121.31	129.79	133.47	126.61	141.86	149.26	133.02
3	Inert Fraction	TPD	0.00	2.11	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.31	0.00	0.00	0.88	0.00	0.69	0.27
4	% of Total Input Waste.....(3) ÷ (2)	%	0.00%	1.66%	0.00%	0.00%	0.00%	0.00%	0.00%	0.24%	0.00%	0.26%	0.00%	0.00%	0.70%	0.00%	0.46%	0.20%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug	Weekly Average	8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug	Weekly Average
1	Hygenic 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-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	Weekly Average		22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	Weekly Average	
A	**Input Waste:**																			
1	Dry Waste	TPD	52.94	62.70	59.79	59.86	52.31	65.95	67.46	60.14	42.86%	60.87	61.62	63.76	58.09	55.73	58.12	58.29	59.50	43.40%
2	Wet Waste	TPD	59.34	68.28	68.96	64.88	74.12	75.91	69.18	68.67	48.93%	73.31	76.96	61.14	70.01	61.43	61.42	73.08	68.19	49.74%
3	Mixed Waste	TPD	3.07	7.59	6.08	4.52	2.76	8.39	8.28	5.81	4.14%	4.46	4.88	6.55	6.22	4.88	6.43	5.79	5.60	4.09%
4	Slaughter Waste	TPD	0.48	2.10	5.08	2.00	1.54	0.79	0.77	1.82	1.30%	0.81	0.92	1.10	1.41	1.53	0.86	1.15	1.11	0.81%
5	**Sub Total.....(1) + (2) + (3) + (4)**	**TPD**	**115.83**	**140.67**	**139.91**	**131.26**	**130.73**	**151.04**	**145.69**	**136.45**	**97.23%**	**139.45**	**144.38**	**132.55**	**135.73**	**123.57**	**126.83**	**138.31**	**134.40**	**98.04%**
6	Tree Waste	TPD	4.82	3.72	3.06	4.67	7.29	1.16	2.49	3.89	2.77%	4.02	2.81	3.60	1.63	0.86	4.77	1.09	2.68	1.96%
7	**Total.....(5) + (6)**	**TPD**	**120.65**	**144.39**	**142.97**	**135.93**	**138.02**	**152.20**	**148.18**	**140.33**	**100.00%**	**143.47**	**147.19**	**136.15**	**137.36**	**124.43**	**131.60**	**139.40**	**137.09**	**100.00%**
B	**Input Waste Composition:**																			
1	Organic / Bio-degradable Fraction	TPD	69.07	81.39	85.17	75.98	80.51	89.17	82.42	80.53	57.38%	86.26	89.02	75.31	82.88	74.29	73.01	84.41	80.74	58.90%
2	Inorganic / Non-recyclable Fraction (RDF)	TPD	30.93	40.51	38.36	35.34	32.09	41.34	43.43	37.43	26.67%	35.41	36.06	41.73	30.70	31.52	34.88	32.90	34.74	25.34%
3	Recyclables:	TPD	15.83	18.77	16.38	18.57	17.87	20.53	19.84	18.26	13.01%	17.78	19.30	15.51	19.91	17.76	18.94	20.08	18.47	13.47%
	Glass	TPD	0.08	0.13	0.08	0.08	0.07	0.11	0.15	0.10	0.07%	0.08	0.12	0.08	0.10	0.11	0.10	0.07	0.09	0.07%
	Metal	TPD	0.42	0.58	0.50	0.58	0.58	0.56	0.54	0.54	0.39%	0.47	0.51	0.44	0.61	0.43	0.56	0.50	0.50	0.37%
	Paper / Cardboard / Tetra Pack	TPD	2.90	3.98	4.31	3.19	2.35	3.10	2.35	3.17	2.32%	3.05	3.31	2.45	4.63	2.13	4.01	2.74	3.19	2.37%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	TPD	6.64	6.99	5.05	7.31	8.93	8.84	8.89	7.52	5.51%	7.38	7.84	6.34	7.93	8.16	6.72	9.72	7.73	5.75%
	Thermocol / Styrofoam	TPD	0.07	0.13	0.14	0.09	0.07	0.14	0.07	0.10	0.07%	0.07	0.14	0.12	0.10	0.12	0.11	0.08	0.11	0.08%
	Cloth / Rags / Textiles	TPD	2.25	3.64	2.13	3.92	3.20	2.96	3.45	3.08	2.26%	3.49	2.66	2.81	2.57	3.50	3.72	3.49	3.17	2.36%
	Rubber	TPD	0.43	0.38	0.52	0.51	0.61	0.47	0.57	0.50	0.37%	0.46	0.46	0.46	0.56	0.38	0.56	0.39	0.47	0.35%
	Coconut	TPD	3.06	2.94	3.65	2.89	2.07	4.37	3.83	3.26	2.39%	2.78	4.27	2.81	3.43	2.93	3.16	3.10	3.21	2.39%
4	Inert	TPD	0.00	0.00	0.00	1.37	0.26	0.00	0.00	0.23	0.17%	0.00	0.00	0.00	2.24	0.00	0.00	0.92	0.45	0.33%
5	Tree Waste	TPD	4.82	3.72	3.06	4.67	7.29	1.16	2.49	3.89	2.77%	4.02	2.81	3.60	1.63	0.86	4.77	1.09	2.68	1.96%
	Total.....(1) + (2) + (3) + (4) + (5)	**TPD**	**120.65**	**144.39**	**142.97**	**135.93**	**138.02**	**152.20**	**148.18**	**140.33**	**100.00%**	**143.47**	**147.19**	**136.15**	**137.36**	**124.43**	**131.60**	**139.40**	**137.09**	**100.00%**

2 RECYCLABLES:

Sr. No.	Description	Unit	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	Weekly Average	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	Weekly Average
1	Glass	Kg	81	127	84	79	65	106	146	98	84	116	80	95	111	101	69	94
2	Metal	Kg	417	577	504	578	575	559	539	536	474	505	437	611	432	558	498	502
3	Tetra Pack	Kg	145	318	310	211	144	288	141	222	305	258	181	430	113	401	216	272
4	Paper / Cardboard	Kg	2,751	3,662	3,999	2,979	2,210	2,808	2,205	2,945	2,749	3,048	2,271	4,198	2,013	3,607	2,522	2,915
	Total.....(3) + (4)	**Kg**	**2,896**	**3,980**	**4,309**	**3,190**	**2,354**	**3,096**	**2,346**	**3,167**	**3,054**	**3,306**	**2,452**	**4,628**	**2,126**	**4,008**	**2,738**	**3,187**
5	Plastic Films	Kg	5,462	5,915	4,470	6,419	7,250	7,811	7,527	6,408	5,997	6,993	5,512	6,722	7,079	5,801	8,595	6,671
6	Hard Plastic	Kg	604	573	318	373	848	557	498	539	671	423	393	507	579	410	506	498
7	PET	Kg	571	503	263	519	830	468	862	574	708	423	431	698	497	511	622	556
	Total.....(5) + (6) + (7)	**Kg**	**6,637**	**6,991**	**5,051**	**7,311**	**8,928**	**8,836**	**8,887**	**7,520**	**7,376**	**7,839**	**6,336**	**7,927**	**8,155**	**6,722**	**9,723**	**7,725**
8	Thermocol	Kg	69	127	140	92	65	136	73	100	70	144	119	95	124	114	83	107
9	Cloth / Rags / Textile	Kg	1,699	2,802	1,686	3,289	2,543	2,152	2,710	2,412	2,939	2,157	2,265	1,929	2,577	3,047	2,862	2,539
10	Jute Bags	Kg	548	842	440	636	660	808	742	668	547	499	545	636	920	669	624	634
	Total.....(9) + (10)	**Kg**	**2,247**	**3,644**	**2,126**	**3,925**	**3,203**	**2,960**	**3,452**	**3,080**	**3,486**	**2,656**	**2,810**	**2,565**	**3,497**	**3,716**	**3,486**	**3,174**
11	Leather / Rubber / Rexine	Kg	429	380	518	512	614	468	568	498	460	462	464	556	383	558	387	467
12	Coconut	Kg	3,058	2,940	3,652	2,888	2,066	4,365	3,832	3,257	2,775	4,274	2,810	3,434	2,929	3,158	3,098	3,211
13	**Total**	**Kg**	**15,834**	**18,766**	**16,384**	**18,575**	**17,870**	**20,526**	**19,843**	**18,257**	**17,779**	**19,302**	**15,508**	**19,911**	**17,757**	**18,935**	**20,082**	**18,468**
		TPD	**15.83**	**18.77**	**16.38**	**18.58**	**17.87**	**20.53**	**19.84**	**18.26**	**17.78**	**19.30**	**15.51**	**19.91**	**17.76**	**18.94**	**20.08**	**18.47**

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	Weekly Average	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	Weekly Average
A	**Biogas Gensets:**																	
1	Biogas Genset-I: Running Time	hr	20.90	21.45	19.15	21.05	21.75	17.70	22.70	20.67	21.45	22.45	18.10	22.15	21.00	20.65	24.00	21.40
2	Biogas Genset-I: Energy Generation	kW.hr	2,380	2,080	1,920	2,240	2,960	2,530	2,970	2,440	3,050	3,030	2,140	2,440	2,420	2,750	3,690	2,789
3	Biogas Genset-II: Running Time	hr	20.90	21.55	19.25	21.20	21.85	17.90	22.65	20.76	21.50	22.45	18.45	22.15	21.00	20.70	24.00	21.46
4	Biogas Genset-II: Energy Generation	kW.hr	3,040	3,230	3,250	3,890	3,600	3,870	3,440	3,474	3,570	3,320	2,690	3,757	4,040	3,820	3,780	3,568
5	**Total.....(2) + (4)**	**kW.hr**	**5,420**	**5,310**	**5,170**	**6,130**	**6,560**	**6,400**	**6,410**	**5,914**	**6,620**	**6,350**	**4,830**	**6,197**	**6,460**	**6,570**	**7,470**	**6,357**
B	**Electricty Generation:**																	
1	As per Tender: 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.(B1)**	Tons	69.07	81.39	85.17	75.98	80.51	89.17	82.42	80.53	86.26	89.02	75.31	82.88	74.29	73.01	84.41	80.74
3	Electricity Generation required as per Tender = 0.4 x 1000 x (2) ÷ 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	259	247	269	290	301	359	283	287	308	283	264	280	308	318	311	296
#	Surplus / Shortage	kWH	19	7	29	50	61	119	43		68	43	24	40	68	78	71	

4 BIOGAS FLARE:

Sr. No.	Description	Unit	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	Weekly Average	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	Weekly Average
1	Operation Time	hr/day	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.01	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-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	Weekly Average	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	Weekly Average
A	**Raw Effluent Quality:**																	
1	Flow	m^3/day	100.10	105.10	105.90	100.10	107.40	108.00	108.60	105.03	113.20	112.70	100.70	103.10	103.80	99.10	90.40	103.29
2	pH	---	7.72	6.07	6.35	7.82	6.78	7.67	7.09	7.07	6.60	7.02	6.91	7.10	7.27	6.81	6.26	6.85
3	Biochemical Oxygen Demand (BOD5)	mg/l	1,829	1,568	2,418	2,224	2,199	1,988	1,867	2,013	1,687	1,976	2,073	1,748	2,444	1,800	2,077	1,972
4	Chemical Oxygen Demand (COD)	mg/l	4,883	4,437	6,746	6,583	4,420	5,288	4,836	5,313	4,403	4,821	7,235	4,824	5,719	4,050	4,819	5,124
5	Total Suspended Solids (TSS)	mg/l	4,536	3,011	6,021	4,515	3,628	4,672	4,425	4,401	3,526	3,063	3,607	2,762	5,768	3,420	3,552	3,671
6	Total Dissolve Solids (TDS)	mg/l	1,578	1,711	1,412	1,521	1,749	1,545	1,617	1,590	1,642	1,310	1,501	1,389	1,748	1,417	1,478	1,498
B	**Treated Effluent Quality:**																	
1	pH	---	6.92	6.70	6.73	6.66	7.39	6.59	7.20	6.88	6.62	6.74	7.22	6.86	7.18	6.79	6.56	6.85
2	Biochemical Oxygen Demand (BOD5)	mg/l	8	7	9	6	9	6	5	7	9	8	9	5	9	6	8	8
3	Chemical Oxygen Demand (COD)	mg/l	86	63	79	64	58	81	90	74	72	85	73	74	53	80	57	71
4	Total Suspended Solids (TSS)	mg/l	9	8	10	7	10	7	6	8	10	9	10	6	10	7	9	9
5	Total Dissolve Solids (TDS)	mg/l	1,625	1,814	1,497	1,582	1,889	1,669	1,698	1,682	1,741	1,376	1,531	1,417	1,765	1,460	1,493	1,540

6 DISPOSAL OF INERT:

Sr. No.	Description	Unit	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	Weekly Average	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	Weekly Average
1	As per Tender: Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.																	
2	Input Waste	TPD	115.83	140.67	139.91	131.26	130.73	151.04	145.69	136.45	139.45	144.38	132.55	135.73	123.57	126.83	138.31	134.40
3	Inert Fraction	TPD	0.00	0.00	0.00	1.37	0.26	0.00	0.00	0.23	0.00	0.00	0.00	2.24	0.00	0.00	0.92	0.45
4	% of Total Input Waste.....(3) ÷ (2)	%	0.00%	0.00%	0.00%	1.04%	0.20%	0.00%	0.00%	0.18%	0.00%	0.00%	0.00%	1.65%	0.00%	0.00%	0.67%	0.33%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug	Weekly Average	22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug	Weekly Average
1	Hygenic 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-Aug	30-Aug	31-Aug	Weekly Average		Monthly Average	
A	**Input Waste:**								
1	Dry Waste	TPD	59.93	59.30	55.19	58.14	42.48%	56.46	41.03%
2	Wet Waste	TPD	65.38	60.78	68.04	64.73	47.30%	68.59	49.87%
3	Mixed Waste	TPD	6.37	11.01	4.06	7.15	5.22%	7.21	5.25%
4	Slaughter Waste	TPD	0.16	1.27	1.47	0.97	0.71%	1.04	0.75%
5	**Sub Total.....(1) + (2) + (3) + (4)**	**TPD**	**131.84**	**132.36**	**128.76**	**130.99**	**95.72%**	**133.30**	**96.90%**
6	Tree Waste	TPD	3.32	9.00	5.27	5.86	4.28%	4.26	3.10%
7	**Total.....(5) + (6)**	**TPD**	**135.16**	**141.36**	**134.03**	**136.85**	**100.00%**	**137.56**	**100.00%**
B	**Input Waste Composition:**								
1	Organic / Bio-degradable Fraction	TPD	76.30	77.09	77.42	76.94	56.22%	80.00	58.16%
2	Inorganic / Non-recyclable Fraction (RDF)	TPD	38.01	35.07	32.96	35.34	25.83%	34.72	25.23%
3	Recyclables:	TPD	17.53	19.47	18.09	18.37	13.42%	18.26	13.28%
	Glass	TPD	0.11	0.08	0.12	0.10	0.07%	0.10	0.07%
	Metal	TPD	0.53	0.54	0.41	0.49	0.36%	0.51	0.38%
	Paper / Cardboard / Tetra Pack	TPD	3.77	4.47	3.84	4.03	2.94%	3.36	2.50%
	Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics	TPD	8.52	7.93	5.60	7.35	5.37%	7.37	5.48%
	Thermocol / Styrofoam	TPD	0.11	0.12	0.10	0.11	0.08%	0.10	0.08%
	Cloth / Rags / Textiles	TPD	1.98	3.18	3.45	2.87	2.10%	3.05	2.27%
	Rubber	TPD	0.46	0.36	0.50	0.44	0.32%	0.47	0.35%
	Coconut	TPD	2.07	2.79	4.07	2.98	2.18%	3.31	2.46%
4	Inert	TPD	0.00	0.73	0.29	0.34	0.25%	0.32	0.23%
5	Tree Waste	TPD	3.32	9.00	5.27	5.86	4.28%	4.26	3.10%
	Total.....(1) + (2) + (3) + (4) + (5)	**TPD**	**135.16**	**141.36**	**134.03**	**136.85**	**100.00%**	**137.56**	**100.00%**

2 RECYCLABLES:

Sr. No.	Description	Unit	29-Aug	30-Aug	31-Aug	Weekly Average	Monthly Average
1	Glass	Kg	105	79	116	100	97
2	Metal	Kg	527	543	412	494	512
3	Tetra Pack	Kg	351	259	203	271	247
4	Paper / Cardboard	Kg	3,420	4,214	3,634	3,756	3,112
	Total.....(3) + (4)	**Kg**	**3,771**	**4,473**	**3,837**	**4,027**	**3,359**
5	Plastic Films	Kg	7,452	6,573	4,727	6,251	6,258
6	Hard Plastic	Kg	520	690	448	553	555
7	PET	Kg	545	666	426	546	558
	Total.....(5) + (6) + (7)	**Kg**	**8,517**	**7,929**	**5,601**	**7,349**	**7,371**
8	Thermocol	Kg	105	119	103	109	102
9	Cloth / Rags / Textile	Kg	1,568	2,478	2,491	2,179	2,376
10	Jute Bags	Kg	409	699	959	689	672
	Total.....(9) + (10)	**Kg**	**1,977**	**3,177**	**3,450**	**2,868**	**3,048**
11	Leather / Rubber / Rexine	Kg	461	357	502	440	469
12	Coconut	Kg	2,070	2,793	4,069	2,977	3,306
13	**Total**	**Kg**	**17,533**	**19,470**	**18,090**	**18,364**	**18,263**
		TPD	**17.53**	**19.47**	**18.09**	**18.36**	**18.26**

3 ELECTRICITY GENERATION:

Sr. No.	Description	Unit	29-Aug	30-Aug	31-Aug	Weekly Average	Monthly Average
A	**Biogas Gensets:**						
1	Biogas Genset-I: Running Time	hr	24.00	18.90	22.75	21.88	21.41
2	Biogas Genset-I: Energy Generation	kW.hr	3,450	2,510	3,190	3,050	2,984
3	Biogas Genset-II: Running Time	hr	24.00	19.05	22.75	21.93	22.02
4	Biogas Genset-II: Energy Generation	kW.hr	3,600	2,690	3,370	3,220	3,496
5	**Total.....(2) + (4)**	**kW.hr**	**7,050**	**5,200**	**6,560**	**6,270**	**6,479**
B	**Electricty Generation:**						
1	As per Tender: 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.(B1)**	Tons	76.30	77.09	77.42	76.94	80.00
3	Electricity Generation required as per Tender = 0.4 x 1000 x (2) ÷ 100	kWH	240	240	240	240	240
4	Electricity generated = (A2 ÷ A1) + (A4 ÷ A3)	kWH	294	274	288	285	298
#	Surplus / Shortage	kWH	54	34	48		

4 BIOGAS FLARE:

Sr. No.	Description	Unit	29-Aug	30-Aug	31-Aug	Weekly Average	Monthly Average
1	Operation Time	hr/day	0.00	0.02	0.00	0.01	0.01

5 EFFLUENT TREATMENT PLANT:

Sr. No.	Description	Unit	29-Aug	30-Aug	31-Aug	Weekly Average	Monthly Average
A	**Raw Effluent Quality:**						
1	Flow	m^3/day	91.40	102.40	103.10	98.97	100.16
2	pH	---	6.12	7.55	7.58	7.08	6.95
3	Biochemical Oxygen Demand (BOD5)	mg/l	2,299	2,482	1,559	2,113	2,004
4	Chemical Oxygen Demand (COD)	mg/l	4,989	8,265	4,973	6,076	5,435
5	Total Suspended Solids (TSS)	mg/l	4,575	4,418	3,212	4,068	4,031
6	Total Dissolve Solids (TDS)	mg/l	1,612	1,740	1,778	1,710	1,601
B	**Treated Effluent Quality:**						
1	pH	---	6.68	6.73	6.58	6.66	6.90
2	Biochemical Oxygen Demand (BOD5)	mg/l	5	7	9	7	7
3	Chemical Oxygen Demand (COD)	mg/l	57	79	76	71	71
4	Total Suspended Solids (TSS)	mg/l	6	8	10	8	8
5	Total Dissolve Solids (TDS)	mg/l	1,628	1,914	1,902	1,815	1,686

6 DISPOSAL OF INERT:

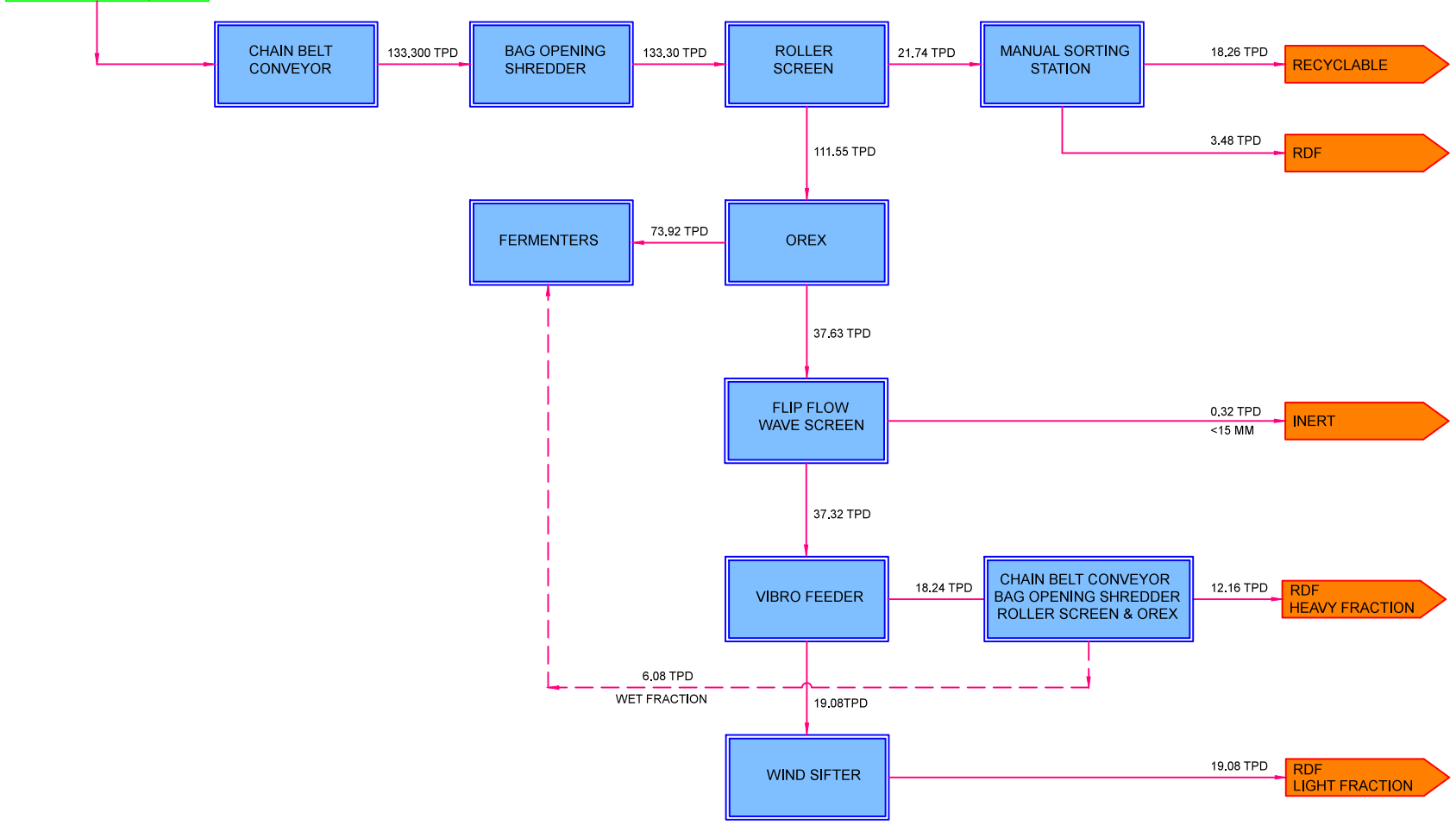
Sr. No.	Description	Unit	29-Aug	30-Aug	31-Aug	Weekly Average	Monthly Average
1	As per Tender: Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility.						
2	Input Waste	TPD	131.84	132.36	128.76	130.99	133.30
3	Inert Fraction	TPD	0.00	0.73	0.29	0.34	0.32
4	% of Total Input Waste.....(3) ÷ (2)	%	0.00%	0.55%	0.23%	0.26%	0.24%

7 HOUSEKEEPING:

Sr. No.	Description	Unit	29-Aug	30-Aug	31-Aug	Weekly Average	Monthly Average
1	Hygenic 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	18.26
2	RDF	34.72
3	WET FRACTION	80.00
4	INERT	0.32
	TOTAL	133.300

NUMBER OF RECYCLABLE FRACTIONS		
SR. NO.	NAME	WEIGHT (KG)
01	GLASS	97
02	METALS	512
03	TETRAPACK	247
04	PAPER/CARDBOARD	3,112
05	PLASTIC FILM	6,258
06	HARD PLASTIC	555
07	PET	558
08	THERMOCOL	102
09	CLOTH/RAGS/TEXTILE	2,376
10	JUTE BAGS	672
11	LEATHER/RUBBER/REXINE	469
12	COCONUT	3,306
	TOTAL	18,263



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	KG		01/09/18
DSGN	SG		01/09/18
CHKD	SG		01/09/18
APPD	SG		01/09/18

TITLE :
ANNEXURE -1
MASS BALANCE: AUGUST 2018

SCALE NTS

SIZE A3 | REV. R0