

**Monthly Performance Report
(HWT-NG100-MPR-18-R0)**

**January 2018
(From 01/01/2018 to 31/01/2018)**

**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 January 2017
(As compared to Schedule – 7: Performance Standards, Volume – I of RFP)

| Sr. No. | Parameter | Performance Standard As per Schedule – 7 | Actual Performance at Plant (Monthly Average) |
|---------|---|--|--|
| 1. | Number of fractions of recyclables sorted per day from the input mixed waste | Minimum 10 numbers of fractions shall be sorted daily from the input dry waste as received in the facility. The list of fractions are as follows: <ol style="list-style-type: none"> 1. PET Bottles 2. Mixed Plastic Articles 3. Newspapers / other Paper Material 4. Cardboard 5. Styrofoam & Thermocol 6. Coconut Shells 7. Clothes 8. Rubber Articles 9. Metal Articles & Cans 10. E-waste Articles and any Hazardous Waste | 13 numbers of fractions are being sorted daily from the input dry waste as received in the facility. The list of fractions are as follows: <ol style="list-style-type: none"> 1. Glass 2. Metal Articles & Cans 3. Tetrapacks 4. Paper / Cardboard 5. Plastic Film 6. Hard Plastics 7. PET Bottles 8. Styrofoam & Thermocol 9. Cloth / Rags / Textile 10. Jute bags 11. Leather / Rubber / Rexine 12. Coconut Shells 13. E-waste Articles and any Hazardous Waste |
| 2. | Quantum of reject/residues to be sent to the landfill after processing. No organic fraction shall be disposed in the landfill. | Maximum 10% of inert of the total input waste as received in the facility (in TPD). | Input waste to the Plant is <u>170.92 TPD</u> . Quantum of Inert is <u>1.973 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>0.50</u> MW/100 tons of Input Biodegradable Waste as received in the Facility (in TPD). |

| Sr. No. | Parameter | Performance Standard As per Schedule – 7 | Actual Performance at Plant (Monthly Average) | | | | | | | | | | |
|---------|---|---|---|----|------|-----|--------|-----|---------|-----|--------|-----|-----------|
| 4. | Biogas Flaring System | The Biogas Flaring System shall strictly be used only in case of emergency and not as a routine practice. | Biogas is being flared strictly, only under emergency and not as a routine practice. The average running time of Biogas Flaring System is 3.58 hours/day . | | | | | | | | | | |
| 5. | Discharge of treated effluent conforming to regulatory norms | Effluent Treatment Plant shall be operated under all conditions. | Effluent Treatment Plant is being operated continuously and is meeting all statutory conditions. The Treated Effluent Characteristics are as follows: <table border="1" data-bbox="1032 726 1403 940"> <tbody> <tr> <td>pH</td> <td>6.96</td> </tr> <tr> <td>BOD</td> <td>7 mg/l</td> </tr> <tr> <td>COD</td> <td>76 mg/l</td> </tr> <tr> <td>TSS</td> <td>8 mg/l</td> </tr> <tr> <td>TDS</td> <td>1646 mg/l</td> </tr> </tbody> </table> | pH | 6.96 | BOD | 7 mg/l | COD | 76 mg/l | TSS | 8 mg/l | TDS | 1646 mg/l |
| pH | 6.96 | | | | | | | | | | | | |
| BOD | 7 mg/l | | | | | | | | | | | | |
| COD | 76 mg/l | | | | | | | | | | | | |
| TSS | 8 mg/l | | | | | | | | | | | | |
| TDS | 1646 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: January 2018 | | |
|---------|--------------------------------------|--|-----------|
| Sr. No. | Content | Month | Signature |
| 1 | Input Waste Composition | From 01.01.2018 To 31.01.2018 | |
| 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-Jan | 2-Jan | 3-Jan | 4-Jan | 5-Jan | 6-Jan | 7-Jan | Weekly Average | 8-Jan | 9-Jan | 10-Jan | 11-Jan | 12-Jan | 13-Jan | 14-Jan | Weekly Average | | |
|-----------------------------------|---|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|----------------|
| A Input Waste: | | | | | | | | | | | | | | | | | | | | |
| 1 | Dry Waste | TPD | 66.970 | 68.280 | 74.390 | 75.650 | 60.630 | 66.840 | 53.990 | 66.68 | 36.73% | 65.650 | 69.810 | 59.570 | 69.300 | 59.010 | 56.800 | 51.770 | 61.70 | 36.62% |
| 2 | Wet Waste | TPD | 128.810 | 129.600 | 104.290 | 120.760 | 112.310 | 99.890 | 105.150 | 114.40 | 63.03% | 110.790 | 100.550 | 115.700 | 89.780 | 110.440 | 97.030 | 111.620 | 105.13 | 62.39% |
| 3 | Mixed Waste | TPD | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00% | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00% |
| 4 | Mulched Tree Waste | TPD | 0.000 | 0.000 | 0.860 | 0.000 | 0.000 | 0.400 | 1.800 | 0.44 | 0.24% | 0.000 | 2.850 | 1.290 | 3.870 | 0.870 | 1.040 | 1.790 | 1.67 | 0.99% |
| 5 | Total.....1+2+3+4 | TPD | 195.78 | 197.88 | 179.54 | 196.41 | 172.94 | 167.13 | 160.94 | 181.52 | 100.00% | 176.44 | 173.21 | 176.56 | 162.95 | 170.32 | 154.87 | 165.18 | 168.50 | 100.00% |
| B Input Waste Composition: | | | | | | | | | | | | | | | | | | | | |
| 1 | Organic / Bio degradable Fraction | 65.00% | 128.81 | 129.60 | 104.29 | 120.76 | 112.31 | 99.89 | 105.15 | 114.40 | 63.03% | 110.79 | 100.55 | 115.70 | 89.78 | 110.44 | 97.03 | 111.62 | 105.13 | 62.39% |
| 2 | Inorganic / Non-recyclable Fraction (RDF) | | 34.78 | 43.47 | 45.46 | 48.17 | 32.22 | 44.85 | 31.97 | 40.13 | 22.11% | 42.74 | 47.60 | 36.12 | 50.13 | 29.57 | 36.55 | 30.26 | 39.00 | 23.14% |
| 3 | Recyclables | 14.00% | 30.13 | 22.76 | 27.47 | 24.77 | 25.91 | 20.99 | 23.82 | 25.12 | 13.84% | 20.86 | 23.31 | 22.53 | 21.59 | 23.76 | 19.73 | 21.52 | 21.90 | 13.00% |
| | Glass | 0.50% | 0.10 | 0.12 | 0.18 | 0.18 | 0.16 | 0.08 | 0.13 | 0.13 | 0.07% | 0.09 | 0.17 | 0.11 | 0.16 | 0.10 | 0.08 | 0.13 | 0.12 | 0.07% |
| | Metal | 0.50% | 0.76 | 0.83 | 0.81 | 0.59 | 0.64 | 0.58 | 0.64 | 0.69 | 0.38% | 0.64 | 0.73 | 0.67 | 0.70 | 0.55 | 0.51 | 0.73 | 0.65 | 0.38% |
| | Paper / Cardboard / Tetrapack | 4.00% | 5.78 | 4.53 | 5.39 | 5.46 | 3.60 | 2.76 | 3.27 | 4.40 | 2.42% | 3.51 | 5.96 | 5.77 | 4.48 | 2.88 | 3.47 | 2.96 | 4.15 | 2.46% |
| | Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics | 6.00% | 12.84 | 7.42 | 10.93 | 9.13 | 12.43 | 9.41 | 11.54 | 10.53 | 5.80% | 6.67 | 7.92 | 6.96 | 6.71 | 11.04 | 8.80 | 7.47 | 7.94 | 4.71% |
| | Thermocoal / Styrofoam | 1.00% | 0.14 | 0.10 | 0.11 | 0.20 | 0.10 | 0.17 | 0.14 | 0.14 | 0.08% | 0.11 | 0.12 | 0.09 | 0.10 | 0.10 | 0.15 | 0.17 | 0.12 | 0.07% |
| | Cloth / Rags / Textiles | 1.50% | 4.25 | 5.32 | 4.00 | 3.18 | 4.89 | 4.93 | 3.64 | 4.32 | 2.38% | 5.29 | 3.22 | 4.24 | 4.16 | 2.69 | 2.87 | 4.21 | 3.81 | 2.26% |
| | Rubber Items | 0.50% | 0.98 | 0.77 | 0.68 | 0.61 | 0.57 | 0.48 | 0.76 | 0.69 | 0.38% | 0.71 | 0.54 | 0.56 | 0.49 | 0.83 | 0.46 | 0.50 | 0.58 | 0.35% |
| | Coconut | | 5.29 | 3.66 | 5.37 | 5.42 | 3.51 | 2.57 | 3.70 | 4.22 | 2.32% | 3.85 | 4.66 | 4.13 | 4.79 | 5.57 | 3.39 | 5.37 | 4.54 | 2.69% |
| 4 | Inert | 10.00% | 2.06 | 2.06 | 2.32 | 2.71 | 2.50 | 1.40 | 0.00 | 1.86 | 1.03% | 2.05 | 1.75 | 2.21 | 1.45 | 6.55 | 1.56 | 1.78 | 2.48 | 1.47% |
| 5 | Mulched Tree Waste | 11.00% | 0.00 | 0.00 | 0.86 | 0.00 | 0.00 | 0.40 | 1.80 | | | 0.00 | 2.85 | 1.29 | 3.87 | 0.87 | 1.04 | 1.79 | | |
| | Total.....1+2+3+4+5 | 100.00% | | | | | | | | | 100.00% | | | | | | | | | 100.00% |

2 RECYCLABLES:

| Sr. No. | Description | Unit | 1-Jan | 2-Jan | 3-Jan | 4-Jan | 5-Jan | 6-Jan | 7-Jan | Weekly Average | 8-Jan | 9-Jan | 10-Jan | 11-Jan | 12-Jan | 13-Jan | 14-Jan | Weekly Average | |
|-----------------------|---------------------------|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|--|
| A Recyclables: | | | | | | | | | | | | | | | | | | | |
| 1 | Glass | Kg | 98 | 119 | 180 | 177 | 156 | 84 | 129 | 135 | 88 | 173 | 106 | 163 | 102 | 77 | 132 | 120 | |
| 2 | Metal | Kg | 764 | 831 | 808 | 589 | 640 | 585 | 644 | 694 | 635 | 727 | 671 | 701 | 545 | 511 | 727 | 645 | |
| 3 | Tetrapack | Kg | 375 | 381 | 528 | 459 | 227 | 171 | 193 | 333 | 320 | 483 | 294 | 287 | 242 | 267 | 186 | 297 | |
| 4 | Paper / Cardboard | Kg | 5,400 | 4,151 | 4,858 | 5,002 | 3,371 | 2,587 | 3,074 | 4,063 | 3,192 | 5,476 | 5,479 | 4,194 | 2,637 | 3,202 | 2,770 | 3,850 | |
| | Total.....3+4 | Kg | 5,775 | 4,532 | 5,386 | 5,461 | 3,598 | 2,758 | 3,267 | 4,397 | 3,512 | 5,959 | 5,773 | 4,481 | 2,879 | 3,469 | 2,956 | 4,147 | |
| 5 | Plastic Films | Kg | 10,981 | 6,211 | 8,813 | 7,864 | 10,283 | 8,073 | 9,820 | 8,864 | 5,702 | 6,823 | 5,892 | 5,613 | 9,470 | 7,574 | 6,466 | 6,791 | |
| 6 | Hard Plastic | Kg | 1,027 | 467 | 1,061 | 722 | 1,144 | 753 | 969 | 878 | 373 | 467 | 501 | 644 | 750 | 598 | 478 | 544 | |
| 7 | Pet | Kg | 835 | 742 | 1,061 | 548 | 1,007 | 583 | 750 | 789 | 594 | 625 | 563 | 457 | 817 | 625 | 523 | 601 | |
| | Total.....5+6+7 | Kg | 12,843 | 7,420 | 10,935 | 9,134 | 12,434 | 9,409 | 11,539 | 10,531 | 6,669 | 7,915 | 6,956 | 6,714 | 11,037 | 8,797 | 7,467 | 7,936 | |
| 8 | Thermocal | Kg | 137 | 99 | 108 | 196 | 104 | 167 | 145 | 137 | 106 | 121 | 88 | 98 | 102 | 155 | 165 | 119 | |
| 9 | Cloth / Rags / Textile | Kg | 2,978 | 4,093 | 3,203 | 2,291 | 3,524 | 4,146 | 2,990 | 3,318 | 3,774 | 2,619 | 3,009 | 3,341 | 1,905 | 2,329 | 3,298 | 2,896 | |
| 10 | Jute Bags | Kg | 1,270 | 1,230 | 801 | 891 | 1,370 | 784 | 647 | 999 | 1,519 | 602 | 1,229 | 814 | 786 | 536 | 914 | 914 | |
| | Total.....9+10 | Kg | 4,248 | 5,323 | 4,004 | 3,182 | 4,894 | 4,930 | 3,637 | 4,317 | 5,293 | 3,221 | 4,238 | 4,155 | 2,691 | 2,865 | 4,212 | 3,811 | |
| 11 | Leather / Rubber / Rexine | Kg | 979 | 772 | 682 | 609 | 571 | 485 | 756 | 693 | 706 | 537 | 565 | 489 | 835 | 465 | 496 | 585 | |
| 12 | Coconut | Kg | 5,286 | 3,661 | 5,368 | 5,421 | 3,511 | 2,574 | 3,702 | 4,218 | 3,846 | 4,659 | 4,132 | 4,791 | 5,569 | 3,392 | 5,368 | 4,537 | |
| 13 | Total | Kg | 30,130 | 22,757 | 27,471 | 24,769 | 25,908 | 20,992 | 23,819 | 25,121 | 20,855 | 23,312 | 22,529 | 21,592 | 23,760 | 19,731 | 21,523 | 21,900 | |
| | | TPD | 30.13 | 22.76 | 27.47 | 24.77 | 25.91 | 20.99 | 23.82 | 25.12 | 20.86 | 23.31 | 22.53 | 21.59 | 23.76 | 19.73 | 21.52 | 21.90 | |

3 ELECTRICITY GENERATION:

| Sr. No. | Description | Unit | 1-Jan | 2-Jan | 3-Jan | 4-Jan | 5-Jan | 6-Jan | 7-Jan | Weekly Average | 8-Jan | 9-Jan | 10-Jan | 11-Jan | 12-Jan | 13-Jan | 14-Jan | Weekly Average | |
|--------------------------|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|--|
| A Biogas Gensets: | | | | | | | | | | | | | | | | | | | |
| 1 | Biogas Genset-I: Running Time | hr | 23.14 | 18.43 | 23.01 | 23.96 | 22.20 | 15.25 | 21.04 | 21.00 | 23.95 | 23.30 | 24.00 | 21.95 | 23.90 | 23.75 | 23.80 | 23.52 | |
| 2 | Biogas Genset-I: Energy Generation | kW.hr | 3,749 | 3,128 | 3,483 | 3,801 | 2,900 | 2,010 | 3,381 | 3,207 | 3,800 | 3,610 | 3,750 | 3,190 | 3,520 | 3,160 | 3,450 | 3,497 | |
| 3 | Biogas Genset-II: Running Time | hr | 23.52 | 18.05 | 23.07 | 23.68 | 22.25 | 17.75 | 17.59 | 20.84 | 23.90 | 23.40 | 24.00 | 21.90 | 23.90 | 23.75 | 23.80 | 23.52 | |
| 4 | Biogas Genset-II: Energy Generation | kW.hr | 3,597 | 2,644 | 3,424 | 3,376 | 3,310 | 2,420 | 2,430 | 3,029 | 3,850 | 3,700 | 3,820 | 3,260 | 3,650 | 3,330 | 3,580 | 3,599 | |
| 5 | Total.....2+4 | kW.hr | 7,346 | 5,772 | 6,907 | 7,177 | 6,210 | 4,430 | 5,811 | 6,236 | 7,650 | 7,310 | 7,570 | 6,450 | 7,170 | 6,490 | 7,030 | 7,096 | |

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

| Sr. No. | Description | Unit | 1-Jan | 2-Jan | 3-Jan | 4-Jan | 5-Jan | 6-Jan | 7-Jan | Weekly Average | 8-Jan | 9-Jan | 10-Jan | 11-Jan | 12-Jan | 13-Jan | 14-Jan | 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 | 128.81 | 129.60 | 104.29 | 120.76 | 112.31 | 99.89 | 105.15 | 114.40 | 110.79 | 100.55 | 115.70 | 89.78 | 110.44 | 97.03 | 111.62 | 105.13 |
| 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 | 315 | 316 | 300 | 301 | 279 | 268 | 299 | 297 | 320 | 313 | 315 | 294 | 300 | 273 | 295 | 302 |

4 BIOGAS FLARE:

| Sr. No. | Description | Unit | 1-Jan | 2-Jan | 3-Jan | 4-Jan | 5-Jan | 6-Jan | 7-Jan | Weekly Average | 8-Jan | 9-Jan | 10-Jan | 11-Jan | 12-Jan | 13-Jan | 14-Jan | Weekly Average |
|---------|----------------|--------|-------|-------|-------|-------|-------|-------|-------|----------------|-------|-------|--------|--------|--------|--------|--------|----------------|
| 1 | Operation Time | hr/day | 2.77 | 2.38 | 4.41 | 3.48 | 2.41 | 6.70 | 3.89 | 3.72 | 3.82 | 1.42 | 1.37 | 3.30 | 1.92 | 2.22 | 3.47 | 2.50 |

5 EFFLUENT TREATMENT PLANT:

| Sr. No. | Description | Unit | 1-Jan | 2-Jan | 3-Jan | 4-Jan | 5-Jan | 6-Jan | 7-Jan | Weekly Average | 8-Jan | 9-Jan | 10-Jan | 11-Jan | 12-Jan | 13-Jan | 14-Jan | Weekly Average |
|------------------------------------|----------------------------------|---------------------|-------|-------|-------|-------|-------|-------|-------|----------------|-------|-------|--------|--------|--------|--------|--------|----------------|
| A Raw Effluent Quality: | | | | | | | | | | | | | | | | | | |
| 1 | Flow | m ³ /day | 70.93 | 70.70 | 70.72 | 65.52 | 65.77 | 68.67 | 69.09 | 68.77 | 62.00 | 46.54 | 64.51 | 71.60 | 67.44 | 65.88 | 56.82 | 62.11 |
| 2 | pH | --- | 7.13 | 6.14 | 7.1 | 6.35 | 7.32 | 7.46 | 6.77 | 6.90 | 7.89 | 7.52 | 6.24 | 6.54 | 6.82 | 7.34 | 6.06 | 6.92 |
| 3 | Biochemical Oxygen Demand (BOD5) | mg/l | 1,835 | 2,296 | 2,115 | 1,870 | 1,517 | 1,650 | 1,843 | 1,875 | 2,022 | 1,946 | 1,985 | 2,321 | 2,300 | 1,695 | 1,607 | 1,982 |
| 4 | Chemical Oxygen Demand (COD) | mg/l | 4,808 | 5,579 | 7,149 | 4,525 | 5,006 | 3,383 | 4,902 | 5,050 | 5,722 | 4,612 | 6,848 | 6,568 | 7,521 | 4,831 | 4,001 | 5,729 |
| 5 | Total Suspended Solids (TSS) | mg/l | 3,817 | 4,707 | 4,759 | 3,740 | 3,004 | 3,927 | 3,778 | 3,962 | 3,741 | 4,301 | 3,553 | 5,362 | 3,910 | 2,695 | 3,182 | 3,821 |
| 6 | Total Dissolve Solids (TDS) | mg/l | 1,379 | 1,506 | 1,774 | 1,323 | 1,799 | 1,792 | 1,528 | 1,586 | 1,407 | 1,690 | 1,319 | 1,475 | 1,424 | 1,434 | 1,559 | 1,473 |
| B Treated Effluent Quality: | | | | | | | | | | | | | | | | | | |
| 1 | pH | --- | 7.24 | 6.91 | 7.37 | 6.66 | 7.44 | 7.49 | 6.84 | 7.14 | 6.96 | 6.55 | 6.53 | 7.15 | 7.05 | 6.62 | 6.69 | 6.79 |
| 2 | Biochemical Oxygen Demand (BOD5) | mg/l | 7 | 9 | 5 | 6 | 7 | 5 | 7 | 7 | 9 | 8 | 6 | 6 | 5 | 5 | 6 | 6 |
| 3 | Chemical Oxygen Demand (COD) | mg/l | 69 | 81 | 89 | 80 | 90 | 80 | 79 | 81 | 70 | 71 | 85 | 64 | 82 | 62 | 80 | 73 |
| 4 | Total Suspended Solids (TSS) | mg/l | 8 | 10 | 6 | 7 | 8 | 6 | 8 | 8 | 10 | 9 | 7 | 7 | 6 | 6 | 7 | 7 |
| 5 | Total Dissolve Solids (TDS) | mg/l | 1,434 | 1,551 | 1,792 | 1,336 | 1,997 | 1,810 | 1,650 | 1,653 | 1,491 | 1,707 | 1,425 | 1,549 | 1,552 | 1,520 | 1,637 | 1,554 |

6 DISPOSAL OF INERT:

| Sr. No. | Description | Unit | 1-Jan | 2-Jan | 3-Jan | 4-Jan | 5-Jan | 6-Jan | 7-Jan | Weekly Average | 8-Jan | 9-Jan | 10-Jan | 11-Jan | 12-Jan | 13-Jan | 14-Jan | 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 | 195.78 | 197.88 | 179.54 | 196.41 | 172.94 | 167.13 | 160.94 | 181.52 | 176.44 | 173.21 | 176.56 | 162.95 | 170.32 | 154.87 | 165.18 | 168.50 |
| 3 | Inert Fraction | TPD | 2.060 | 2.058 | 2.316 | 2.710 | 2.500 | 1.400 | | 2.174 | 2.050 | 1.750 | 2.207 | 1.450 | 6.550 | 1.560 | 1.780 | 2.478 |
| 4 | % of Total Input Waste.....3/2 | % | 1.05% | 1.04% | 1.29% | 1.38% | 1.45% | 0.84% | 0.00% | 1.01% | 1.16% | 1.01% | 1.25% | 0.89% | 3.85% | 1.01% | 1.08% | 1.46% |

7 HOUSEKEEPING:

| Sr. No. | Description | Unit | 1-Jan | 2-Jan | 3-Jan | 4-Jan | 5-Jan | 6-Jan | 7-Jan | Weekly Average | 8-Jan | 9-Jan | 10-Jan | 11-Jan | 12-Jan | 13-Jan | 14-Jan | 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-Jan | 16-Jan | 17-Jan | 18-Jan | 19-Jan | 20-Jan | 21-Jan | Weekly Average | 22-Jan | 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | Weekly Average | | |
|-----------------------------------|---|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|----------------|
| A Input Waste: | | | | | | | | | | | | | | | | | | | | |
| 1 | Dry Waste | TPD | 63.660 | 63.680 | 56.510 | 64.050 | 59.850 | 60.910 | 48.090 | 59.54 | 37.26% | 62.750 | 61.260 | 69.950 | 58.290 | 55.750 | 64.870 | 50.840 | 60.53 | 36.36% |
| 2 | Wet Waste | TPD | 94.820 | 98.510 | 95.790 | 82.080 | 103.640 | 113.690 | 99.850 | 98.34 | 61.54% | 109.040 | 108.350 | 100.750 | 95.500 | 92.620 | 106.630 | 118.640 | 104.50 | 62.77% |
| 3 | Mixed Waste | TPD | 0.000 | 0.000 | 1.060 | 0.000 | 0.000 | 0.000 | 0.000 | 0.15 | 0.09% | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 0.00% |
| 4 | Mulched Tree Waste | TPD | 0.160 | 2.750 | 2.120 | 3.150 | 0.000 | 0.000 | 4.140 | 1.76 | 1.10% | 1.280 | 0.960 | 2.840 | 0.540 | 0.330 | 3.750 | 0.460 | 1.45 | 0.87% |
| 5 | Total.....1+2+3+4 | TPD | 158.64 | 164.94 | 155.48 | 149.28 | 163.49 | 174.60 | 152.08 | 159.79 | 100.00% | 173.07 | 170.57 | 173.54 | 154.33 | 148.70 | 175.25 | 169.94 | 166.49 | 100.00% |
| B Input Waste Composition: | | | | | | | | | | | | | | | | | | | | |
| 1 | Organic / Bio degradable Fraction | 65.00% | 94.82 | 98.51 | 95.79 | 82.08 | 103.64 | 113.69 | 99.85 | 98.34 | 61.54% | 109.04 | 108.35 | 100.75 | 95.50 | 92.62 | 106.63 | 118.64 | 104.50 | 62.77% |
| 2 | Inorganic / Non-recyclable Fraction (RDF) | | 41.56 | 41.82 | 33.82 | 46.27 | 33.26 | 35.09 | 30.57 | 37.48 | 23.46% | 34.92 | 36.49 | 50.77 | 35.39 | 34.78 | 41.04 | 23.17 | 36.65 | 22.01% |
| 3 | Recyclables | 14.00% | 20.86 | 23.24 | 24.44 | 19.79 | 25.37 | 23.97 | 18.26 | 22.28 | 13.94% | 27.54 | 24.05 | 20.37 | 22.24 | 18.86 | 26.09 | 26.39 | 23.65 | 14.20% |
| | Glass | 0.50% | 0.08 | 0.08 | 0.08 | 0.07 | 0.10 | 0.17 | 0.08 | 0.09 | 0.06% | 0.16 | 0.09 | 0.10 | 0.09 | 0.07 | 0.16 | 0.17 | 0.12 | 0.07% |
| | Metal | 0.50% | 0.48 | 0.54 | 0.59 | 0.63 | 0.74 | 0.68 | 0.46 | 0.59 | 0.37% | 0.67 | 0.60 | 0.52 | 0.65 | 0.65 | 0.54 | 0.65 | 0.61 | 0.37% |
| | Paper / Cardboard / Tetrapack | 4.00% | 2.93 | 2.54 | 5.24 | 3.76 | 4.20 | 6.02 | 2.63 | 3.90 | 2.44% | 4.14 | 3.56 | 5.57 | 5.31 | 3.66 | 4.40 | 5.46 | 4.58 | 2.75% |
| | Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics | 6.00% | 8.90 | 10.23 | 8.94 | 8.94 | 12.10 | 7.09 | 7.35 | 9.08 | 5.68% | 12.55 | 12.40 | 6.66 | 7.84 | 6.57 | 9.46 | 12.07 | 9.65 | 5.80% |
| | Thermocoal / Styrofoam | 1.00% | 0.16 | 0.15 | 0.16 | 0.13 | 0.16 | 0.12 | 0.08 | 0.14 | 0.09% | 0.14 | 0.17 | 0.17 | 0.15 | 0.13 | 0.16 | 0.15 | 0.15 | 0.09% |
| | Cloth / Rags / Textiles | 1.50% | 3.57 | 3.35 | 3.45 | 3.16 | 4.17 | 4.66 | 3.06 | 3.63 | 2.27% | 5.11 | 3.55 | 3.82 | 3.89 | 2.86 | 5.05 | 3.60 | 3.98 | 2.39% |
| | Rubber Items | 0.50% | 0.63 | 0.76 | 0.70 | 0.58 | 0.54 | 0.68 | 0.55 | 0.63 | 0.40% | 0.47 | 0.67 | 0.50 | 0.40 | 0.73 | 0.58 | 0.56 | 0.56 | 0.34% |
| | Coconut | | 4.11 | 5.59 | 5.29 | 2.51 | 3.37 | 4.54 | 4.08 | 4.21 | 2.64% | 4.31 | 3.02 | 3.02 | 3.90 | 4.18 | 5.75 | 3.74 | 3.99 | 2.40% |
| 4 | Inert | 10.00% | 1.40 | 1.37 | 1.43 | 1.14 | 1.22 | 1.85 | 3.40 | 1.69 | 1.06% | 1.57 | 1.68 | 1.65 | 1.20 | 2.44 | 1.49 | 1.74 | 1.68 | 1.01% |
| 5 | Mulched Tree Waste | 11.00% | 0.16 | 2.75 | 2.12 | 3.15 | 0.00 | 0.00 | 4.14 | | | 1.28 | 0.96 | 2.84 | 0.54 | 0.33 | 3.75 | 0.46 | | |
| | Total.....1+2+3+4+5 | 100.00% | | | | | | | | | 100.00% | | | | | | | | | 100.00% |

2 RECYCLABLES:

| Sr. No. | Description | Unit | 15-Jan | 16-Jan | 17-Jan | 18-Jan | 19-Jan | 20-Jan | 21-Jan | Weekly Average | 22-Jan | 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | Weekly Average | |
|-----------------------|---------------------------|------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|--|
| A Recyclables: | | | | | | | | | | | | | | | | | | | |
| 1 | Glass | Kg | 79 | 82 | 78 | 75 | 98 | 175 | 76 | 95 | 156 | 85 | 104 | 93 | 74 | 158 | 170 | 120 | |
| 2 | Metal | Kg | 476 | 544 | 591 | 627 | 736 | 681 | 456 | 587 | 675 | 597 | 521 | 648 | 654 | 543 | 646 | 612 | |
| 3 | Tetrapack | Kg | 170 | 157 | 341 | 361 | 416 | 319 | 200 | 281 | 319 | 335 | 485 | 462 | 263 | 286 | 316 | 352 | |
| 4 | Paper / Cardboard | Kg | 2,765 | 2,383 | 4,899 | 3,401 | 3,786 | 5,704 | 2,431 | 3,624 | 3,818 | 3,230 | 5,086 | 4,847 | 3,395 | 4,113 | 5,139 | 4,233 | |
| | Total.....3+4 | Kg | 2,935 | 2,540 | 5,240 | 3,762 | 4,202 | 6,023 | 2,631 | 3,905 | 4,137 | 3,565 | 5,571 | 5,309 | 3,658 | 4,399 | 5,455 | 4,585 | |
| 5 | Plastic Films | Kg | 7,280 | 8,529 | 7,885 | 7,556 | 10,646 | 5,983 | 6,170 | 7,721 | 10,603 | 10,466 | 5,784 | 6,586 | 5,790 | 8,025 | 10,316 | 8,224 | |
| 6 | Hard Plastic | Kg | 881 | 941 | 483 | 751 | 835 | 638 | 646 | 739 | 1,067 | 744 | 486 | 659 | 427 | 568 | 676 | 661 | |
| 7 | Pet | Kg | 739 | 757 | 572 | 635 | 617 | 468 | 529 | 617 | 878 | 1,190 | 393 | 596 | 355 | 871 | 1,074 | 765 | |
| | Total.....5+6+7 | Kg | 8,900 | 10,227 | 8,940 | 8,942 | 12,098 | 7,089 | 7,345 | 9,077 | 12,548 | 12,400 | 6,663 | 7,841 | 6,572 | 9,464 | 12,066 | 9,651 | |
| 8 | Thermocal | Kg | 159 | 148 | 155 | 134 | 163 | 122 | 76 | 137 | 138 | 171 | 174 | 154 | 134 | 158 | 153 | 155 | |
| 9 | Cloth / Rags / Textile | Kg | 2,781 | 2,511 | 2,810 | 2,624 | 2,989 | 3,902 | 2,143 | 2,823 | 3,661 | 2,558 | 2,917 | 2,726 | 2,070 | 4,129 | 2,843 | 2,986 | |
| 10 | Jute Bags | Kg | 789 | 837 | 642 | 541 | 1,180 | 760 | 914 | 809 | 1,445 | 990 | 901 | 1,163 | 785 | 919 | 760 | 995 | |
| | Total.....9+10 | Kg | 3,570 | 3,348 | 3,452 | 3,165 | 4,169 | 4,662 | 3,057 | 3,632 | 5,106 | 3,548 | 3,818 | 3,889 | 2,855 | 5,048 | 3,603 | 3,981 | |
| 11 | Leather / Rubber / Rexine | Kg | 635 | 759 | 700 | 582 | 540 | 681 | 547 | 635 | 467 | 665 | 503 | 401 | 729 | 578 | 561 | 558 | |
| 12 | Coconut | Kg | 4,109 | 5,591 | 5,286 | 2,508 | 3,368 | 4,540 | 4,076 | 4,211 | 4,309 | 3,019 | 3,020 | 3,905 | 4,178 | 5,748 | 3,739 | 3,988 | |
| 13 | Total | Kg | 20,863 | 23,239 | 24,442 | 19,795 | 25,374 | 23,973 | 18,264 | 22,279 | 27,536 | 24,050 | 20,374 | 22,240 | 18,854 | 26,096 | 26,393 | 23,649 | |
| | | TPD | 20.86 | 23.24 | 24.44 | 19.80 | 25.37 | 23.97 | 18.26 | 22.28 | 27.54 | 24.05 | 20.37 | 22.24 | 18.85 | 26.10 | 26.39 | 23.65 | |

3 ELECTRICITY GENERATION:

| Sr. No. | Description | Unit | 15-Jan | 16-Jan | 17-Jan | 18-Jan | 19-Jan | 20-Jan | 21-Jan | Weekly Average | 22-Jan | 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | Weekly Average |
|--------------------------|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|----------------|
| A Biogas Gensets: | | | | | | | | | | | | | | | | | | |
| 1 | Biogas Genset-I: Running Time | hr | 24.00 | 23.05 | 20.50 | 21.20 | 24.00 | 24.00 | 19.80 | 22.36 | 23.95 | 22.85 | 14.95 | 24.00 | 24.00 | 24.00 | 24.00 | 22.54 |
| 2 | Biogas Genset-I: Energy Generation | kW.hr | 3,570 | 3,410 | 3,010 | 3,010 | 3,650 | 3,780 | 2,350 | 3,254 | 3,550 | 3,280 | 2,140 | 3,520 | 3,620 | 3,220 | 3,030 | 3,194 |
| 3 | Biogas Genset-II: Running Time | hr | 24.00 | 23.05 | 20.50 | 21.15 | 24.00 | 24.00 | 19.85 | 22.36 | 23.95 | 22.70 | 14.90 | 24.00 | 24.00 | 24.00 | 23.70 | 22.46 |
| 4 | Biogas Genset-II: Energy Generation | kW.hr | 3,710 | 3,530 | 3,120 | 3,160 | 3,750 | 3,860 | 2,560 | 3,384 | 3,670 | 3,420 | 2,220 | 3,690 | 3,740 | 3,430 | 3,270 | 3,349 |
| 5 | Total.....2+4 | kW.hr | 7,280 | 6,940 | 6,130 | 6,170 | 7,400 | 7,640 | 4,910 | 6,639 | 7,220 | 6,700 | 4,360 | 7,210 | 7,360 | 6,650 | 6,300 | 6,543 |

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

| Sr. No. | Description | Unit | 15-Jan | 16-Jan | 17-Jan | 18-Jan | 19-Jan | 20-Jan | 21-Jan | Weekly Average | 22-Jan | 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | 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 | 94.82 | 98.51 | 95.79 | 82.08 | 103.64 | 113.69 | 99.85 | 98.34 | 109.04 | 108.35 | 100.75 | 95.50 | 92.62 | 106.63 | 118.64 | 104.50 |
| 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 | 303 | 301 | 299 | 291 | 308 | 318 | 248 | 296 | 301 | 294 | 292 | 300 | 307 | 277 | 264 | 291 |

4 BIOGAS FLARE:

| Sr. No. | Description | Unit | 15-Jan | 16-Jan | 17-Jan | 18-Jan | 19-Jan | 20-Jan | 21-Jan | Weekly Average | 22-Jan | 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | Weekly Average |
|---------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|----------------|--------|--------|--------|--------|--------|--------|--------|----------------|
| 1 | Operation Time | hr/day | 2.38 | 3.65 | 1.54 | 2.09 | 1.13 | 1.87 | 4.72 | 2.48 | 2.27 | 2.93 | 7.30 | 4.00 | 2.88 | 6.08 | 6.85 | 4.62 |

5 EFFLUENT TREATMENT PLANT:

| Sr. No. | Description | Unit | 15-Jan | 16-Jan | 17-Jan | 18-Jan | 19-Jan | 20-Jan | 21-Jan | Weekly Average | 22-Jan | 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | Weekly Average |
|------------------------------------|----------------------------------|---------------------|--------|--------|--------|--------|--------|--------|--------|----------------|--------|--------|--------|--------|--------|--------|--------|----------------|
| A Raw Effluent Quality: | | | | | | | | | | | | | | | | | | |
| 1 | Flow | m ³ /day | 72.26 | 62.20 | 76.78 | 63.41 | 78.67 | 72.62 | 74.97 | 71.56 | 76.00 | 77.04 | 77.30 | 59.11 | 92.03 | 92.38 | 97.97 | 81.69 |
| 2 | pH | --- | 6.67 | 6 | 7.69 | 7.46 | 7.17 | 7.86 | 7.57 | 7.20 | 6.02 | 6.49 | 7.4 | 6.53 | 6.95 | 7.88 | 7.35 | 6.95 |
| 3 | Biochemical Oxygen Demand (BOD5) | mg/l | 2,226 | 1,752 | 1,761 | 2,380 | 1,519 | 1,587 | 2,335 | 1,937 | 1,891 | 2,402 | 2,285 | 2,148 | 1,673 | 2,019 | 1,511 | 1,990 |
| 4 | Chemical Oxygen Demand (COD) | mg/l | 5,565 | 4,135 | 4,314 | 7,449 | 3,828 | 3,936 | 6,701 | 5,133 | 4,387 | 5,188 | 5,575 | 6,551 | 3,781 | 4,482 | 3,324 | 4,755 |
| 5 | Total Suspended Solids (TSS) | mg/l | 4,207 | 2,768 | 3,487 | 5,307 | 2,339 | 3,031 | 4,483 | 3,660 | 3,858 | 4,300 | 4,707 | 3,738 | 2,727 | 4,300 | 2,342 | 3,710 |
| 6 | Total Dissolve Solids (TDS) | mg/l | 1,550 | 1,468 | 1,559 | 1,528 | 1,635 | 1,456 | 1,562 | 1,537 | 1,699 | 1,645 | 1,612 | 1,486 | 1,781 | 1,488 | 1,606 | 1,617 |
| B Treated Effluent Quality: | | | | | | | | | | | | | | | | | | |
| 1 | pH | --- | 6.73 | 7.19 | 7.3 | 7.18 | 6.63 | 7.1 | 6.95 | 7.01 | 6.59 | 7.07 | 7.29 | 6.77 | 7.14 | 6.9 | 7.12 | 6.98 |
| 2 | Biochemical Oxygen Demand (BOD5) | mg/l | 8 | 7 | 9 | 8 | 8 | 8 | 5 | 8 | 7 | 5 | 6 | 5 | 9 | 5 | 6 | 6 |
| 3 | Chemical Oxygen Demand (COD) | mg/l | 56 | 82 | 87 | 89 | 78 | 90 | 83 | 81 | 60 | 80 | 58 | 56 | 51 | 51 | 81 | 62 |
| 4 | Total Suspended Solids (TSS) | mg/l | 9 | 8 | 10 | 9 | 9 | 9 | 6 | 9 | 8 | 6 | 7 | 6 | 10 | 6 | 7 | 7 |
| 5 | Total Dissolve Solids (TDS) | mg/l | 1,674 | 1,615 | 1,606 | 1,635 | 1,684 | 1,529 | 1,703 | 1,635 | 1,852 | 1,694 | 1,644 | 1,590 | 1,888 | 1,548 | 1,751 | 1,710 |

6 DISPOSAL OF INERT:

| Sr. No. | Description | Unit | 15-Jan | 16-Jan | 17-Jan | 18-Jan | 19-Jan | 20-Jan | 21-Jan | Weekly Average | 22-Jan | 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | 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 | 158.64 | 164.94 | 155.48 | 149.28 | 163.49 | 174.60 | 152.08 | 159.79 | 173.07 | 170.57 | 173.54 | 154.33 | 148.70 | 175.25 | 169.94 | 166.49 |
| 3 | Inert Fraction | TPD | 1.400 | 1.370 | 1.430 | 1.140 | 1.220 | 1.851 | 3.400 | 1.687 | 1.570 | 1.680 | 1.650 | 1.200 | 2.440 | 1.490 | 1.740 | 1.681 |
| 4 | % of Total Input Waste.....3/2 | % | 0.88% | 0.83% | 0.92% | 0.76% | 0.75% | 1.06% | 2.24% | 1.06% | 0.91% | 0.98% | 0.95% | 0.78% | 1.64% | 0.85% | 1.02% | 1.02% |

7 HOUSEKEEPING:

| Sr. No. | Description | Unit | 15-Jan | 16-Jan | 17-Jan | 18-Jan | 19-Jan | 20-Jan | 21-Jan | Weekly Average | 22-Jan | 23-Jan | 24-Jan | 25-Jan | 26-Jan | 27-Jan | 28-Jan | 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-Jan | 30-Jan | 31-Jan | Weekly Average | | Monthly Average | |
|-----------------------------------|---|----------------|---------------|---------------|---------------|----------------|----------------|-----------------|----------------|
| A Input Waste: | | | | | | | | | |
| 1 | Dry Waste | TPD | 72.600 | 58.610 | 66.680 | 65.96 | 37.00% | 62.88 | 36.79% |
| 2 | Wet Waste | TPD | 108.340 | 117.760 | 106.460 | 110.85 | 62.18% | 106.65 | 62.38% |
| 3 | Mixed Waste | TPD | 0.000 | 0.000 | 0.000 | 0.00 | 0.00% | 0.03 | 0.02% |
| 4 | Mulched Tree Waste | TPD | 1.590 | 1.250 | 1.570 | 1.47 | 0.82% | 1.36 | 0.81% |
| 5 | Total.....1+2+3+4 | TPD | 182.53 | 177.62 | 174.71 | 178.29 | 100.00% | 170.92 | 100.00% |
| B Input Waste Composition: | | | | | | | | | |
| 1 | Organic / Bio degradable Fraction | 65.00% | 108.34 | 117.76 | 106.46 | 110.85 | 62.18% | 106.65 | 62.38% |
| 2 | Inorganic / Non-recyclable Fraction (RDF) | | 45.76 | 32.75 | 39.32 | 39.27 | 22.03% | 38.51 | 22.55% |
| 3 | Recyclables | 14.00% | 26.50 | 25.95 | 26.49 | 26.31 | 14.76% | 23.85 | 13.95% |
| | Glass | 0.50% | 0.13 | 0.16 | 0.17 | 0.15 | 0.09% | 0.12 | 0.07% |
| | Metal | 0.50% | 0.60 | 0.69 | 0.68 | 0.66 | 0.37% | 0.64 | 0.37% |
| | Paper / Cardboard / Tetrapack | 4.00% | 3.60 | 4.58 | 5.57 | 4.58 | 2.57% | 4.32 | 2.53% |
| | Mixed Plastic, Bottles, Cups, Food Packets, Coated Plastics | 6.00% | 12.08 | 12.24 | 12.39 | 12.24 | 6.86% | 9.89 | 5.77% |
| | Thermocoal / Styrofoam | 1.00% | 0.15 | 0.11 | 0.17 | 0.14 | 0.08% | 0.14 | 0.08% |
| | Cloth / Rags / Textiles | 1.50% | 3.89 | 3.45 | 4.25 | 3.86 | 2.16% | 3.92 | 2.29% |
| | Rubber Items | 0.50% | 0.71 | 0.53 | 0.54 | 0.60 | 0.33% | 0.61 | 0.36% |
| | Coconut | | 5.35 | 4.19 | 2.71 | 4.08 | 2.29% | 4.21 | 2.47% |
| 4 | Inert | 10.00% | 1.93 | 1.16 | 2.45 | 1.85 | 1.04% | 1.91 | 1.12% |
| 5 | Mulched Tree Waste | 11.00% | 1.59 | 1.25 | 1.57 | | | | |
| | Total.....1+2+3+4+5 | 100.00% | | | | | 100.00% | | 100.00% |

2 RECYCLABLES:

| Sr. No. | Description | Unit | 29-Jan | 30-Jan | 31-Jan | Weekly Average | | Monthly Average | |
|-----------------------|---------------------------|------------|---------------|---------------|---------------|----------------|--|-----------------|--|
| A Recyclables: | | | | | | | | | |
| 1 | Glass | Kg | 128 | 160 | 175 | 154 | | 125 | |
| 2 | Metal | Kg | 602 | 693 | 681 | 659 | | 640 | |
| 3 | Tetrapack | Kg | 291 | 390 | 312 | 331 | | 319 | |
| 4 | Paper / Cardboard | Kg | 3,305 | 4,193 | 5,261 | 4,253 | | 4,005 | |
| | Total.....3+4 | Kg | 3,596 | 4,583 | 5,573 | 4,584 | | 4,323 | |
| 5 | Plastic Films | Kg | 10,017 | 10,207 | 10,665 | 10,296 | | 8,379 | |
| 6 | Hard Plastic | Kg | 882 | 1,028 | 657 | 856 | | 736 | |
| 7 | Pet | Kg | 1,184 | 1,004 | 1,065 | 1,084 | | 771 | |
| | Total.....5+6+7 | Kg | 12,083 | 12,239 | 12,387 | 12,236 | | 9,886 | |
| 8 | Thermocal | Kg | 146 | 107 | 175 | 143 | | 138 | |
| 9 | Cloth / Rags / Textile | Kg | 3,141 | 2,588 | 3,061 | 2,930 | | 2,991 | |
| 10 | Jute Bags | Kg | 746 | 858 | 1,184 | 929 | | 929 | |
| | Total.....9+10 | Kg | 3,887 | 3,446 | 4,245 | 3,859 | | 3,920 | |
| 11 | Leather / Rubber / Rexine | Kg | 712 | 533 | 542 | 596 | | 613 | |
| 12 | Coconut | Kg | 5,348 | 4,192 | 2,708 | 4,083 | | 4,207 | |
| 13 | Total | Kg | 26,502 | 25,953 | 26,486 | 26,314 | | 23,852 | |
| | | TPD | 26.50 | 25.95 | 26.49 | 26.31 | | 23.85 | |

3 ELECTRICITY GENERATION:

| Sr. No. | Description | Unit | 29-Jan | 30-Jan | 31-Jan | Weekly Average | | Monthly Average | |
|--------------------------|-------------------------------------|--------------|--------------|--------------|--------------|----------------|--|-----------------|--|
| A Biogas Gensets: | | | | | | | | | |
| 1 | Biogas Genset-I: Running Time | hr | 23.30 | 22.60 | 24.00 | 23.30 | | 22.55 | |
| 2 | Biogas Genset-I: Energy Generation | kW.hr | 3,150 | 3,300 | 4,030 | 3,493 | | 3,329 | |
| 3 | Biogas Genset-II: Running Time | hr | 23.45 | 22.55 | 24.00 | 23.33 | | 22.51 | |
| 4 | Biogas Genset-II: Energy Generation | kW.hr | 3,370 | 3,420 | 4,060 | 3,617 | | 3,395 | |
| 5 | Total.....2+4 | kW.hr | 6,520 | 6,720 | 8,090 | 7,110 | | 6,725 | |

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

| Sr. No. | Description | Unit | 29-Jan | 30-Jan | 31-Jan | 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 | 108.34 | 117.76 | 106.46 | 110.85 | 106.65 |
| 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 | 279 | 298 | 337 | 305 | 298 |

4 BIOGAS FLARE:

| Sr. No. | Description | Unit | 29-Jan | 30-Jan | 31-Jan | Weekly Average | Monthly Average |
|---------|----------------|--------|--------|--------|--------|----------------|-----------------|
| 1 | Operation Time | hr/day | 7.58 | 5.00 | 1.23 | 4.60 | 3.58 |

5 EFFLUENT TREATMENT PLANT:

| Sr. No. | Description | Unit | 29-Jan | 30-Jan | 31-Jan | Weekly Average | Monthly Average |
|------------------------------------|----------------------------------|---------------------|--------|--------|--------|----------------|-----------------|
| A Raw Effluent Quality: | | | | | | | |
| 1 | Flow | m ³ /day | 98.54 | 90.97 | 90.97 | 93.49 | 75.53 |
| 2 | pH | --- | 7.8 | 6.59 | 6.27 | 6.89 | 6.97 |
| 3 | Biochemical Oxygen Demand (BOD5) | mg/l | 2,430 | 2,294 | 1,640 | 2,121 | 1,981 |
| 4 | Chemical Oxygen Demand (COD) | mg/l | 6,075 | 6,102 | 4,067 | 5,415 | 5,216 |
| 5 | Total Suspended Solids (TSS) | mg/l | 5,783 | 3,854 | 2,542 | 4,060 | 3,843 |
| 6 | Total Dissolve Solids (TDS) | mg/l | 1,793 | 1,543 | 1,467 | 1,601 | 1,563 |
| B Treated Effluent Quality: | | | | | | | |
| 1 | pH | --- | 7.24 | 6.54 | 6.9 | 6.89 | 6.96 |
| 2 | Biochemical Oxygen Demand (BOD5) | mg/l | 9 | 9 | 9 | 9 | 7 |
| 3 | Chemical Oxygen Demand (COD) | mg/l | 90 | 66 | 88 | 81 | 76 |
| 4 | Total Suspended Solids (TSS) | mg/l | 10 | 10 | 10 | 10 | 8 |
| 5 | Total Dissolve Solids (TDS) | mg/l | 1,829 | 1,682 | 1,526 | 1,679 | 1,646 |

6 DISPOSAL OF INERT:

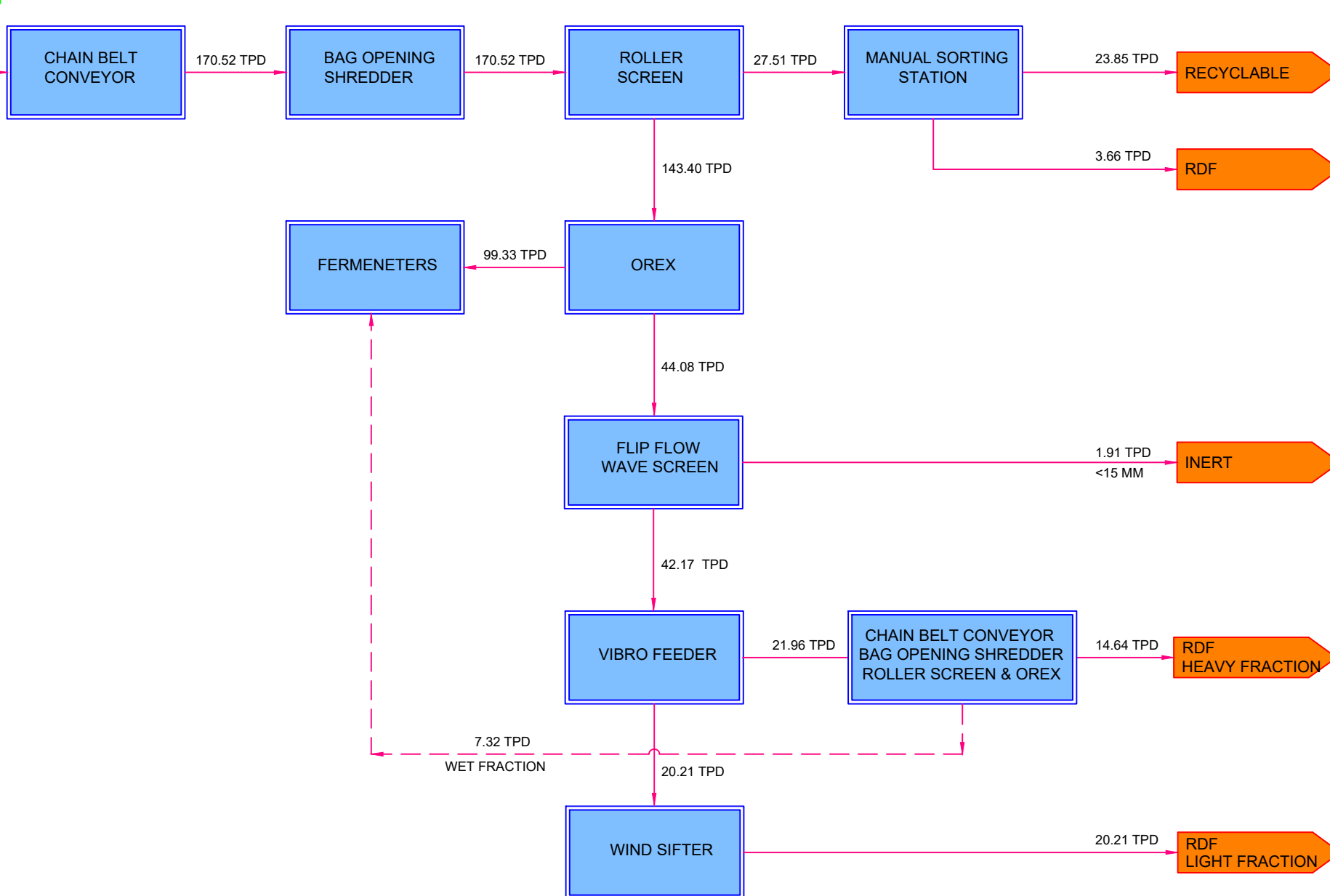
| Sr. No. | Description | Unit | 29-Jan | 30-Jan | 31-Jan | Weekly Average | Monthly Average |
|---------|---|------|--------|--------|--------|----------------|-----------------|
| 1 | <u>As per Tender:</u> Maximum 10% of Inerts of the Total Input Waste (excluding Mulched Tree Waste) as received in the Facility. | | | | | | |
| 2 | Input Waste | TPD | 182.53 | 177.62 | 174.71 | 178.29 | 170.92 |
| 3 | Inert Fraction | TPD | 1.930 | 1.160 | 2.446 | 1.845 | 1.973 |
| 4 | % of Total Input Waste.....3/2 | % | 1.06% | 0.65% | 1.40% | 1.04% | 1.12% |

7 HOUSEKEEPING:

| Sr. No. | Description | Unit | 29-Jan | 30-Jan | 31-Jan | 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 | 23.85 |
| 2 | RDF | 38.51 |
| 3 | WET FRACTION | 106.65 |
| 4 | INERT | 1.91 |
| TOTAL | | 170.92 |

| NUMBER OF RECYCLABLE FRACTIONS | | |
|--------------------------------|-----------------------|-------------|
| SR. NO. | NAME | WEIGHT (KG) |
| 01 | GLASS | 125 |
| 02 | METALS | 640 |
| 03 | TETRAPACK | 319 |
| 04 | PAPER/CARDBOARD | 4005 |
| 05 | PLASTIC FILM | 8379 |
| 06 | HARD PLASTIC | 736 |
| 07 | PET | 771 |
| 08 | THERMOCAL | 138 |
| 09 | CLOTH/RAGS/TEXTILE | 2991 |
| 10 | JUTE BAGS | 929 |
| 11 | LEATHER/RUBBER/REXINE | 613 |
| 12 | COCONUT | 4207 |
| TOTAL | | 23852 |



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 | | 01/02/18 |
| DSGN | SG | | 01/02/18 |
| CHKD | SG | | 01/02/18 |
| APPD | GK | | 01/02/18 |

TITLE :
 ANNEXURE -1
 MASS BALANCE
 JANUARY 2018

SCALE
 NTS
 SIZE
 A3
 REV.
 R0