

VAB/ENV/20-21/D6

29.05.2020

To,
The Director,
Ministry of Environment and Forest,
Regional Office (Southern Zone) Kendriya Sadan, 4th Floor,
17th Main Road, 2nd Block, Koramangala, Bangalore.

Sub: 22nd Six Monthly Compliance Report to the conditions of Environmental Clearance for Vedanta Ltd. (Formerly known as Sesa Sterlite Limited/Sesa Goa Limited) - Blast Furnace (0.9 MTPA), Sinter Plant (2MTPA), Coke Plant (0.6 MTPA) and Waste Heat Recovery Power Plant (60 MW) located at village Navelim, Taluka Bicholim in, North Goa District, Goa.

Reference

1. F No.J-11011/946/2007-IA-II(i) dated June 03, 2009.
2. Amendment in Environmental Clearance from MOEF vide letter dated 25/04/2012 and 7/01/2020.

Sir,

With reference to the above, please find enclosed herewith 22nd six monthly compliance report to Environmental Clearance [F No.J-11011/946/2007-IA-II(i)] for the period **October 2019 to March 2020** for Vedanta Ltd (Formerly known as Sesa Sterlite Limited/Sesa Goa Limited) Blast Furnace (0.9 MTPA), Sinter Plant (2MTPA), Coke Plant (0.6 MTPA) and Waste Heat Recovery Power Plant (60 MW) located at village Navelim, Taluka Bicholim, North Goa District, Goa.

Thanking you,

Yours faithfully,
For Vedanta Ltd.


N.L. Vhatte

Director- Value Added Business-Vedanta Ltd.

Cc: Member Secretary, GSPCB, CPCB (SZO)

Enclosures: Annexure I, II, III & IV

VEDANTA LIMITED
Vedanta Iron and Steel, Unit 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1376, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1384, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1553, 1554, 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2

22nd Compliance Report to EC No: F. No. J-11011/946/2007-IA-II(I)

(Period: October 2019 to March 2020)

6 Monthly Compliance Report to Conditions Of Environmental Clearance Issued By MOEF, Govt. of India, for Blast Furnace (0.90MTPA), Sinter Plant (2MTPA), Coke Plant (0.6MTPA), Waste Heat Recovery Power Plant (60MW) by Vedanta Limited (earlier known as Sesa Sterlite Ltd./ Sesa Goa Limited) *

A. Specific Conditions

- I. Electrostatic precipitator (ESP) shall be provided to Sinter plant and WHRB based Power Plant to control gaseous emissions from all the vents/stacks within 100 mg/Nm³. Gas Cleaning Plant along with Ventury scrubber shall be provided to blast furnace. On-line stack monitoring facilities for all the stacks shall be provided to ensure particulate emissions below 100 mg/Nm³ and data submitted to the Ministry's Regional Office at Bangalore, CPCB and Goa Pollution Control Board. Efforts shall be made to reduce RSPM levels in the ambient air and a time bound action plan should be submitted.**

Electrostatic Precipitator (ESP) provided to the Sinter Plant at Head End & Tail End of Sinter Machine. Dry Gas Cleaning Plant (GCP) with a dust catcher & bag filters, provided to Blast Furnace. Online stack monitoring facilities is installed for Sinter main stack, Sinter Tail end stack, WHRB-1&2 of Waste Heat Recovery Power plant and Hot Blast Stove of Blast Furnace. Continuous Real time data are connected to CPCB portal .Other conditions complied subject to letter dated 15 Sep 2009 addressed to MOEF, which clarifies areas of non-applicability of the conditions. Regular Stack Monitoring & Ambient Air Quality Monitoring is conducted and monthly reports are submitted to GSPCB (Currently uploaded on OCEMS system as per GSPCB Direction). Also half yearly reports are submitted to CPCB & MOEF.

Detail of average reading for all six locations.

Sr.No.	Location	Average from October 19 to March 20			
		PM10	PM2.5	SO2	NO2
1	Amona Gate	61.36	36.09	11.9	17.80
2	Compound wall Towards Maina	66.54	40.77	11.27	17.80
3	Opposite BSNL Exchange	64.73	35.90	11.83	17.37
4	Near Dispatch Gate	62.82	34.25	11.09	16.08
5	Compound wall Towards Navelim	69.81	40.83	12.68	19.51
6	Nr. Sateri Temple	64.84	35.42	11.27	17.88

12 parameters monitoring as per National AAQ report is as follows**(Average from October 19 to March 20)**

Sr.no	Parameters	Amona Gate	Opp BSNL Exchange	Near dispatch gate	Comp. wall towards Navelim	Near Sateri temple	Comp. wall towards Maina
1	PM10	61.36	64.73	62.82	69.81	64.84	66.54
	limit =100 µg/m3						
2.	PM 2.5	36.09	35.90	34.25	40.83	35.42	40.77
	limit =60 µg/m3						
3.	SO ₂	11.9	11.83	11.09	12.68	11.27	11.27
	limit =80 µg/m3						
4.	NO ₂	17.80	17.37	16.08	19.51	17.88	17.80
	limit =80 µg/m3						
5.	Ozone	ND	ND	ND	ND	ND	ND
	Limit =180 µg/m3 (Detection limit 10 ug/m3)						
6.	Lead (pb)	ND	ND	ND	ND	ND	ND
	limit =1 (detection limit 0.1 µg/m3)						
7.	Ammonia (NH ₃)	ND	ND	ND	ND	ND	ND
	Limit=400 µg/m3 (Detection limit 20 ug/m3)						
8.	Carbon Monoxide (mg/m3) (CO)	ND	ND	ND	ND	ND	ND
	Limit = 4 (detection limit 1 mg/m3)						
9.	Benzene (C ₆ H ₆)	ND	ND	ND	ND	ND	ND
	Limit= 5 (detection limit 1 µg/m3)						
10.	Benzo Pyrene (BaP)	ND	ND	ND	ND	ND	ND

	Limit = 1 (detection limit 0.5 ng/m3)						
11.	Arsenic (As)	ND	ND	ND	ND	ND	ND
	Limit= 6 (detection limit 0.5 ng/m3)						
12.	Nickel (Ni)	ND	ND	ND	ND	ND	ND
	Limit= 20(detection limit 0.5 ng/m3)						

Individual day wise readings are attached as Annexure I

II. Pulse jet bag filters shall be provided to coal crusher, product house, raw material handling areas. Transfer point etc. Bag filters shall be provided at the crusher. Screening and transfer points. The Coke Oven gases shall be fully utilized for power generation. Water sprinkling system and dry fog system shall be provided to control fugitive emissions at the coal handling area and work zone.

Pulse jet bag filters are provided for coal crusher house, coke screening towers, transfer points, raw material handling sections, etc. Also rain gun sprinklers are provided at raw material yard. Coal is stored in the closed shed. Wind screens are installed along the raw material storage yard. Bag house de-dusting system is provided for proportioning bin, sinter screening building, flux and fuel crushing and small de-dusting units for various transfer stations. Additionally fog/mist cannons have been brought for dust suppression from process activities at the source. Coke Oven Flue Gas (COFG) is fully utilized for Clean Power Generation.

III. Data on ambient air quality stack emission and fugitive emissions shall be uploaded on the company's website and also regularly submitted online to Ministry's Regional office at Bangalore, Goa State Pollution Control Board (GPCB) and Central Pollution Control Board as well as hard copy once in six months. Data on SPM, SO₂ and NO_x shall also be displayed prominently outside the premises at the appropriate place for the general public.

Ambient Air quality & source emission data is submitted on regular basis to GSPCB. Also six monthly data on stack emission & ambient air quality is submitted to GSPCB, CPCB, MOEF through e-mail and also uploaded on company website

Display of PM₁₀, PM_{2.5}, and SO₂ & NO₂ is done prominently outside the premises for the general public. Please refer to table in (i) of Specific Conditions. Ambient Air Quality Reports and Stack Monitoring Reports are submitted regularly to MOEF, CPCB & GSPCB along with six monthly compliance reports. All the values are within limits.

Stack emission data is provided in (iii) of GC below and attached as Annexure II.

IV. Secondary fugitive emissions from all the sources including Blast Furnace, Coke Oven and Sinter Plant shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines/Code of Practice issued by the CPCB shall be followed.

There are no specific permissible limits, - guidelines/code of practice issued by CPCB/MOEF for Non-Recovery Coke Oven Plants. Rain guns have been installed at raw material yard for dust suppression. Bag filter de-dusting systems are used to control dust. Wind screen/wind shields are installed at prominent locations as per the instructions of GSPCB. The monitoring is done regularly. Also as an additional improvement initiative we have procured Fog/Mist canons and Road sweeping machine Dulevu to make for road dust cleaning and ultimately for fugitive dust suppression and control.

V. Total water requirement shall not exceed 16632 m³/day. The effluent from generated utilities shall be treated in the effluent treatment plant and recycled and reused in the process in blast furnace, sinter plant, dust suppression. Ash moistening, firefighting and green belt development etc. No effluent shall be discharged outside the premises and 'zero' discharge shall be followed.

All Process water from Coke, Blast Furnace, and Sinter Plant is recycled and reused. After appropriate treatment Blow down from Cooling Tower of Power Plant is let out into Mondovi River after temperature & pH monitoring as per Consent conditions from Goa State Pollution Control Board (GSPCB).

The present Water Consumption is on an avg. 4288.8 m³/day (including water for cooling as well as process water) blow down water from Power Plant is around average 142.1 m³/day.

VI. Regular monitoring of influent and effluent water shall be ensured and treated wastewater shall meet the norms prescribed by the Goa State Pollution Control Board or described under the E(P) Act whichever are more stringent and reports shall be submitted six monthly to the Ministry's Regional Office at Bangalore, GSPCB and CPCB.

Blow down from Cooling Tower of Power Plant is let out into Mandovi river after temperature & pH adjustment. Monthly monitoring is carried out as per Consent conditions. Reports are submitted to GSPCB every month and to MOEF (RO), CPCB, and every six monthly as six monthly compliance reports. Blast Furnace, Sinter Plant and Coke Oven Plant operate on zero discharge. Only non-contact type of condenser cooling water is disposed back into Mandovi river as per Consent conditions from Goa State Pollution Control Board (GSPCB) .As per CTO condition max. 3600 m³/day blow down water can be disposed, however last six month avg. was around 142.1 m³/day. Temperature & pH is around avg. 30°C and 7.3 respectively.

VII. All the blast furnace slag shall be granulated and provided to cement manufacturers for further utilization. All the dust from the air pollution control equipments shall be recycled and reused in the Sinter plant. All the other solid wastes shall be disposed off in the environment-friendly manner or provided to authorized recyclers/ re-processors. Used oil shall also be provided to authorized recyclers only. An action plan for the disposal of fly ash and granulated BF & SMS slag shall be submitted to the Ministry and its Regional Office at Bangalore within 3 months.

Granulated BF slag is disposed to cement industries. Dust from air pollution control equipment is recycled & reused in Sinter Plant. Used oil is disposed off to the authorized recyclers only. Disposal of Fly Ash & SMS slag is not applicable as the facility is limited to iron making through blast furnace and there is no steel making provision and the power plant is based on waste heat hence thermal coal is not used for power generation. The non-applicability of fly ash & SMS slag is mentioned in letter to MoEF dated 15 September 2009.

VIII. All the fly ash shall be utilized as per Fly Ash Notification, 1999 and amended in 2003.

Not Applicable as thermal coal is not used. The power plant is run on BF gas and Coke Oven Flue Gas.

IX. Vehicular pollution due to transportation of raw material and finished product shall be controlled. Proper arrangements shall also be made to control dust emissions during loading and unloading of the raw material and finished product.

Vehicular pollution due to transportation of raw materials and finished product is controlled. Rain Guns (Sprinkling system) have been installed in the raw material yard and water tankers are used for dust suppression. Sprinklers for dust suppression has been installed at Pig Iron Dispatch yard. Pollution under Check certificates of all vehicles entering premises is checked.

X. Green belt shall be developed in 33 % area within and around the plant premises as per the CPCB guidelines in consultation with DFO.

Green belt is developed in phases with plantation drives during the Monsoons. Total land area is 104 Ha. 21Ha is reserved for future usage and 33Ha is earmarked as greenbelt area. Plantation was carried out in consultation of Goa Forest Development Corporation (GFDC) as well as in-house guidance from company expert team.

XI. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Sector shall be strictly implemented.

The Project is not an Integrated Iron & Steel Plant and hence the CREP guidelines of steel sector are not applicable however, whatever CREP conditions are applicable for blast furnace and non-recovery coke plant have been complied, proactively.

XII. The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed' after the completion of the project.

All temporary housing structures have been decommissioned after the project is operational.

B. GENERAL CONDITIONS

1. The project authorities must strictly adhere to the stipulations made by the Goa Pollution Control Board (GPCB) and the State Government.

Stipulations made by GSPCB are strictly adhered to. Reports are either sent to Goa State Pollution Control Board (GSPCB) or uploaded on GSPCB Website. Regular site visits are made by GSPCB personnel to check the compliance status.

2. No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.

No expansion or modification in the plant is carried out without prior approval of MoEFCC. We have got Environment Clearance and Consent to operate for hot metal expansion from existing Blast furnace for production enhancement of 0.45 MTPA to 0.54 MTPA. We have applied for Environment clearance for setting up of Ductile Iron plant, Ferro Silicon Plant and additional Oxygen plant in the existing Pig Iron Expansion Plant premises near existing mini blast furnace.

3. The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The state Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. On-line continuous monitoring system shall be installed in stacks to monitor SPM and interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit. NOX burners shall be installed to control NOX levels.

Online stack monitoring instrument is installed for main stacks of Sinter plant (At Head End and Tail End), Hot Blast Stove and both WHRB stacks of Power Plant to track TPM and gases. Real time data are continuously going to CPCB portal. Interlock is provided for Sinter Machine, to ensure automatically stopping of the process when emission exceeds the limits.

The stack heights of stacks and latest data is as follows- (From October-19 to March-20)

Plant	Stack connected to	Height of stack	Particulate Matter in mg/Nm ³ (Avg.)	SO ₂ in mg/Nm ³ (Avg.)	NO ₂ in mg/Nm ³ (Avg.)
Sinter Plant	Main ESP	100m	44.6	4.1	NA
	Discharge end ESP	30m	41.55	Not Applicable as these are de-dusting stacks	
	Sinter Screening & Product bunker Bag Filter	30m	42.06		
	Proportioning bin bag filter	30m	44.97		
	Flux & Fuel Area bag filter	30m	44.6		
Blast Furnace	Cast House De-dusting	30m	42.9	Not Applicable as these are de-dusting stacks	
	Stock House De-dusting	30m	46.2		
	Hot Blast Stoves (HBS)	60m	33.66	17.66	27.01
Power Plant	Waste Heat Recovery Boiler-1	50m	37.11	42.09	40.92
	Waste Heat Recovery Boiler-2	50m	40.32	45.89	41.76

***99% of the time (on an avg.) stacks connected to coke oven batteries are closed from top and coke oven flue gases with temperature of almost 1100°C are diverted to waste heat recovery boiler for clean power generation. As per latest consent granted by Goa State Pollution Control, the unit should carry out emission monitoring from the stacks of Waste Heat recovery boiler chimney attached to coke oven plant once in three month, which is carried out regularly and reports are sent/uploaded to GSPCB. However due to the structural weakening of Waste Heat Recovery Boiler 2 chimney, stack monitoring was not done for the aforesaid chimney for 2 Quarters. The same has been communicated to State Pollution Control Board and the chimney is likely to be replaced by June 2020.**

- 4. At least four ambient air quality-monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of SPM, SO₂ and NO₂ are anticipated in consultation with the GPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bangalore I GSPCB I CPCB once in six months.**

AAQM locations are approved by GSPCB and the monthly reports are submitted to GSPCB. Two Continuous Ambient Air Quality Stations have been set up. Data on Air Quality, Stack emissions is submitted once in six months to MOEF (RO). Monthly AAQM reports are submitted to GSPCB. All

12 parameters as per NAAQM are monitored; other parameters are Below Detection Limits. Ozone and Ammonia are found in traces. Table is attached above in specific condition no.(i) ; Ambient Air Quality Reports and Stack Monitoring Reports are submitted regularly to MOEF, CPCB & GSPCB along with six monthly compliance report. All the values are within limits.

- 5. In-plant control measures for checking fugitive emissions from all the vulnerable sources like Sinter plant, Blast Furnace area etc. shall be adopted. Further, specific measures like water sprinkling shall be carried out at the stock piles of raw material, stacker reclaimer, transfer points etc. Dust extraction system and bag filters shall be provided to the sinter plant, stock house and blast furnace. Centralized de-dusting system i.e. collection of fugitive emissions through suction hood and subsequent treatment through bag filter or any other device and finally emitted through a stack of appropriately designed shall be provided. Fugitive emissions shall be controlled, regularly monitored and records maintained.**

Individual Pulse Jet Bag Filters are provided for Cast House, Stock House of Blast Furnace and Flux & Fuel House, Proportioning House, Sinter Screening House of Sinter Plant. These Pulse jet bag filters cover various capture points such as screening, transfer stations, etc. Electrostatic precipitators (ESPs) are provided at Head & Tail end of Sinter Machine of the Sinter Plant. Rain gun sprinklers are provided & operated at the Raw material yard of the Sinter Plant & Blast Furnace. Windscreens are also installed along the raw material boundary wall. Windshields are installed at the Pig Iron dispatch yard. All the stacks are of adequate height as per the design. Fugitive emissions are controlled, monitored & records maintained. Dust suppression system installed at raw material hoppers.

- 6. Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The treated wastewater shall be utilized for plantation purpose.**

All Process water from Coke, Blast Furnace, and Sinter Plant is recycled and reused after appropriate treatment. Blow down from Cooling Tower of Power Plant is let out into Mandovi river after temperature & pH adjustment as per GSPCB. Cooling tower blow down is monitored every month before disposal into river. Readings Of the same are attached in Annexure III.

- 7. The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods. Silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (night time).**

Overall noise levels in and around the plant area is on an average less than 85dB (A). Enclosures, acoustic hoods, silencers, etc. are provided wherever necessary. The ambient noise levels conforms to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime) at the boundary of the plant.

8. The company shall develop surface water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.

Surface rain water harvesting and ground water recharging are in vogue as per the advise of Sr. hydro geologist from Water Resource Department (WRD) of Goa. Roof top rain water is directed to tanks and reused. Around 300000 m³ rain water (from mid-June- mid October) is collected in excavated pits. The stored water is used for process in blast furnace, shell cooling and slag granulation. Also, water which is drawn from the Napoli (mining) pit and is used for the process is obtained by Rain Water Harvesting.

9. Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

Occupational Health Surveillance of the workers is carried out on a regular basis and records maintained as per the Factories Act. An Occupational Health Centre with an ambulance and Occupational physician (Company employee) and Para-medicos are available.

10. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report. Further, the company shall undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.

There are three villages around the units. We have done the need assessment of the area and working towards the overall development of the villages in various thrust areas like Health, Education, livelihood creation & creation of social infrastructure. There is continuous engagement with all the concerned stakeholders to understand the concerns and finding solutions through consultation process.

11. The project authorities shall earmark adequate capital cost and recurring cost/annum for environment pollution control measures and utilize judiciously to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Ministry's Regional Office at Bangalore. The funds so provided shall not be diverted for any other purpose

HSE department with competent employees looks after Environmental Management with Management support. An earmarked budget has been allotted with adequate provisions for implantation, operation and maintenance of Environment Pollution Control Measures

12. The Regional Office of this Ministry at Bangalore/CPCB/GPCB will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.

6 monthly compliance report & monitored data is submitted to MoEF, CPCB & GSPCB regularly on six monthly basis. The report & data uploaded on to company website: -
<http://sesagoaironore.com/sustainability/hse/environment-reports/>

13. **The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the GPCB and may also be seen at Website of the Ministry of Environment and Forests at <http://envfor.nic.in>. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office.**

The information about grant of Environmental Clearance was published in 2 local newspapers as per the condition of EC. English Daily "Navhind Times" dated 12/06/2009 & Marathi Daily "Tarun Bharat" dated 12/06/2009.

14. **Project authorities shall inform the Regional Office as well as the Ministry. the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work**

The first Consent to Operate was granted for following units in below mentioned years:-

Coke Plant	08/9/2011
WHRPP	22/12/2011
BF	08/06/2012
Sinter Plant	09/11/2012

Additional Recommendations on 25/4/12, when amendment in EC was granted

1. **The NAAQS issued by the Ministry vide GSR No 826 (E) dated 16th November 2009 shall be followed.**

12 parameters as mentioned in NAAQS are monitored at AAQ stations and reports are submitted to GSPCB.

2. **The Project Proponent shall also submit 6 monthly reports on the status of the compliance of stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to respective RO of MOEF, respective ZO of CPCB & SPCB. RO of MOEF at Bangalore/CPCB/GSPCB shall monitor the conditions.**

Complied. Six monthly compliance reports submitted to RO of MOEF at Bangalore with cc to CPCB & GSPCB. Also monitored parameters are submitted to the authorities as mentioned in above clauses.

3. **Environmental Statement for each financial year ending 31st March in Form V as is mandated to be submitted by project proponent to GSPCB as prescribed under EPR 1986 shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to respective ROs of MOEF by e-mail.**

Complied. The Environmental Statements for all units, viz, Coke Plant, Power Plant, Blast furnace and Sinter Plant for year 2018-19 are submitted on 30th September 2019.

4. **The Company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter-alia address (i) SOP to bring into focus any Infringent/deviation/violation of EC conditions (ii) Hierarchical system or Administrative order of the company to deal with environmental issues and ensuring compliance to EC conditions (iii) System of reporting of noncompliance/violation environmental norms to Board of Directors of the company or/and stakeholders or shareholders.**

Corporate Environment Responsibility Policy Action Plan was submitted to MOEF, CPCB and GSPCB on 20/11/12 along with 7th Six Monthly EC Compliance. If any changes are incorporated in CER, same will be intimated to the authorities. Environmental issues are discussed periodically in Vedanta Sustainability Committee Meeting. This Sustainability Committee reports to the Board of Directors, which reviews performance on 6 monthly basis.

Additional Conditions as per Amendment to Environmental clearance via letter No:- F. No. J-11011/946/2007-IA.II(I) dated 07/01/2020

1. **Additional filter beds, arrester wall shall be provided along the Storm Water Drainage for settlement of Suspended Particles and to prevent siltation. The runoff water shall be diverted in settling ponds to prevent any siltation of river/nallah/fields.**

Storm water drains are provided with filter beds. The additional filter beds and arrester walls are already provided before monsoon. The runoff water is diverted into the settling ponds to prevent siltation of river/nallah/fields.

2. **All the transportation roads within the project premises shall be fully asphalted/ concreted in a phased manner to ensure the reduction of fugitive emissions and to get a clear runoff during monsoon.**

Majority of the roads are asphalted and the remaining roads will be asphalted or concreted in a phase-wise manner. Also, it will be pertinent to note that budget is allocated for the same annually.

3. **Regular monitoring of ground water quality shall be carried out in one open well each in three villages i.e., Amona, Navelim and Maina villages in the post and pre-monsoon seasons and the results shall be submitted to GSPCB under intimation to RO, MOEF & CC Bangalore.**

Ground water quality monitoring was done in the surrounding villages i.e. Amona, Navelim and Maina in the month of January 2020. The reports are enclosed herewith as Annexure IV for your reference. The post-monsoon season monitoring shall be done after the monsoons.

4. **One additional Continuous Ambient Air Quality Monitoring Station (CAAQMS), in consultation with GSPCB shall be established within the project premise towards the adjoining village and monitoring reports shall be submitted to Goa State Pollution Control Board (GSPCB) and CPCB.**

There are six AAQMS units installed within the plant namely Near Amona Gate, Near Dispatch Gate, Compound wall towards Maina, Compound wall Towards Navelim, Near Satteri Temple and opposite BSNL exchange and Reports of the Monitoring done at these stations are submitted to GSPCB on monthly basis.. Also, additional two CAAQMS units are installed within the plant and are connected to GSPCB and CPCB. We have requested Goa State Pollution Control Board to provide seventh location for Ambient air monitoring.

5. **Additional sprinkling arrangement in the raw material stacking area shall be done to control fugitive dust within the project premise.**

Rain guns are provided in the stacking area for suppressing dust. Also, additional water tanker sprinkling is done in stacking yard.

5. **Secondary emission generated during charging, tapping of metal, slag tapping may be controlled by providing canopy hoods at proper elevation connected to air pollution control device without interfering with the production process.**

Bag Filters are provided to control the secondary emission with the hoods at the emission sources.

6. **The NOx and CO levels should be monitored at workplace at regular intervals (minimum once a week and controlled).**

We are monitoring NOx levels at 6 Locations and CO at multiple locations.

7. **Monthly monitoring of BaP, Pb, HC, VoCs shall be conducted and report shall be submitted to GSPCB and CPCB.**

We have non-recovery type coke oven plants. However, we have started carrying out the monthly monitoring of BaP, Pb, HC, VoCs

8. **Performance evaluation of all air pollution control devices should be carried out through competent agencies as per the predetermined maintenance protocol of each equipment and report submitted to GSPCB and CPCB.**

We have sent enquiry for conducting the performance evaluation of all the air pollution control devices. However, due to situation created because of COVID-19, the Party was not able to visit and inspect the site for submitting their quotations and will do so as soon as situation permits.

9. The tree density in the existing greenbelt should be increased by planting local species within the project boundary areas adjoining villages as per CPCB guideline.

33% of dedicated green belt area has been marked within the premises. Every year plantation is taken up in the monsoon season to increase the density.

10. All above condition shall also be incorporated in the Six Monthly report submitted to Regional Office, Bangalore, MoEF&CC.

This is being complied hereby with this 22nd E.C Compliance report.

** Vedanta Limited (earlier known as Sesa Sterlite Ltd./Sesa Goa Ltd.) has implemented Blast Furnace (0.54MTPA), Sinter Plant (1MTPA), Coke Plant (0.3MTPA), Waste Heat Recovery Power Plant (30MW) vis-a-vis 50% of Environmental Clearance Capacity, as Phase1.*

With respect to Letter dated 25/4/12 from MOEF, name of Project Proponent has been changed from Sesa Industries Ltd. to Sesa Goa Ltd. And further to Vedanta Ltd. Also an amendment in EC has been issued by MOEF with respect to change in plant configuration with changes in stack dimensions.

- Vedanta Ltd. has got Environment Clearance and Consent To Operate for hot metal expansion from existing Blast furnace for production enhancement of 0.45 MTPA to 0.54 MTPA.
- We have applied for Environment clearance for setting up of 0.3 MTPA Capacity Ductile Iron plant, 0.005MTPA Capacity Ferro Silicon Plant, Increasing capacity of Existing plant from 0.54 MTPA to 0.65 MTPA through technology up-gradation, Setting up of 4 Coke ovens, Increase in Existing capacity of Production from old unit from 0.29 MTPA to 0.35 MTPA and Oxygen Plant in the existing Pig Iron Expansion Plant premises near existing mini blast furnace.

ANNEXURE-I**Ambient Air Monitoring data from October-19 to March-20**

1 NEAR AMONA GATE				
Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO₂)	Nitrogen Dioxide (NO₂)
1.10.2019	70.5	39.6	10.3	18.3
4.10.2019	75.2	42.8	11.3	19.3
8.10.2019	65.3	35.4	12.9	16.3
11.10.2019	60.9	30.6	10.5	15.5
15.10.2019	56.2	32.6	11.4	16.3
18.10.2019	52.9	29.5	10.6	10.5
22.10.2019	56.9	31.6	10.2	13.3
25.10.2019	51.8	29.8	11.4	13.7
29.10.2019	55.8	31.4	12.5	15.5
5.11.2019	66.3	37.2	12.2	20.1
8.11.2019	71.9	40.8	13.7	21.7
12.11.2019	62.1	31.5	14.2	19.1
15.11.2019	56.7	26.9	12.6	17.1
19.11.2019	54.2	30.1	13.2	17.4
22.11.2019	48.3	27.6	11.2	14.6
26.11.2019	53.2	26.7	12.6	17.3
29.11.2019	47.9	25.8	12.2	14.3
3.12.2019	65.2	36.7	11.8	19.2
6.12.2019	72.5	41.6	14.2	22.6
10.12.2019	61.7	30.3	13.6	18.2
13.12.2019	59.7	27.9	12.8	19.6
17.12.2019	56.7	32.4	11.6	15.3
20.12.2019	51.3	29.4	12.4	15.9
24.12.2019	57.2	28.6	13.6	18.6
27.12.2019	49.6	27.2	11.9	15.8
31.12.2019	60.3	34.8	13.1	20.7
4.01.2020	62.3	39.2	10.2	19.3
7.01.2020	64.2	40.2	10.9	18.2
11.01.2020	61.5	43.2	11.2	19.6
14.01.2020	65.3	41.5	10.9	17.2
18.01.2020	66.2	42.6	13.2	16.3
21.01.2020	62.3	39.5	14.2	15.6
25.01.2020	61.8	38.2	12.5	18.2
28.01.2020	58.3	37.6	11.5	20.5
4.02.2020	60.8	42.3	10.6	19.5

7.02.2020	64.2	41.2	11.5	20.4
11.02.2020	65.8	46.2	10.4	12.3
14.02.2020	61.3	41.5	12.5	20.6
18.02.2020	68.3	38.6	12.4	21.8
21.02.2020	67.2	39.5	11.6	18.3
25.02.2020	62.3	40.2	11.4	19.6
28.02.2020	64.2	41.7	11.7	17.4
3.03.2020	65.3	40.8	10.2	20.6
6.03.2020	62.9	39.8	11.5	18.5
10.03.2020	68.4	41.5	10.4	18.9
13.03.2020	65.3	40.7	10.9	18.7
17.03.2020	65.9	41.8	12.4	19.3

2 OPPOSITE BSNL EXCHANGE

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)
1.10.2019	72.3	35.2	11.3	15.3
4.10.2019	69.2	36.9	13.5	14.3
8.10.2019	65.3	31.5	11.5	16.2
11.10.2019	61.5	32.6	10.6	18.4
15.10.2019	70.2	34.6	10.4	15.3
18.10.2019	64.3	38.2	11.5	15.2
22.10.2019	59.2	39.7	12.3	14.9
25.10.2019	58.3	38.2	11.8	16.5
29.10.2019	58.3	36.4	12.3	15.7
5.11.2019	70.6	33.4	13.4	16.2
8.11.2019	66.9	35.8	12.1	15.5
12.11.2019	62.3	29.5	10.3	14.6
15.11.2019	63.7	30.5	9.8	17.5
19.11.2019	68.6	33.4	11.6	16.2
22.11.2019	66.3	39.8	10.3	14.2
26.11.2019	55.8	36.4	13.4	16.6
29.11.2019	54.8	37.2	13.3	14.4
3.12.2019	73.1	35.6	14.3	18.2
6.12.2019	64.9	34.5	13.3	16.8
10.12.2019	63.5	31.2	11.4	15.6
13.12.2019	66.7	32.4	10.6	19.1
17.12.2019	67.9	34.6	12.2	15.6
20.12.2019	69.1	40.2	13.1	16.7
24.12.2019	58.2	37.1	14.2	18.6
27.12.2019	56.8	38.9	14.6	15.5
31.12.2019	61.7	36.2	13.1	17.3
4.01.2020	69.3	32.6	11.2	19.6

7.01.2020	64.3	31.5	13.2	18.3
11.01.2020	66.3	34.9	12.6	17.5
14.01.2020	68.2	35.6	12.8	18.6
18.01.2020	65.9	32.5	13.4	18.9
21.01.2020	61.2	29.5	10.5	18.4
25.01.2020	64.3	32.5	12.4	16.3
28.01.2020	62.8	31.4	11.3	21.4
4.02.2020	62.3	35.6	10.3	20.3
7.02.2020	68.4	38.2	12.5	18.3
11.02.2020	70.2	40.2	11.4	19.2
14.02.2020	71.3	32.4	12.6	18.4
18.02.2020	63.6	39.5	10.5	19.6
21.02.2020	62.8	41.2	11.8	17.3
25.02.2020	64.9	38.2	10.4	20.3
28.02.2020	65.9	40.7	10.7	21.4
3.03.2020	65.3	38.3	10.6	18.3
6.03.2020	62.5	40.6	11.3	17.5
10.03.2020	64.9	39.5	9.8	19.6
13.03.2020	64.8	41.7	10.7	18.7
17.03.2020	63.9	40.8	10.2	18.2

3 NEAR DISPATCH GATE

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)
1.10.2019	65.3	32.5	10.3	15.3
4.10.2019	69.2	35.9	9.5	16.2
8.10.2019	68.3	34.2	10.4	14.8
11.10.2019	71.2	36.8	9.6	13.2
15.10.2019	65.3	32.8	8.3	15.9
18.10.2019	69.2	33.7	9.7	16.8
22.10.2019	61.2	36.8	10.5	14.7
25.10.2019	59.8	39.4	11.2	10.3
29.10.2019	64.2	32.8	12.4	15.9
5.11.2019	60.3	28.9	10.8	14.2
8.11.2019	62.4	31.7	10.9	15.6
12.11.2019	61.3	33.7	11.7	13.2
15.11.2019	66.9	32.8	10.2	14.3
19.11.2019	60.8	29.5	9.4	14.6
22.11.2019	65.5	30.6	10.6	15.6
26.11.2019	56.9	32.8	12.8	16.3
29.11.2019	56.7	31.4	13.1	15.2
3.12.2019	61.3	26.9	12.1	15.2
6.12.2019	65.7	33.4	11.7	16.2

10.12.2019	63.4	34.3	10.6	15.2
13.12.2019	68.2	35.7	11.5	16.9
17.12.2019	58.2	30.4	10.1	13.2
20.12.2019	62.9	31.5	11.9	16.4
24.12.2019	59.4	33.7	13.3	17.2
27.12.2019	57.5	32.6	14.2	16.3
31.12.2019	58.6	30.7	12.4	15.9
4.01.2020	60.2	32.2	11.3	16.2
7.01.2020	58.6	31.2	11.9	15.3
11.01.2020	62.3	35.6	12.3	19.5
14.01.2020	64.2	29.5	12.5	18.4
18.01.2020	58.3	34.2	10.5	16.3
21.01.2020	59.6	36.2	10.4	15.2
25.01.2020	61.4	30.5	12.6	16.2
28.01.2020	62.3	31.5	12.4	16.8
4.02.2020	63.5	38.2	9.5	18.2
7.02.2020	68.2	36.2	10.2	17.3
11.02.2020	65.3	34.5	9.8	16.3
14.02.2020	64.2	39.7	11.3	18.2
18.02.2020	62.9	40.5	11.4	19.5
21.02.2020	63.5	38.6	10.2	16.3
25.02.2020	65.8	37.2	12.4	15.7
28.02.2020	67.2	35.4	12.7	18.2
3.03.2020	60.2	38.4	10.6	17.9
6.03.2020	61.5	37.9	9.5	17.9
10.03.2020	60.8	39.5	9.8	15.3
13.03.2020	59.8	36.8	10.4	16.8
17.03.2020	63.5	40.5	10.6	19.8

4 COMPOUND WALL TOWARDS NAVELIM

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)
1.10.2019	72.6	32.9	11.3	16.2
4.10.2019	69.2	34.6	9.5	16.8
8.10.2019	68.2	31.6	10.2	15.8
11.10.2019	64.3	34.9	12.6	19.2
15.10.2019	71.3	38.6	13.2	16.3
18.10.2019	65.2	39.4	11.4	15.3
22.10.2019	62.9	40.1	10.5	17.4
25.10.2019	61.4	39.5	10.9	18.2
29.10.2019	60.9	38.5	9.4	17.3
5.11.2019	70.4	33.6	12.2	15.3
8.11.2019	71.7	32.6	10.7	17.1

12.11.2019	66.9	30.8	11.7	16.8
15.11.2019	61.8	33.4	13.2	20.3
19.11.2019	69.6	36.9	12.3	15.6
22.11.2019	63.2	37.3	13.1	17.2
26.11.2019	59.6	37.1	11.4	16.2
29.11.2019	58.2	36.9	12.3	19.5
3.12.2019	72.1	34.6	13.1	16.4
6.12.2019	69.2	31.8	11.3	15.4
10.12.2019	68.2	32.8	12.1	17.6
13.12.2019	63.7	34.6	11.9	19.6
17.12.2019	67.9	35.1	13.2	16.2
20.12.2019	64.8	36.9	14.2	18.8
24.12.2019	61.7	38.6	12.9	17.6
27.12.2019	60.7	37.7	13.6	21.3
31.12.2019	63.7	38.2	14.2	23.5
4.01.2020	75.6	49.3	12.6	19.5
7.01.2020	78.3	48.5	15.2	20.3
11.01.2020	79.2	50.1	14.6	21.3
14.01.2020	80.4	48.6	16.3	22.5
18.01.2020	78.1	47.5	15.3	23.5
21.01.2020	75.6	49.6	13.2	24.6
25.01.2020	76.3	48.1	14.8	21.3
28.01.2020	74.8	49.1	15.3	22.9
4.02.2020	71.6	45.6	11.6	22.5
7.02.2020	75.3	48.3	13.2	20.5
11.02.2020	76.2	46.8	12.5	21.6
14.02.2020	71.4	46.9	12.4	19.5
18.02.2020	77.3	45.2	13.5	19.3
21.02.2020	75.4	49.7	12.9	21.4
25.02.2020	76.3	48.2	13.7	22.8
28.02.2020	72.8	48.7	14.1	21.4
3.03.2020	70.6	42.6	13.2	24.5
6.03.2020	72.5	43.9	12.5	23.6
10.03.2020	70.9	45.1	12.4	21.8
13.03.2020	73.5	42.8	11.9	24.9
17.03.2020	69.8	45.7	12.5	20.5

5 NEAR SATERI TEMPLE

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)
1.10.2019	72.6	36	9.5	15.3
4.10.2019	71.6	39.2	9.8	14.2
8.10.2019	35.6	35.5	10.4	13.9

11.10.2019	69.5	32.6	9.3	16.5
15.10.2019	71.4	34.9	10.4	16.2
18.10.2019	68.3	37.2	11.3	15.8
22.10.2019	65.4	39.6	10.7	15.7
25.10.2019	68.3	40.1	10.6	14.8
29.10.2019	62.4	38.7	9.5	17.2
5.11.2019	68.6	32.5	11.2	17.2
8.11.2019	69.3	37.4	10.3	15.4
12.11.2019	52.8	26.1	12.1	14.3
15.11.2019	62.8	29.4	11.3	15.6
19.11.2019	69.2	35.7	13.2	18.1
22.11.2019	65.6	36.2	12.6	14.5
26.11.2019	62.5	37.9	13.3	16.6
29.11.2019	64.7	38.1	12.5	15.9
3.12.2019	70.3	34.6	12.6	19.2
6.12.2019	72.6	39.1	11.2	17.2
10.12.2019	55.9	28.4	13.4	16.4
13.12.2019	64.5	31.2	12.9	17.3
17.12.2019	73.4	38.6	14.2	20.2
20.12.2019	63.9	35.2	19.9	15.1
24.12.2019	64.6	39.6	12.8	17.3
27.12.2019	66.7	40.5	13.7	18.1
31.12.2019	60.8	31.5	12.6	17.2
4.01.2020	68.3	31.2	10.6	20.6
7.01.2020	65.3	32.6	11.5	20.4
11.01.2020	69.2	32.9	11.3	21.9
14.01.2020	70.1	31.5	11.9	20.3
18.01.2020	69.3	33.6	10.3	21.5
21.01.2020	71.2	31.4	11.2	21.9
25.01.2020	68.3	33.9	12.6	18.3
28.01.2020	60.8	31.5	11.4	17.5
4.02.2020	62.6	35.2	11.2	21.6
7.02.2020	62.4	34.2	10.6	20.5
11.02.2020	65.3	38.6	9.4	23.2
14.02.2020	61.3	39.5	9.2	21.4
18.02.2020	62.9	40.5	8.6	20.8
21.02.2020	64.2	35.6	10.3	19.6
25.02.2020	65.1	34.8	10.6	18.2
28.02.2020	61.7	32.4	10.3	18.4
3.03.2020	60.9	38.6	10.9	18.3
6.03.2020	59.8	41.5	9.5	15.9
10.03.2020	63.4	38.2	9.36	16.9
13.03.2020	58.7	35.9	8.7	19.5
17.03.2020	63.8	35.7	9.3	18.7

6 COMPOUND WALL TOWARDS MAINA

Date	Particular Matter PM 10	Particular Matter PM 2.5	Sulphur Dioxide (SO ₂)	Nitrogen Dioxide (NO ₂)
1.10.2019	62.5	39.6	10.3	14.6
4.10.2019	65.5	38.4	9.6	15.8
8.10.2019	64.8	36.2	9.8	15.7
11.10.2019	69.3	39.6	10.4	14.3
15.10.2019	70.2	38.4	11.3	16.5
18.10.2019	71.3	39.6	12.5	17.3
22.10.2019	68.2	36.8	11.4	17.5
25.10.2019	69.3	37.4	10.6	18.2
29.10.2019	65.8	40.2	11.4	16.6
5.11.2019	60.1	37.3	11.2	15.3
8.11.2019	63.3	37.4	10.2	14.1
12.11.2019	61.4	33.4	9.1	13.8
15.11.2019	65.8	67.7	9.8	12.7
19.11.2019	66.9	34.2	10.2	14.5
22.11.2019	67.8	36.1	10.8	14.9
26.11.2019	61.9	32.9	8.9	13.7
29.11.2019	60.3	32.3	8.8	12.6
3.12.2019	64.1	40.2	12.1	16.2
6.12.2019	65.2	39.5	9.2	13.8
10.12.2019	63.6	35.7	10.1	14.7
13.12.2019	66.7	38.2	11.5	16.3
17.12.2019	69.7	36.2	12.4	17.6
20.12.2019	70.6	37.5	13.1	16.9
24.12.2019	72.6	40.1	12.3	18.1
27.12.2019	71.9	38.2	11.4	19.2
31.12.2019	66.8	41.6	12.7	15.1
4.01.2020	65.3	42.6	11.3	18.3
7.01.2020	64.9	44.2	12.5	18.2
11.01.2020	68.3	41.6	11.9	19.3
14.01.2020	70.2	43.5	10.4	20.3
18.01.2020	68.2	45.6	11.3	20.4
21.01.2020	65.3	42.9	11.8	21.5
25.01.2020	64.2	43.8	12.7	20.6
28.01.2020	68.3	42.1	11.4	19.5
4.02.2020	62.6	42.6	11.6	20.5
7.02.2020	65.3	41.8	12.4	19.3
11.02.2020	64.8	45	11.8	21.3
14.02.2020	69.2	43.5	10.6	21.5
18.02.2020	70.5	46.2	13.2	20.3

21.02.2020	65.3	42.8	12.4	21.4
25.02.2020	62.8	42.9	12.8	21.8
28.02.2020	64.7	42.1	11.7	19.8
3.03.2020	68.3	45.3	12.6	19.6
6.03.2020	70.2	41.9	11.5	21.5
10.03.2020	68.3	44.2	10.9	20.4
13.03.2020	69.4	41.6	11.5	23.5
17.03.2020	65.8	45.3	12.3	21.8

ANNEXURE II

STACK MONITORING DETAILS FROM October 2019 TO March 2020

1. SINTER PLANT

Sr. No	Month	Parameter	Stack Details				
			Head End ESP	Tail End ESP	Proportioning Dedusting	Screening Dedusting	Flux & Fuel Dedusting
1	October '19 - December '19	Particulate Matter(Mg/Nm3)	45.84	42.84	41.78	44.67	43.92
		SO2(Kg/Hr.)	3.92	NA	NA	NA	NA
2	January'20 - March'20	Particulate Matter(Mg/Nm3)	47.36	40.27	42.35	45.27	45.28
		SO2(Kg/Hr.)	4.28	NA	NA	NA	NA

2. BLAST FURNACE 3

Sr. No	Month	Parameter	Stack Details			
			Hot Blast Stove	PCM Cast House Dedusting	Stock House Dedusting	Pulverised Coal Injection
1	October '19 - December'19	Particulate Matter(Mg/Nm3)	48.02	44.9	51.2	49.6
		SO2 (Mg/Nm3)	20.04	NA	NA	NA
		Nox(Mg/Nm3)	39.6	NA	NA	NA
2	January'20 - March'20	Particulate Matter(Mg/Nm3)	25.3	40.9	41.2	47.9
		SO2 (Mg/Nm3)	15.29	NA	NA	NA
		Nox(Mg/Nm3)	14.42	NA	NA	NA

3. WASTE HEAT RECOVERY POWER PLANT- II

Sr.No	Month	Parameter	Stack Details	
			Waste Heat Recovery Boiler No 1	Waste Heat Recovery Boiler No 2
1	October '19 - December'19	Particulate Matter(PM)	36.58	40.32
		Sulphur Dioxide(SO ₂)	42.36	45.89
		Oxides of Nitrogen as (NO ₂)	40.87	41.76
2	January'20 - March'20	Particulate Matter(PM)	37.65	-
		Sulphur Dioxide(SO ₂)	41.83	-
		Oxides of Nitrogen as (NO ₂)	40.97	-

ANNEXURE III**Water Analysis data of Power Plant – October 2019 to March 2020**

Sr.No	Month	Parameter	CT Blowdown Discharge Before Treatment	CT Blowdown Discharge after Treatment
1	Oct.-19	PH	7.21	7.46
		Temperature (Deg. Cel.)	30	28.5
		Suspended Solid(mg/Lit)	69	62
		Oil & Grease (mg/Lit)	Less than 4	Less than 4
		Free Chlorine (mg/Lit)	Nil	Nil
		Phosphates as P	Less than 0.1	Less than 0.1
		Copper as Cu (mg/Lit)	0.36	0.29
		Chromium as Cr (mg/Lit)	<0.005	<0.005
		Iron as Fe (mg/Lit)	0.29	0.21
		Zinc as Zn (mg/Lit)	0.25	0.18
2	Nov.-19	PH	7.31	7.39
		Temperature (Deg. Cel.)	25	25.5
		Suspended Solid(mg/Lit)	66	60
		Oil & Grease (mg/Lit)	Less than 4	Less than 4
		Free Chlorine (mg/Lit)	NIL	NIL
		Phosphates as P	Less Than 0.1	Less Than 0.1
		Copper as Cu (mg/Lit)	0.33	0.26
		Chromium as Cr (mg/Lit)	<0.005	<0.005
		Iron as Fe (mg/Lit)	0.27	0.19
		Zinc as Zn (mg/Lit)	0.23	0.16
3	Dec.-19	PH	7.38	7.32
		Temperature (Deg. Cel.)	31.2	31.2
		Suspended Solid(mg/Lit)	62	61
		Oil & Grease (mg/Lit)	Less than 4	Less than 4
		Free Chlorine (mg/Lit)	NIL	NIL
		Phosphates as P	Less than 0.1	Less than 0.1
		Copper as Cu (mg/Lit)	0.34	0.24
		Chromium as Cr (mg/Lit)	<0.005	<0.005
		Iron as Fe (mg/Lit)	0.28	0.17
		Zinc as Zn (mg/Lit)	0.21	0.18
4	Jan.-19	PH	7.32	7.34
		Temperature (Deg. Cel.)	31.6	31.5
		Suspended Solid(mg/Lit)	66	62
		Oil & Grease (mg/Lit)	Less than 4	Less than 4
		Free Chlorine (mg/Lit)	NIL	NIL

		Phosphates as P	Less than 0.1	Less than 0.1
		Copper as Cu (mg/Lit)	0.32	0.28
		Chromium as Cr (mg/Lit)	<0.005	<0.005
		Iron as Fe (mg/Lit)	0.29	0.18
		Zinc as Zn (mg/Lit)	0.24	0.15
5	Feb.-19	PH	7.32	7.28
		Temperature (Deg. Cel.)	31.6	31.2
		Suspended Solid(mg/Lit)	54	48
		Oil & Grease (mg/Lit)	Less than 4	Less than 4
		Free Chlorine (mg/Lit)	NIL	NIL
		Phosphates as P	Less than 0.1	Less than 0.1
		Copper as Cu (mg/Lit)	0.25	0.24
		Chromium as Cr (mg/Lit)	<0.005	<0.005
		Iron as Fe (mg/Lit)	0.17	0.15
		Zinc as Zn (mg/Lit)	0.13	0.12
6	Mar-19	PH	7.35	7.24
		Temperature (Deg. Cel.)	31.2	31.4
		Suspended Solid(mg/Lit)	51	42
		Oil & Grease (mg/Lit)	Less than 4	Less than 4
		Free Chlorine (mg/Lit)	Nil	NIL
		Phosphates as P	Less than 0.1	Less than 0.1
		Copper as Cu (mg/Lit)	0.23	0.21
		Chromium as Cr (mg/Lit)	<0.005	<0.005
		Iron as Fe (mg/Lit)	0.15	0.13
		Zinc as Zn (mg/Lit)	0.14	0.11

Parameters	Limits (For After treatment water)
pH	6.5-8.5
Suspended Solid(mg/Lit)	100
Oil & Grease (mg/Lit)	20
Free Chlorine (mg/Lit)	0.5
Phosphates as P(mg/Lit)	5
Copper as Cu (mg/Lit)	1
Chromium as Cr (mg/Lit)	0.2
Iron as Fe(mg/Lit)	1
Zinc as Zn(mg/Lit)	1

ANNEXURE IV

Mitra S. K. Private Limited



Unit No. 212, 5th Floor
Sahakar Road, Parel, Andheri East
Mumbai - 400 025
(Toll Free) 1800 100 1000 (022) 4013 0410
T : 01 22 4013 0410
F : 01 22 4013 0410
E : info@mskprivate.com, ms@mskprivate.com

TEST REPORT

Name & Address of the Customer :
VEDANTA LIMITED
Sesa Ghor, 20, EDC Complex,
Pattao, Panaji, Goa - 403001
W. O. No :- 1002/4800017111, Dtd. 21.12.2019

Report No. : MUM/ED/19-20
Date : 10.02.2020
Job Reference no: ED/WAT/MUM-2019/00026
Sample Description : Naveli, Ground Water
Date of Sampling : 11/01/2020

ANALYSIS RESULT

Sl. No	Parameter	Result	Unit	Desirable limit	Permissible limit	Method Sampling & Analysis
1	Color	<1.0	Hazen	5	15	IS 3025 (part 4) 1983
2	pH value	6.84 at 25 degree	mg/l	6.5-8.5	6.5-8.5	IS 3025 (part 11) 1984
3	Turbidity	<1.0	N.T.U	1	5	IS 3025 (part 10) 1984
4	Total dissolved solids (as TDS)	138	mg/l	500	2000	IS 3025 (part 16) 1984
5	Chloride (as Cl)	30.2	mg/l	250	1000	IS 3025 (part 32) 1984
6	Manganese (as Mn)	0.1	mg/l	0.1	0.3	APHA (23rd Edition) 3120 B 2017
7	Nitrate (as NO3)	4.8	mg/l	45	45	APHA (23rd Edition) 4500 NO3 E 2017
8	Sulphate (as SO4)	12.7	mg/l	200	400	IS 3025 (part 24) 1986
9	Total Hardness (as CaCO3)	76	mg/l	200	600	IS 3025 (part 21) 1983
10	Electrical Conductivity	244	µs/cm	-	-	APHA (23rd Edition) 2510 B
11	Total Suspended Solid (as TSS)	<2.5	mg/l	-	-	APHA (23rd Edition) 2540 C
12	Biochemical Oxygen Demand (as BOD)	<2.0	mg/l	-	-	IS 3025 (part 44) 1993
13	Chemical Oxygen Demand (COD)	<2.5	mg/l	-	-	APHA (23rd Edition) 5220 B 2017
14	Oil and Grease	<3.0	mg/l	-	-	IS 3025 (part 39) 1993
15	Phosphate (as PO4)	0.23	mg/l	-	-	APHA (23rd Edition) 4500 2017
16	Dissolved Iron	0.09	mg/l	-	-	APHA (23rd Edition) 3500 Fe B 2017
17	Calcium Hardness	44	mg/l	-	-	APHA 23 rd 3500 Ca B
18	Magnesium hardness as CaCO3	32	mg/l	-	-	APHA 23 rd 3500 Mg B

For, Mitra S K Private Limited



Authorized Signatory

Mitra S. K. Private Limited

Unit No. 212, 2nd Phase
Sardar Vallabhbhai Road, Phoenix, Andheri East
Mumbai - 400 072
(City : 022-4015 4015)
(Fax : 022-4015 4015)
(E-mail : mitra.s.k.private@rediffmail.com)

**TEST REPORT****Name & Address of the Customer :****VEDANTA LIMITED**

Sesa Ghor, 20, EDC Complex,

Pattao, Panaji, Goa - 403001

W. O. No :- 1002/4800017111, Dtd. 21.12.2019

Report No. : MUM/ED/19-20**Date : 10.02.2020****Job Reference no: ED/WAT/MUM-2019/00026****Sample Description : Maina , Ground Water****Date of Sampling : 11/01/2020****ANALYSIS RESULT**

Sl. No	Parameter	Result	Unit	Desirable limit	Permissible limit	Method Sampling & Analysis
1	Color	<1.0	Hazen	5	15	IS 3025 (part 4) 1983
2	pH value	6.73 at 25 degree	mg/l	6.5-8.5	6.5-8.5	IS 3025 (part 11) 1984
3	Turbidity	<1.0	N.T.U	1	5	IS 3025 (part 10) 1984
4	Total dissolved solids (as TDS)	26	mg/l	500	2000	IS 3025 (part 16) 1984
5	Chloride (as Cl)	15	mg/l	250	1000	IS 3025 (part 32) 1984
6	Manganese (as Mn)	<0.02	mg/l	0.1	0.3	APHA (23rd Edition) 3120 B 2017
7	Nitrate (as NO ₃)	1.72	mg/l	45	45	APHA (23rd Edition) 4500 NO ₃ E 2017
8	Sulphate (as SO ₄)	2.0	mg/l	200	400	IS 3025 (part 24) 1986
9	Total Hardness (as CaCO ₃)	12	mg/l	200	600	IS 3025 (part 21) 1983
10	Electrical Conductivity	45	µs/cm	-	-	APHA (23rd Edition) 2510 B
11	Total Suspended Solid (as TSS)	<2.5	mg/l	-	-	APHA (23rd Edition) 2540 C
12	Biochemical Oxygen Demand (as BOD)	<2.0	mg/l	-	-	IS 3025 (part 44) 1993
13	Chemical Oxygen Demand (COD)	<4.0	mg/l	-	-	APHA (23rd Edition) 5220 B 2017
14	Oil and Grease	<3.0	mg/l	-	-	IS 3025 (part 39) 1993
15	Phosphate (as PO ₄)	0.24	mg/l	-	-	APHA (23rd Edition) 4500 2017
16	Dissolved Iron	0.18	mg/l	-	-	APHA (23rd Edition) 3500 Fe B 2017
17	Calcium Hardness	8.0	mg/l			APHA 23 rd 3500 Ca B
18	Magnesium hardness as CaCO ₃	4.0	mg/l			APHA 23 rd 3500 Mg B

For, Mitra S K Private Limited



Authorized Signatory

Mitra S. K. Private Limited

Unit No. 212, 3rd Floor
Sardar Vallabhbhai Road, Panchsheel, Andheri East
Mumbai - 400 072
(City : 022-4015-4016)
(Fax : 022-4015-4016)
(E : msk@msk.co.in)

**TEST REPORT****Name & Address of the Customer :****VEDANTA LIMITED**Sesa Ghor, 20, EDC Complex,
Pattao, Panaji, Goa - 403001

W. O. No :- 1002/4800017111, Dtd. 21.12.2019

Report No. : MUM/ED/19-20**Date : 10.02.2020****Job Reference no: ED/WAT/MUM-2019/00026****Sample Description : Amona , Ground Water****Date of Sampling : 11/01/2020****ANALYSIS RESULT**

Sl. No.	Parameter	Result	Unit	Desir- able limit	Permissible limit	Method Sampling & Analysis
1	Color	<1.0	Hazen	5	15	IS 3025 (part 4) 1983
2	pH value	6.68 at 25 degree	mg/l	6.5- 8.5	6.5-8.5	IS 3025 (part 11) 1984
3	Turbidity	<1.0	N.T.U	1	5	IS 3025 (part 10) 1984
4	Total dissolved solids (as TDS)	282	mg/l	500	2000	IS 3025 (part 16) 1984
5	Chloride (as Cl)	94	mg/l	250	1000	IS 3025 (part 32) 1984
6	Manganese (as Mn)	<0.02	mg/l	0.1	0.3	APHA (23rd Edition) 3120 B 2017
7	Nitrate (as NO ₃)	21.0	mg/l	45	45	APHA (23rd Edition) 4500 NO ₃ E 2017
8	Sulphate (as SO ₄)	26.3	mg/l	200	400	IS 3025 (part 24) 1986
9	Total Hardness (as CaCO ₃)	72.0	mg/l	200	600	IS 3025 (part 21) 1983
10	Electrical Conductivity	487	µs/cm	-	-	APHA (23rd Edition) 2510 B
11	Total Suspended Solid (as TSS)	<2.5	mg/l	-	-	APHA (23rd Edition) 2540 C
12	Biochemical Oxygen Demand (as BOD)	<2.0	mg/l	-	-	IS 3025 (part 44) 1993
13	Chemical Oxygen Demand (COD)	<4.0	mg/l	-	-	APHA (23rd Edition) 5220 B 2017
14	Oil and Grease	<3.0	mg/l	-	-	IS 3025 (part 39) 1993
15	Phosphate (as PO ₄)	<0.15	mg/l	-	-	APHA (23rd Edition) 4500 2017
16	Dissolved Iron	<0.05	mg/l	-	-	APHA (23rd Edition) 3500 Fe B 2017
17	Calcium Hardness	48.0	mg/l			APHA 23 rd 3500 Ca B
18	Magnesium hardness as CaCO ₃	24	mg/l			APHA 23 rd 3500 Mg B

For, Mitra S K Private Limited



Authorized Signatory

