**Annexure-I & Appendix-1**

**Annexure- 1**

**DATA ON WATER USES, WASTE WATER GENERATION AND WATER CHARGES**

**(Coal/ Lignite based Thermal Power Plants)**

1. **Name of the power plant:**
2. **Plant Capacity and details of units installed:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Unit Size (MW)** | **No. of Units** | **Total Capacity****(MW)** | **Year of Commissioning** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. **Coal Data:**

|  |  |
| --- | --- |
| Type of coal (Domestic/ Imported) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Coal consumption at 100% MCR (TPH)** | **GCV of coal (kcal/kg)** | **Ash content****(%age)** |
| Design coal |  |  |  |
| Worst coal |  |  |  |

4. **Raw Water Data:**

1. *For fresh water/ sea water*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Source(s) of raw water** | **Distance of source from the plant, km** | **Allocation from each source, m3/h / cuses** | **Design raw water requirement of the plant, m3/h (m3/day)** | **Raw water storage provided in the plant, m3/ No. of days** | **Size/ area of raw water reservoir(s)** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

1. Whether plant is required to use treated sewage water also: Yes/ No

If yes, and

*already using treated sewage water*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Source(s) of treated sewage water** | **Distance of source/ STP from the plant, km** | **Contracted quantum to be used, m3/h (m3/day)** | **Broad quality parameters of treated sewage water being received** | **System provided in the plant for handling & treatment, if any** | **Details on use in different plant systems** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

or if

*scheme for use of treated sewage water is under implementation/ planning*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Available source(s) of treated sewage water** | **Distance of source/ STP from the plant, km** | **Expected availability of treated sewage water, m3/h (m3/day)** | **Broad details of the scheme** | **Current status** |
|  |  |  |  |  |
|  |  |  |  |  |

5. **Condenser Cooling System:**

*In case of wet cooling system*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Mode of Condenser Cooling (once through/ cooling Towers)** | **Type of Cooling Towers****(NDCT/ IDCT)** | **Design CW flow unit wise, m3/h** | **Design hot water & cold water temperature, deg C** | **COC in case of Cooling Towers** |
|  |  |  |  |  |
|  |  |  |  |  |

 *In case of dry cooling system*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Capacity of the unit, MW** | **Broad details of dry cooling system/ACC provided** | **Design heat load, MWt** | **Design ambient temperature, deg C** | **Design condenser pressure, ata/ kg/cm2** |
|  |  |  |  |  |
|  |  |  |  |  |

6. **Ash Data:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Design capacity of Fly Ash handling system(s) (t/h)** | **Design capacity of Bottom Ash handling system (t/h)** | **Mode of Ash** **Disposal (Wet/ HCSD/ Dry)** | **Ash : Water****Ratio for wet disposal/ HCSD** | **Distance of ash dyke from power plant, km** |
| **Fly Ash** | **Bottom Ash** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

7.  **Type of water uses & design flow/ consumption:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No** | **Description** | **Type of water, raw/ clarified/ filtered/ DM/ CW blowdown/ waste water/ treated sewage water** | **Design requirement/ consumption, m3/h (m3/day)** |
| i) | Cooling Tower make up, if applicable |  |  |
| ii) | Fly ash disposal |  |  |
| iii) | Bottom ash disposal |  |  |
| iv) | DM water make up |  |  |
| v) | Potable water (plant / colony) |  |  |
| vi) | HVAC make up |  |  |
| vii) | Service water |  |  |
| viii) | Coal dust suppression |  |  |
| ix) | FGD |  |  |
| x) | DeNOx  |  |  |
| xi) | Horticulture |  |  |
| xii) | Any other (specify) |  |  |
|  | Total |  |  |

8. **Waste Water Generation & Disposal:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No** | **Description** | **Design flow/ quantity, m3/h (m3/day)** | **Quantity used, m3/h (m3/day)** | **Balance quantity (unused), m3/h (m3/day)** |
| i) | CT Blow down  |  |  |  |
| ii) | Clarifier sludge |  |  |  |
| iii) | DM & CP plant regeneration |  |  |  |
| iv) | Filter backwash |  |  |  |
| v) | Boiler blow down |  |  |  |
| vi) | FGD waste water |  |  |  |
| vii) | Any other (specify) |  |  |  |
| viii) | Total |  |  |  |
| ix) | Mode of disposal of unused waste water |  |

**9. Ash Water Recovery System (AWRS):**

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Description** | **Detail** |
| i) | AWRS provided (Yes/ No) |  |
| ii) | If yes, year of operationalization |  |
| iii) | Broad details of AWRS provided |  |
| iv) | Design capacity of AWRS, m3/h |  |
| v) | Recovery/ expected recovery, % |  |

**10. Rain Water Harvesting:**

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Description** | **Detail** |
| i) | Details of rain water harvesting system provided |  |
| ii) | Size & storage capacity of rain water harvesting pond provided |  |
| iii) | Data on rain water collected & used in plant systems |  |

**11. Rate of Water Charges:**

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Description** | **Detail** |
| i) | Rate of raw water charges including cess, surcharge etc., Rs/m3 |  |
| ii) | Rate of process water charges including cess, surcharge etc., Rs/m3 |  |
| iii) | Rate of waste water discharge charges including cess, surcharge etc., Rs/m3 |  |
| iv) | Rate of treated sewage water charges including cess, surcharge etc., Rs/m3 |  |
| v) | Rate of any other applicable water charges including cess, surcharge etc., Rs/m3 |  |
| vi) | Any other related charges being paid by the utility |  |

**12.** **Statement of monthly generation, water drawal, waste water generation and water charges etc.:**

 To be furnished as per **Appendix- 1** enclosed.

**13. Water balance diagram for the plant:** To be enclosed

**14. Any other relevant information:**

**Appendix- 1**

**Statement of monthly generation, water drawal/ use, waste water generation and water charges etc.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No. | Description | April-18 | May-18 | June-18 | July-18 | Aug-18 | Sept-18 | Oct-18 | Nov-18 | Dec-18 | Jan-19 | Feb-19 | Mar-19 |
| (i) | Electricity units generated, kWh  |  |  |  |  |  |  |  |  |  |  |  |  |
| (ii) | Quantum of water drawal (sourcewise), m3  |  |  |  |  |  |  |  |  |  |  |  |  |
| (iii) | Quantum of water considered for payment of water charges (sourcewise), Rs. |  |  |  |  |  |  |  |  |  |  |  |  |
| (iv) | Water charges paid including cess, surcharge etc., if any (sourcewise), Rs. |  |  |  |  |  |  |  |  |  |  |  |  |
| (v) | Quantum of process water drawal, for once- through plants, m3  |  |  |  |  |  |  |  |  |  |  |  |  |
| (vi) | Process water charges paid (for once- through cooling plants) including cess, surcharge etc., if any |  |  |  |  |  |  |  |  |  |  |  |  |
| (vii) | Quantum of treated sewage water used, m3  |  |  |  |  |  |  |  |  |  |  |  |  |
| (viii) | Charges paid for treated sewage water including cess, surcharge etc., if any, Rs. |  |  |  |  |  |  |  |  |  |  |  |  |
| (ix) | Quantum of ash water sent to ash dyke, m3 |  |  |  |  |  |  |  |  |  |  |  |  |
| (x) | Quantum of ash dyke water recovered to the plant, m3 |  |  |  |  |  |  |  |  |  |  |  |  |
| (xi) | Quantum of ash dyke water overflow in surrounding drain, if any, m3 |  |  |  |  |  |  |  |  |  |  |  |  |
| (xii) | Quantum of treated waste water discharged from plant boundary, m3 |  |  |  |  |  |  |  |  |  |  |  |  |
| (xiii) | Charges paid for discharge of treated waste water including cess, surcharge etc., if any, Rs. |  |  |  |  |  |  |  |  |  |  |  |  |
| (xiv) | Any other related charges being paid, Rs.  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |
| (xv) | Method of measurement of raw water drawal |  |
| (xvi) | Location of raw water drawal measurement point |  |
| (xvii) | Method of measurement of waste water discharge |  |
| (xviii) | Location of waste water discharge measurement point |  |
|  |  |  \*\*\*\*\* |