

## CHAPTER 9 COMPLIANCE OF TOR

### 9.1 Background to Terms of Reference (TOR)

Ministry Of Environment And Forests, Government of India issued a Notification S.O. 1533 on 14 September 2006, under sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986 for any new project or activities requiring the prior environmental clearance from the Central Government or as the case may be, by the State Level Environment Impact Assessment Authority. The projects have been broadly placed in two categories - Category A and Category B, based on the spatial extent of potential impacts and potential impacts on human health and natural and man made resources. The proposed project falls under category A which shall require prior environmental clearance from the Ministry of Environment and Forests (MoEF), Government of India. For obtaining the said clearance, an Environment Impact Assessment (EIA) Report in respect of the project or activity addressing all relevant environmental concerns needs to be prepared. As per the new notification mentioned above, the EIA needs to be prepared as per the Terms of Reference (TOR) issued by MoEF. For this a required form was filled up and sent alongwith the Project Report for consideration to the MoEF's Expert Appraisal Committee. A presentation to the committee was made on 7 May 2007 and the project was appraised by the MoEF's Expert Appraisal Committee in the said meeting. A TOR was issued on 5 June 2007. A copy of the TOR is annexed. All the Points of the TOR are given below alongwith the compliance status.

### 9.2 Compliance of TOR

- (i) Details of the parameters considered for selection of the proposed site and its comparison with other sites considered.
  - Discussed in **Section 5.3.**
- (ii) Coordinates of the plant site as well as ash pond with toposheet.

- Latitude 20deg 26 min 02 sec North to 20 deg 27 min 43sec North and longitude 85 deg 45 min 28 sec East to 85 deg 75 min 07 sec East.  
Toposheet is given in Fig 3.1
- (iii) Distance of the site from HFL of river Mahanadi should be indicated.
  - About 2.2 km
- (iv) Is the site within 10 km of any defence installation and if so an NOC from the Ministry of Defence may be provided.
  - No
- (v) The study area should cover an area of 10-km radius around the proposed site.
  - Study area of 10-km radius around the proposed site has been considered.  
Please refer Chapter 3.0
- (vi) Land use of the study area as well as the project area shall be given. How much of the project area is Government / forestland and the status of obtaining possession of such land. In respect of private land, how is proposed to be obtained and if it is to be acquired by Govt., commitment of the Govt. for the same may be obtained.
  - Landuse of the area has been studied through satellite imagery and described in **Section 3.4**. Out of the total 990 acres of land, the Govt. land is about 21%. 4% of land is forestland which is dispersed in very small patches. A Land distribution detail is given below.

| Type of Land      | Category        | Area in Acs.   | Method of acquisition  | Present Status   |
|-------------------|-----------------|----------------|--|--|
| <b>Government</b> | Forest          | 39.340         | Through forest diversion plan  | Administrative Approval obtained and 10% charges paid. Consultant is being appointed for developing the forest diversion plan and implement the same |
|                   | Gochar          | 17.790         | De reservation to be done by collector for alienation Final approval to be obtained from GoO | Administrative Approval obtained and 10% charges paid. Proclamation from local Tahasildar is awaited   |
|                   | Leasable        | 88.770         |  |  |
|                   | Communal        | 22.550         |  |  |
|                   | Lift Irrigation | 1.990          | Final decision at GoO level.Rev.Dept. to write to WR Dept for land transfer                  | Administrative Approval obtained and 10% charges paid. Collector to write to the concerned dept and Govt. for alienation                             |
| Irrigation        | 38.780          |                |  |  |
|                   | <b>Total</b>    | <b>209.220</b> |  |  |
| <b>Private</b>    |                 | <b>780.084</b> | Acquisition process will start through consent order route                                   | Administrative Approval obtained and 10% charges paid. Documents already submitted to Govt. by RDC office 4(1) notification is expected soon         |
|                   | <b>G.Total</b>  | <b>989.304</b> |  |  |

(vii) Is the project area bisected by a water body? How will ash be transported from the plant to the ash pond lying on the opposite side of the water body and the precautions proposed to avoid spillage of ash into the water body.

- Yes, the project area is bisected by the Puri Main Canal. The ash in slurry form will be carried through closed pipeline over the bridge over Puri Main canal. There is no chance of ash spillage.

(viii) Location of any National Park, Sanctuary, Elephant / Tiger Reserve (existing as well as proposed), migratory routes, if any, within 10 km of the project site shall be specified and marked on the map.

- There is Chandaka - Dampara *Wildlife Sanctuary* & National Park towards 4 km south and Nandankanan National Park towards 7.5 km south-southeast. Figure 3.4 shows the forest areas in a map.

(ix) Land requirement for the project to be optimized.

- All facilities of the plant are laid out in close proximity to each other to the extent practicable so as to minimise the extent of land required. Ash pond area is kept minimum.
- (x) Topography of the area should be given clearly indicating whether the site requires any filling. If so, details of filling, quantity of fill material required, its source, transportation etc. should be given.
- Topography survey has been initiated. Soon after its conclusion, further details will be forwarded. The filling requirement in general will not be much.
- (xi) Impact on drainage of the area and the surroundings.
- The power plant is designed such a way that the rain water drains will be led to nearest storm water drain after water harvesting.
- (xii) Information regarding surface hydrology and water regime.
- Discussed in **Section 3.6**.
- (xiii) One season site-specific meteorological data shall be provided.
- Meteorological data for the summer season March-May 2007 has been provided. Please refer the **Annexure I**.
- (xiv) One season AAQ data (except monsoon) to be given. The monitoring stations should take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.
- Air quality monitoring has been carried out accordingly. Details given in **Section 3.5** and detailed results in **Annexure II**.
- (xv) Impact of the project on the AAQ of the area. Details of the model used and the input data used for modeling should also be provided. The air quality contours may be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The wind roses may also be shown on this map.
- Impact on air quality has been studied using dispersion model. Details have been provided in **Section 4.5**. The air quality contour maps have been provided in **Figures 4.1, 4.2, 4.3 and 4.4**.

(xvi) Fuel analysis to be provided. As also details of the source of fuel.

- Source of main fuel (coal) : Mahanadi Coal Fields – Talcher Coal Mines, situated at a distance of 60 km from the proposed power station.

Following is the typical analysis of run-off-mine coal (un-washed) expected out of coal fields in the vicinity of Orissa state (Talcher Coal Fields, particularly Mandakini Coal Block):

| Description                | Unit          | Min. –<br>Max.    | Annual<br>Typical<br>(Avg.) |
|----------------------------|---------------|-------------------|-----------------------------|
| <b>Proximate Analysis</b>  | %             |                   |                             |
| Volatile matter            | %             | 24.0-28.0         | 27+/-2%                     |
| Moisture                   | %             | 6.0 - 8.0         | 7.0-8.0                     |
| Ash                        | %             | 21.0-48           | 38+/-2%                     |
| Sulphur                    | %             | Less than<br>0.6% | Less than<br>0.6%           |
| Grindability Index         | HGI           | 58 to 61          | 59                          |
| Higher heating value (HHV) | k Cal /<br>kg | 3400-5180         | 4000-4200                   |
| Ash fusion temp.           | (deg. C)      | 1080-1400         | 1100                        |
| <b>Ultimate Analysis</b>   |               |                   |                             |
| Carbon                     | %             | 34.8-55.0         | 42-45                       |
| Hydrogen                   | %             | 2.09-3.28         | 2.5-2.8                     |
| Sulphur                    | %             | 0.51-0.61         | 0.5-0.6                     |
| Nitrogen                   | %             | 0.81-1.25         | 1.0-1.1                     |
| Oxygen                     | %             | 6.63-10.56        | 8.0-9.0                     |

(xvii) Details of fuel transportation.

- Coal from the mines is envisaged to be transported by bottom open rail wagons on the rail route. A main broad gauge railway line of South eastern Railways is existing at Naraj Mardhapur Railway station which is located adjacent to the proposed power station area. A take off point is to be constructed before the station for coal rakes to enter into the power station

area. Coal received at the power plant will be unloaded in to a track hopper while the rake is in motion in the Merry Go-Round (MGR) system.

(xviii) Source of water and its availability. Commitment regarding availability of requisite quantity of water from the competent authority.

- The source of water for the thermal power plant would be Mahanadi river which is at about a distance of 2 km from the power plant. The total requirement of raw water make-up is of the order of 40 cusecs (21 MGD) for the 1000 MW power plant capacity. Duly considering evaporation losses in the raw water storage pond, an allocation of 46 cusecs is being sought from the Irrigation authorities. As per a separate study report conducted by an independent agency, adequate quantity of river water is available throughout all seasons of the year and for all the years to come.

(xix) Details of rainwater harvesting and how it will be used in the plant.

- Rainwater harvesting details is given in **Section 6.7**.

(xx) Examine the feasibility of zero discharge. In case of any proposed discharge, its quantity, quality and point of discharge, users downstream etc. should be provided.

- The wastewater management has considered maximum recycling and reuse of the generated wastewater. After that whatever is excess will be discharged into the Mahanadi River. The details of wastewater management have been discussed in **Section 2.10**.

(xxi) Optimisation of COC for water conservation. Other water conservation measures proposed in the project should also be given.

- Clarified water is being proposed for CW make up. Based on the tentative water analysis the system is designed for an Optimal COC of 4.5, with CW treatment and side stream filtration. With this the system has the capability of operating at a higher COC in future.

(xxii) Details of water balance taking into account reuse and re-circulation of effluents

- **Table 2.2** provides the water requirement for the plant and details is discussed in **Section 2.8**.

(xxiii) Details of greenbelt i.e. land with not less than 1500 trees per ha giving details of species, width of plantation, planning schedule etc.

- Discussed in **Section 6.6**.

(xxiv) Detailed plan of ash utilization / management.

- Discussed in **Section 2.10**.

(xxv) Details of evacuation of ash. Location of the ash pond may be shown on a topo sketch with distance from the boundary of the ash pond to the nearest water body clearly shown.

- Ash pond and others shown in the layout plan. Discussed in **Sections 2.9 and 2.10**.

(xxvi) Details regarding ash pond impermeability and whether it would be lined, if so details of the lining etc.

- Bunds will be provided to contain the ash. Up stream slope of the bund will be protected by LDPE Lining, where as the down stream side slope will be protected by turfing. The LDPE Liner shall be 200 micron thick and of black colour. The lining shall have a 150 mm sand cushion at the bottom. The liner shall be protected by providing one layer of Brick 75 thick over a cement mortar layer of min 15 mm thick spread over the LDPE Liner. The LDPE Liner will be properly anchored at the top of the bund, at the berms and at the bottom of the bund with appropriate embedment with PCC in continuous trench.

Pond floor will also be lined to prevent seepage of ash into ground water as per the requirements of environmental authority. The floor shall be based with LDPE Liner of 150 microns thickness with a bottom sand cushions of 150 mm and top earth cover of 300 mm.

(xxvii) Detailed R&R plan shall be prepared taking into account the socio economic status of the area, homestead oustees, land oustees, landless laboureres.

- XIMB, Bhubaneswar is conducting the socio-economic study for the project. They are now involved in preparing the R & R plan for Project Affected People based on Government of Orissa's R & R policy. As homestead land in the identified land is negligible, there is no major displacement and resettlement work. The exact quantum of resettlement will be known after the report on Socio-economic study. Exact number of persons to whom jobs have to be provided will be known after the report on Socio-economic study. The report is expected to be ready by 30th September, 2007 which will be submitted to Collector

(xxviii) Details of flora and fauna duly authenticated should be provided. In case of any scheduled fauna, conservation plan should be provided.

- Discussed in details in **Section 3.10.**

(xxix) Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as the casual workers including truck drivers during operation phase.

- Discussed in details in **Section 4.2.**

(xxx) Public hearing points raised the commitment of the project proponent on the same.

- It will be done after public hearing

(xxxi) Measures of socio economic influence to the local community proposed to be provided by project proponent. As far as possible, quantitative dimension to be given.

- Tata group is well known for its social commitment. R&R plan will provide some relief to the project affected people. Further studies are being carried out.

(xxxii) Impact of the project on local infrastructure of the area such as road network and whether any additional infrastructure would need to be constructed and the agency responsible for the same with time frame.

- A Corporate Social Responsibility plan is under preparation and its details has been discussed in **Section 6.11.**

(xxxiii)EMP to mitigate the adverse impacts due to the project.

- **Chapter 6** details EMP.

(xxxiv)Risk assessment to be undertaken. Based on the same, proposed safeguard measures should be provided.

- **Chapter 7** details Risk Assessment & Onsite Emergency Plan.

(xxxv) Any litigation pending against the project details thereof.

- No

Besides, the above the following general points will be followed;

- a) All documents to be properly referenced with index, page numbers and continuous page numbering.
  - b) Where data is presented in the report especially in table, the period in which the data was collected and the source should invariably be indicated.
  - c) Where the documents provided are in a language other than English, an English translation should be provided.
- Report has been made accordingly.

In addition to the above, information on the following may also be incorporated in the EIA report.

1. Is the project intended to have CDM-intent?

- No

(i) If not, then why?

- There is yet no plan to apply for CDM approval in this project. However, there will be effort to reduce energy use in different operations of the plant thus helping the CDM intent indirectly.

(ii) If yes, then

- (a) Has PIN (Project Idea Note) {or PCN (Project Concept Note)}

submitted to the 'NCA' (National CDM Authority) in the MoEF?

- (b) If not, then by when is that expected?
- (c) Has PDD (Project Design Document) been prepared?
- (d) What is the “Carbon intensity” from your electricity generation projected (i.e. CO<sub>2</sub> Tons/MWH or Kg/KWH)
- (e) Amount of CO<sub>2</sub> in Tons/year expected to be reduced from the baseline data available on the CEA's web-site ([www.cea.nic.in](http://www.cea.nic.in))

2. Notwithstanding 1(I) above, data on (d) & (e) above to be worked out and reported.

(d) 1.04 tons/MWH, This value is similar to CEA result.

(e) No specific CDM projects have yet been identified.

After preparing the draft EIA covering the above mentioned issues, the proponent will get the public hearing conducted and take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.

-----00000-----