

BY REGD POST



**OFFICE OF THE
STATE POLLUTION CONTROL BOARD, ORISSA**

Parivesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII,
Bhubaneswar - 751 012

No. 5014 /Ind-II-NOC- 4568

Date 26-03-10

OFFICE MEMORANDUM

In consideration of the application for obtaining Consent to Establish for **M/s Tata Power Company Ltd.** the State Pollution Control Board has been pleased to convey its Consent to Establish under section 25 of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 for **Power Plant (coal based) of capacity 1000 MW (4X125MW + 2x250 MW) at – Village Naraj Marthpur** (Plot No. & Khata No. as mentioned in application form) in the district of **Cuttack** with the following conditions.

GENERAL CONDITIONS.

1. This Consent to establish is valid for the product, quantity, manufacturing process and raw materials as mentioned in the application and for a period of five years from the date of issue of this letter, provided commencement of production of the proposed project has not taken place in the meantime.
2. If the proponent fails to start operation of the project within five years but substantial physical progress has been made then a renewal of this consent shall be sought by the proponent.
3. Adequate effluent treatment facilities are to be provided such that the quality of sewage and trade effluent satisfies the standards as prescribed under Environment Protection Rule, 1986 or as prescribed by the Central Pollution Control Board and/or State Pollution Control Board or otherwise stipulated in the special conditions.
4. All emission from the industry as well as the ambient air quality and noise shall conform to the standards as laid down under Environment(Protection) Act. 1986 or as prescribed by Central Pollution Control Board/State Pollution Control Board or otherwise stipulated in the special conditions.
5. Appropriate method of disposal of solid waste is to be adopted to avoid environmental pollution.
6. The industry shall comply to the provisions of Environment Protection Act, 1986 and the rules made thereunder with their amendments from time to time such as the Hazardous Waste (Management & Handling) Rules 1989, Hazardous Chemical Rules, /Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 etc. and amendments thereunder. The industry shall also comply to the provisions of Public Liability Insurance Act, 1991, if applicable.

7. The industry is to apply for grant of Consent to operate under section 25/26 of Water(Prevention & Control of Pollution)Act, 1974 & Air (Prevention & Control of Pollution)Act, 1981 at least 3 (three) months before the commercial production and obtain Consent to Operate from this Board.
8. This consent to establish is subject to statutory and other clearances from Govt. of Orissa and/or Govt. of India, as and when applicable.

SPECIAL CONDITIONS :-

1. The proponent has to seek environmental clearance as per EIA notification 2006 and construction activity for the proposal shall commence after obtaining environmental clearance from MoEF, Govt. of India.
2. The proponent shall carry out construction activity as per approved lay out map (copy enclosed). Any deviation in approved layout map during construction activity shall be treated as violation of consent condition and appropriate action (including revocation of consent to establish) shall be taken as per law. If the proponent desires to change the approved plant layout map, they can submit a modified plant layout map surrendering the previous one and get it approve by the Board before going for physical construction activity
3. The height of each stack of power plant boiler shall not be less than 275 meters from the ground. The power plant shall have three stacks for flue gas emission.
4. The unit shall obtain clearance from Air Port Authority for construction of stack height of 275 mt. attached to the boilers for proposed thermal power plant.
5. Under no circumstances, the unit shall discharge effluent during rainy season to the nallah connected to Mahanadi barrage at Naraj. Location of discharge point for disposal of treated effluent during rainy season to river Mahanadi shall be decided in consultation with Board
6. The industry in no case shall obstruct the natural drains flowing through the proposed site and shall provide culverts and bridges of adequate di-mention wherever necessary for proper drainage of storm water.
7. The industry shall take all care not to allow any discharge into Puri Main canal and shall abide by norms of Irrigation Department, Govt. of Orissa particularly in the construction of culverts on the canal.
8. The industry shall take all care not to discharge any waste water into any other natural stream and surrounding land.
9. Necessary preventive measures shall be taken during construction phase so that the ambient air quality including noise shall conform to National Ambient Air Quality standards and standards for noise in industrial area as per Annexure-I.
10. The construction material which has potential to be air borne, shall be transported in covered trucks.
11. The unit shall install ESP in the stack attached to power plant boiler such that particulate matter emission shall not exceed $100\text{mg}/\text{Nm}^3$. The proponent has to design air pollution control equipment such as ESP to achieve emission standard of $50\text{ mg}/\text{Nm}^3$. They should make provision for one spare field during the design of

ESP. If more than one field of ESP fails, the plant should trip automatically through an interlocking system.

12. The unit shall provide port hole and platform at suitable location with safe approach to conduct emission monitoring at the stack.
13. The unit shall provide dust extraction system at crusher house, boiler bunker to control dust emission. CHP shall be installed in a shed and coal carrying conveyor belts shall be covered.
14. The unit shall install adequate dust extraction system as well as dust suppression system at all potential dust generating points to control fugitive dust emission and the ambient air quality inside the factory premises shall conform to the National Ambient Air Quality Standard as per Annexure – II.
15. Separate energy meter shall be installed for all the pollution control equipments and the records shall be maintained for verification of the Board from time to time.
16. The roads inside the plant premises shall be black topped. Permanent high pressure water sprinkling system shall be installed for regular spraying of water on roads to minimize fugitive dust emission.
17. Pneumatic conveyor system shall be provided as dust collection system for ESP dust. Silos shall be provided for collection of bottom ash and fly ash. Conveyor belt shall be closed and bag filter shall be provided at transfer points of conveyor system to control fugitive emission.
18. The unit shall take adequate measures for controlling of fugitive dust emission during transportation of fly ash for utilisation.
19. The proponent shall install continuous on line ambient air quality and stack monitoring system with display facilities at gate. Detail proposal to this effect shall be submitted to the Board and the monitoring result shall be submitted to the Board quarterly.
20. At least 7 continuous ambient air quality monitoring stations around the industry shall be set up to monitor PM-10, PM-2.5, SO₂, NO_x, CO and other important parameters as given in as per Annexure – II above within at least to the distance in down wind direction and where maximum ground level concentration is anticipated. The exact location of the monitoring stations shall be finalized in consultation with the State Pollution Control Board.
21. Good house keeping practices shall be followed to improved the work environment. All roads and shop floors shall be cleaned regularly.
22. Air pollution Control devices shall be maintained properly. Fabric bags and cages in bag house shall be checked regularly and replaced whenever required. Adequate availability of spares shall be ensured for immediate replacement.
23. Adequate space shall be earmarked for installation of Flue Gas Desulphurisation (FG) system in future if required. This shall also include management and disposal of solid waste to be generated from FGD system.
24. All the wastewater generated shall be discharged to a common monitoring basin before it is reused in the plant for various process.

25. The Blow down shall meet the following standards before it is discharged to the common basin.

Boiler Blow Down :

Suspended solids	-	100.0mg/l (max)
Oil & Grease	-	20.0 mg/l (max)
Copper (Total)	-	1.0 mg/l (max)
Iron (total)	-	1.0mg/l (max)

Cooling Tower Blow Down

Free available Chlorine	-	0.5 mg/l (Max)
Zinc	-	1.0 mg/l (Max)
Chromium (total)	-	2.0 mg/l (Max)
Phosphate	-	0.2 mg/l (Max)

26. The wastewater generated from leakages, blow downs and DM plant shall be treated individually to meet the prescribed standard of effluent discharge to inland surface water and stored in a common basin (i.e. guard pond) for utilization for plantation, dust suppression ash handling and green belt purpose inside the factory premises. Lining shall be provided in guard pond to prevent any seepage into ground to avoid ground water contamination. The proponent shall submit detail drawing with specification of ETP within 6 months.
27. Oil catch pits shall be provided in oil handling area of power plant for collection of spillage
28. The unit shall provide treatment system such as Reverse osmosis plant to treat the waste water generated from cooling tower blow down and reuse the same in the process.
29. The unit shall obtain clearance from Water Resources Deptt., Govt. of Orissa for drawal of 40.22 cusec water from river Mahanadi.
30. The proponent has to carry out the study for availability of water from river Mahanadi during lean season and obtain appropriate clearance from water resources department for drawl of water. The unit shall have to make provision for adequate storage of water at least for 15 days. The industry shall also to take preventive measures for protection of aquatic life at the river water intake system.
31. The storm water drains shall be maintained separately without being mixed up with the industrial effluent or sewage effluent. The domestic effluent from the industry as well as the colony shall be treated in proper sewage treatment plant to meet the prescribed BIS standard (SS – 30mg/l, BOD – 20mg/l) before being discharged or utilized for green belt development.
32. The industry shall adopt high concentration slurry disposal method (HCSD) for ash disposal.
33. Internal drainage arrangement like vertical sand chimney, horizontal sand blanket, rock toe. etc. shall be made for guiding the seepage water flow to the downstream side without any material erosion.
34. The internal and external slopes of the dykes with stone rip rap, turfing, etc. shall be adequately protected to take care of erosion due to wave action, rain cuts.
35. Provision of cut-off trench filled with impervious soils below the dyke section shall be made. This shall increases the length of seepage water flow in the foundation, thereby controlling the exit gradient, which safeguards erosion problem.

36. The foundation shall be prepared by removal of weak and organic materials, compaction by rolling, filling the voids and controlling the moisture on land surface. The dykes shall be constructed in layers compacted with rollers appropriate to the type of soil sued to achieve a dry density of above 95%.
37. **The industry shall submit a definite ash utilization plan to the Board. In case it is proposed to be used in cement plant, they should enter into an agreement with penalty provision. A copy of the agreement shall be submitted to the Board. Ash generated shall be used in a phased manner as per provisions of the notification on fly ash utilization issued by the Ministry of Environment and Forest, Govt. of India dt. 3rd November, 2009. . By the end of 5th year full fly ash utilisation shall be ensured.**
38. The fly ash shall be utilized as per the proposal submitted by you and enclosed as **Annexure – III.**
39. Rain water harvesting structure shall be developed inside the plant premises as per concept and practices made by CPCB and maximum efforts shall be made to reuse harvested rain water, with a definite plan and programme to reduce the drawal of fresh water from water bodies.
40. The unit shall explore the possibility of disposal of fly ash in abandoned mine pit for complete utilization of fly ash.
41. The unit shall submit details of hazardous chemicals and storage facility and risk assessment to the Board.
42. The unit shall open a new ITI unit or adopting existing ITI of imparting training to local youth so that they can be absorbed in the proposed plant as skilled manpower.
43. The proponent shall take precautionary measures to prevent surface run off from ash disposal area during torrential rain. A detailed proposal to this effect is to be submitted within 3 months.
44. Basic structure of the plant in the proposed site should be designed by taking the highest storm/cyclone condition.
45. Plantation activity should be carried out before construction work of plant.
46. The Disaster Management Plan (DMP) of the unit shall be prepared and submitted within 3 months.
47. Adequate fund shall be earmarked in the annual operating budget for environmental management system.
48. **The industry shall comply with all the conditions stipulated under Charter on Corporate Responsibility for Environmental Protection (CREP) guidelines in a time bound manner as envisaged there in.**
49. Standby pollution control equipments or alternate arrangements shall be kept ready so that no point of time even under worst condition any emission or effluent shall be discharged without meeting the prescribed norms.
50. Depending on the environmental condition, stricter standards may be imposed for the effluent or restriction for discharge may be made for which adequate facilities from the beginning shall be made to meet such situation in future.
51. The industry shall take up adequate measure for routine health check up of its employees / workers and the people residing in the neighborhood of the plant free of cost.

52. The industry shall set up a full fledged environment monitoring laboratory and an environment management cell with qualified personnel for monitoring of pollutants and effective remedial measures in case of necessity. Head of the environmental management cell shall report to the unit head. A detail proposal to this effect shall submitted to the Board.
53. The civil construction shall be carried out with the fly ash bricks. If the fly ash bricks are not available locally the civil construction may carried out with other bricks with prior intimation to the concerned Regional Office of SPC Board. A statement indicating use of fly ash bricks during construction period shall be submitted to the Board quarterly for record.
54. The land on which the unit is proposed to be established the power plant shall be converted to industrial use Kisam by the competent authority. The copy of said land conversion document shall be submitted to the Board alongwith consent to operate application.
55. **A green belt of adequate width and density preferably with local species along the periphery of the plant shall be raised so as to provide protection against particulates and noise. It must be ensured that at least 33% of the total land area shall be under permanent green cover. The proponent shall ensure the maintenance of green belt throughout the year and for all time to come. It is advised that they may engage professionals in this field for creation and maintenance of the green belt. An action plan for this purpose shall be prepared and shall be submitted accordingly.**
56. The project proponent shall apply for grant of consent (Consent to operate) under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 preferably before 4 (four) months of the commercial production where further conditions may be imposed. But the conditions laid down in No Objection Certificate shall be fulfilled before applying for consent.
57. **No production activity shall commence prior to installation of the pollution control devices. In case, it is found that the plant is operating without installation of appropriate pollution control equipment(s) and without permission for trial operation from the Board, a direction of closure shall be issued u/s 31-A of Air (PCP) Act, 1981 and /or u/s 33-A of Water (PCP) Act, 1974 without any further notice in this regard.**
58. The Board may impose further conditions or modify the conditions stipulated in this order during installation and / or at the time of obtaining consent to operate and may revoke this clearance in case the stipulated conditions are not implemented and / or any information suppressed in the application form.

Encl : Approved layout Map & Annexures

✓ To,

The Senior General Manager,
M/s Tata Power company Ltd.,HIG-22,BDA Colony,
Jayadev Vihar, Bhubaneswar- 751013

Sda
20/3/11
MEMBER SECRETARY

Memo No. _____/dt.

Copy forwarded to :

1. The Collector, Cuttack
2. The Director of Factories & Boiler, Bhubaneswar
3. DFO, Cuttack
4. Sr. Environmental Engineer (C)
5. Regional Officer, SPC Board, Cuttack
6. Haz. Waste Management Cell
7. General Manager, IPICOL, IPICOL House, Bhubaneswar
8. Copy to Guard File
9. Consent Section

SR. ENV. ENGINEER (N)

SCHEDULE
(see rule 3(l) and 4(l))

Ambient Air Quality Standards in respect of Noise

Area Code	Category of Area/Zone	Limits in dB(A) Leq *	
		Day Time	NightTime
(A)	Industrial area	75	70
(B)	Commercial area	65	55
(C)	Residential area	55	45
(D)	Silence Zone	50	40

Note

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is defined as an area comprising not less than 100 metres around hospitals, educational institutions and courts. The silence zones are zones which are declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

*dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq : It is an energy mean of the noise level, over a specified period.

[F. No. Q-14012/1/96-CPA]
VIJAI SHARMA, R. Secy.

SCHEDULE
(see rule 3(l) and 4(l))

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(C)	Residential area	55	45
(D)	Silence Zone	50	40

टिप्पण :

1. जव कभी और जहां भी किसी अपने-अपने प्रवर्ग के लिये दो क्रमिक प्रदूषण दिनों पर मापित मूल्य, ऊपर विनिर्दिष्ट सीमा से अधिक हो तो इसे नियमित या निरंतर प्रदूषण तथा अतिरिक्त अद्वेषण करवाने के लिये पर्याप्त कारण समझा जायेगा।"

[फा. सं. क्यू-15017/43/2007-सी.पी.डब्ल्यू.]

रजनीश दुबे, संयुक्त सचिव

टिप्पण : मूल नियम, भारत के राजपत्र में असाधारण सं.का.आ.844 (अ), तारीख 19 नवम्बर 1986 द्वारा प्रकाशित किये गये थे और पश्चातवर्ती संशोधन सं.का.आ.433 (अ), तारीख 18 अप्रैल 1987, सा.का.नि. 176 (अ), तारीख 2 अप्रैल 1996 और हाल में ही सा.का.नि. 97 (अ), तारीख 18 फरवरी 2009; सा.का.नि. 149 (अ), तारीख 4 मार्च, 2009; सा.का.नि. 512 (अ), तारीख 9 जुलाई, 2009; सा.का.नि. 543 (अ), तारीख 22 जुलाई, 2009; सा.का.नि. 595 (अ), तारीख 21 अगस्त, 2009; और सा.का.नि. 974 (अ) तारीख, 04 नवम्बर 2009 द्वारा प्रकाशित किए गए।

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 16th November, 2009

G.S.R. 826(E).— In exercise of the powers conferred by section 6 and section 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:—

1. (1) These rules may be called the Environment (Protection) Seventh Amendment Rules, 2009.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Environment (Protection) Rules, 1986 (hereinafter referred to as the said rules), in rule 3, in sub-rule (3B), for the words, brackets, figures and letters, "in columns (3) to (5) of Schedule VII", the words, brackets, figures and letters "in columns (4) and (5) of Schedule VII" shall be substituted.

3. For Schedule VII to the said rules and entries relating thereto, the following Schedule and entries shall be substituted, namely:—

"[SCHEDULE VII]

[See rule 3(3B)]

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and Other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual* 24 hours**	50 80	20 80	- Improved West and Gacke -Ultraviolet fluorescence
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual* 24 hours**	40 80	30 80	- Modified Jacob & Hochheiser (Na-Arsenite) - Chemiluminescence
3	Particulate Matter (size less than 10µm) or PM ₁₀ µg/m ³	Annual* 24 hours**	50 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation

(1)	(2)	(3)	(4)	(5)	(6)
5	Ozone (O ₃) µg/m ³	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical Method
6	Lead (Pb) µg/m ³	Annual* 24 hours**	0.50 1.0	0.50 1.0	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper - ED-XRF using filter
7	Carbon Monoxide(CO) mg/m ³	8 hours** 1 hour**	02 04	02 04	- Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia(NH ₃) µg/m ³	Annual* 24 hours**	100 400	100 400	-Chemiluminescence -Indophenol blue method
9	Benzene (C ₆ H ₆) µg/m ³	Annual*	05	05	- Gas chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m ³	Annual*	01	01	- Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As), ng/m ³	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni), ng/m ³	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note.— Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.”

[F. No. Q-15017/43/2007-CPW]

RAJNEESH DUBE, Jt. Secy.

Note.— The principal rules were published in the Gazette of India, Extraordinary vide number S.O.844(E), dated the 19th November, 1986; and subsequently amended vide numbers S.O. 433(E), dated the 18th April, 1987; G.S.R. 176 (E), dated the 2nd April 1996; and were recently amended vide numbers G.S.R. 97(E), dated the 18th February, 2009; G.S.R. 149(E), dated the 4th March, 2009; G.S.R. 506(E), dated the 9th July, 2009; G.S.R. 543(E), dated the 22nd July, 2009; G.S.R. 506(E), dated the 11th August, 2009; and G.S.R. 794(E), dated the 4th November, 2009.

Annexure III (A)

**A NOTE
ON
PROPOSED ASH DISPOSAL SYSTEM
AND
DEVELOPMENT OF ASH BUND**

There will be four outlets provided for each silo, two for wet slurry disposal, one for unloading of ash in conditioned form in open trucks and one for unloading of ash in closed container trucks. Operation of complete ash evacuation and conveying up to storage silos (bottom ash as well as fly ash) will be controlled from the control panel (PLC) located in the unit control room for control / sequential operation and monitoring.

Development of Ash Bund

Tata Power has identified an area of 74 hectares for ash disposal. Ash disposal area will be developed in two phases, phase-1 of 30 hectares and phase-2 of 36 hectares and remaining 8 hectares will be used for stilling pond. Total disposal area will be sufficient for 5 years for 100 % disposal of total ash (fly ash + bottom ash).

Initially, phase-1 will be developed up to height of 5 meters for ash disposal, which can hold the ash (both BA & FA). During this period area in Phase-2 will be used for construction activities of the plant. Once ash fills the phase-1 up to 5m height, Phase-2 will be taken up for ash disposal. Phase II will also be developed up to 5 meter height. Once height of 5 meter is achieved in phase II, ash disposal will be shifted again to phase I and bund of height 2.5 m will be constructed above the ash fill area in phase-1 and total height of 7.5 meters will be achieved. This process will be repeated till the ash fill height in both the phases will reach 10m above ground level. It may be noted that for raising of bund height above 5m, suitable soil cover will be used over ash for stabilization of ash bund.

Adjacent to the ash bund, a stilling pond would be provided which would occupy about 10% of area of ash bund. Stilling pond is common for both the phases. To allow ash water to flow from settling pond to stilling pond and from stilling pond to the ash water sump, it is proposed to construct collecting wells (spillway) of RCC, as close to the bund as possible. The collecting wells would be operated to maintain a free board of at least one meter for the bund.

Ash bund would be lined suitably with geo-membrane liners to avoid seepage of ash water into the ground / adjoining areas.

INPUT DATA

The following input data is considered for design of the ash disposal system:

- a) Coal Consumption : 16368 Tones per day which is equivalent to 6 Million tones per annum
 - b) Ash content : 40 %
 - c) Total Ash Generation : 5238 tones per day fly ash and 1310 tones per day bottom ash
- Total ash generation (fly ash + bottom) 2.3 Million tones per annum.

Bottom ash produced by each steam generator would be collected in the water impounded, refractory lined furnace hopper as bottom ash. The system adopted for bottom ash removal will be jet pump system with water impounded bottom ash hopper. A heavy-duty clinker grinder and a jet pump would be mounted at each of the hopper outlets to crush the ash clinkers to (-) 25 mm size and convey the same to the slurry sump.

The fly ash (FA) system will be designed to evacuate fly ash in dry form from fly ash hoppers using pressure type pneumatic conveying system. The fly ash removal system will be designed on a continuous basis with 20 cycles per hour and during emergency with 30 cycles per hour. Dry fly ash from ESP hoppers will be collected in the fly ash storage silos.

The fly ash collected in the storage silo will be disposed off by sending it to cement manufacturers or brick manufacturers in the nearby area to the maximum extent in closed bulkers. It is planned to achieve maximum utilization of fly ash immediately after commissioning of the plant. The remaining fly ash will be disposed off in to ash bund in wet concentrated slurry form (in high concentrated slurry form) through closed pipes.

The most important characteristic of ash slurry from the water pollution point of view is the suspended solids content in the effluent. The two stage settling arrangement described above would reduce the suspended solids.

Ash water from the stilling pond will be led to the clarifier where the suspended solids will be reduced by the addition of alum / electrolyte. The clarified water will be pumped to ash water tank in the plant area and it will be used for ash handling service.

Map showing location of ash bund area is enclosed as **Annexure IV**

Annexure III (B)-Ash Utilization Plan

Sr.No	Year	Ash Generation (MT)		Ash Utilisation		Storage in Ash Pond (MTPA)			Utilisation of Ash Pond Area (Ha)	
		Bottom	Fly	Total (G)	Planned Utilisation (MTPA)	% utilisation	Fly Ash	Bottom Ash		Total
1	2012-13	119538	477968	597505	143390	30	334577	119538	454115	4
2	2013-14	239075	955935	1195010	382374	40	573561	239075	812636	11
3	2014-15	478150	1911870	2390020	955935	50	955935	478150	1434085	24
4	2015-16	478150	1911870	2390020	1147122	60	764748	478150	1242898	35
5	2016-17	478150	1911870	2390020	1338309	70	573561	478150	1051711	44
6	2017-18	478150	1911870	2390020	1529496	80	382374	478150	860524	51
7	2018-19	478150	1911870	2390020	1720683	90	191187	478150	669337	57
8	2019-20	478150	1911870	2390020	1911870	100	0	478150	478150	61
9	2020-21	478150	1911870	2390020	1911870	100	0	478150	478150	66
<p>Note:</p> <p>1) Fly ash will be utilised for cement manufacturing, brick manufacturing, mine backfilling, construction work, road embankment, road sub base, building blocks, grouting material, filler in asphalt make roads, light weight aggregates.</p> <p>2) Bottom ash which is initially dumped in ash pond will be used for land filling and mine backfilling and road embankments.</p>										