

**EC granted for expansion of Bokaro Steel Plant (SAIL)  
from 4.0 MTPA to 7.0 MTPA Crude Steel**

ANNEXURE-2#(C)

Date: 23.09.2008 10:29:41 AM

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Speed post



भारत सरकार  
पर्यावरण एवं वन विभाग  
Government of India  
Ministry of Environment & Forests  
(1A Division)

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E-mail: hsmalviya@gmail.com  
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No. J-11011/99/2007-1A-11(1)  
To

Dated: October 16, 2008

M/s Steel Authority of India Limited  
Bokaro Steel Plant  
Bokaro Steel City-827001  
Jharkhand

06542-40359

**Sub: Expansion of Bokaro Steel Plant from 4 MT to 7 MT Crude Steel at Bokaro Steel City, Jharkhand by M/s Steel Authority of India Ltd. - Environmental clearance req.**

Sir,

This has reference to your letter ECD/EMS/01/2008\_816 dated 18<sup>th</sup> June, 2008 alongwith EIA/EMP Report, public hearing/public consultation proceeding and CD of public hearing seeking environmental clearance to the above mentioned project.

2.0 The Ministry of Environment and Forests has examined your application. It is noted that M/s Steel Authority of India Ltd. have proposed for expansion of Bokaro Steel Plant from 4 MT to 7 MT Crude Steel at Bokaro Steel City, Jharkhand. The expansion will be within the existing premises and will be from BF-BOF Route along with Coke Oven and Sinter Plant. The existing Steel melting Shop-I (SMS-I) and Slabbing unit shall be phased out. The existing plant area is 6973.68 ha. Expansion will be within the existing plant premises. The expected cost of the project will be Rs. 11,355.00 Crores. The modernization cum expansion project will have the following products / units for existing and proposed project of (4 MTPA to 7 MTPA):

S.No.	Name of Units/ Products	Existing Capacity (4.0 MTPA)	Proposed Capacity (3.0 MTPA)	Total capacity (7.0 MTPA)
1.	Coke oven complex (gross coke)	3.44 MTPA	-	3.44 MTPA
2.	Sinter plant complex (gross sinter)	6.9 MTPA	2.00 MTPA	8.90 MTPA

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3.	Blast furnace complex (gross hot metal)	4.5 MTPA	3.0 MTPA	7.5 MTPA
4.	SMS	4.0 MTPA	3.0 MTPA	7.0 MTPA (CS)
5.	SMS-I	1.5 MTPA	-	-
6.	SMS-II	2.7 MTPA	0.6 MTPA	3.3 MTPA (Is)
7.	SMS-III	-	3.9 MTPA	3.9 MTPA (Is)
8.	Slabbing mill	Universal slabbing mill with 7 no. soaking pit	-	Phase out
9.	Hot strip mill (HSM)	3.2 MTPA	1.3 MTPA	4.5 MTPA
10.	New hot strip mill with thin caster hot strip Finishing train	-	2.3488 MTPA	2.3488 MTPA
11.	Existing cold rolling mill complex	3.2 MTPA	-	1.2 MTPA
12.	New CMR complex	-	1.2 MTPA	1.2 MTPA
13.	Lime	0.1796 MTPA	0.2133 MTPA	0.3929 MTPA
14.	Dolo plant	0.0653 MTPA	0.0776 MTPA	0.1429 MTPA

3.0 ESP, wet scrubber and bag filters will be provided to control air emissions. The existing water requirement of the plant is 4060 m<sup>3</sup>/hr additional water required for will be 3603 m<sup>3</sup>/hr and will be sourced from Tenughal for which BSI has permission. The entire quantity of water will be treated and recycled.

4.0 Public hearing meeting was held on 18<sup>th</sup> March, 2008.

5.0 The Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA Notification dated 14<sup>th</sup> September, 2006 subject to compliance of the following specific and general conditions:

**A. SPECIFIC CONDITIONS:**

- On-line stack monitoring facilities for all the stacks and sufficient air pollution control devices shall be provided to keep the emission levels below 100 mg/Nm<sup>3</sup>. In cement plant, limit of PM emission shall be controlled within 50 mg/Nm<sup>3</sup> by installing adequate air pollution control system.
- All the standards prescribed for the coke oven plants shall be followed as per the latest guidelines. Proper and full utilization of coke oven gases in power

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plant using waste heat recovery steam generators should be ensured and no flue gases shall be discharged into the air.

- v) Gaseous emission levels including secondary fugitive emissions from blast furnace 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 should be followed.
- vi) Efforts shall be made to reduce impact of the transport of the raw materials and end products on the surrounding environment including agricultural land. All the raw materials including fly ash shall be transported in the closed containers only and shall not be overloaded. Vehicular emissions shall be regularly monitored.
- vii) Prior 'Permission' for the drawl of the additional water required (3600 m<sup>3</sup>/hr) and shall be sourced from Tenughat for which BSI has permission. The entire quantity of water will be treated and recycled.
- viii) The company shall re-assess the additional water required and submit a detailed plan to minimize water consumption. 'Zero' effluent discharge shall be strictly followed and no wastewater shall be discharged outside the premises.
- ix) Continuous monitoring of Total Organic Compounds (TOC) shall be done at the outlet of ETP (BOD) plant.
- x) All the blast furnace (BF) slag shall be granulated and used to cement manufacture. Flue dust from pellet plant, sinter plant and SMS and sludge from BF shall be re-used in sinter plant. Coke breeze from coke oven plant shall be used in sinter and pellet plant. SMS slag shall be given for metal recovery or properly utilized. All the other solid waste including broken refractory mass shall be properly disposed off in environment-friendly manner.
- xi) A time bound action plan shall be submitted to reduce solid waste, its proper utilization and disposal.
- xii) Efforts shall be made to use low grade lime, more fly ash and solid waste in the cement manufacturing.
- xiii) Proper utilization of fly ash shall be ensured as per Fly ash Notification, 1999 and subsequent amendment in 2003.
- xiv) As proposed, green belt should be developed in 33 % area.



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- xv) All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel plants should be implemented.
- xvi) The commitments made during public hearing shall be complied with. An action plan in this respect shall be submitted to the Ministry's Regional Office at Bhubaneswar.
- xvii) As proposed, Rs. 749.5 Crores and Rs. 112.5 Crores earmarked towards capital cost and recurring cost/annum for environment pollution control measures shall be judiciously utilized to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.
- xviii) Provision shall be made for the housing of 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, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

B. GENERAL CONDITIONS:

- i. The project authorities must strictly adhere to the stipulations made by the Jharkhand Pollution Control Board (JPCB) and the State Government.
- ii. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.
- iii. The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19<sup>th</sup> May, 1993 and standards prescribed from time to time. The Jharkhand Pollution Control Board (JPCB) 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. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit.
- iv. 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, SO<sub>2</sub> and NO<sub>x</sub> are anticipated in consultation with the JPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the JPCB / CPCB once in six months.
- v. In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Further, specific measures like water



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sprinkling around the coal stockpiles and asphaltting or concreting of the roads shall be done to control fugitive emissions.

- vi. Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19<sup>th</sup> May, 1993 and 31<sup>st</sup> December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.
- vii. 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 shall conform to the standards prescribed under EPA Rules, 1986 i.e. 75 dBA (day time) and 70 dBA (night time).
- viii. Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
- ix. The company shall develop rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.
- x. The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA / EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc. Suggestions made during the public hearing shall be implemented.
- xi. The Regional Office of this Ministry at Bhubaneswar / CPCB / JPCB shall monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.
- xii. 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 JPCB 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 at Bhubaneswar.
- xiii. 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.



6.9. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

7.0. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.


8.0. Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Authority Act, 1997.

9.0. The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management and Handling) Rules, 2003 and the Public (Insurance) Liability Act, 1991 along with their amendments and rules.

  
(H. S. Malviya)  
Joint Director

Copy to:

1. The Secretary, Department of Environment, Govt. of Jharkhand, Jharkhand.
2. Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
3. Chairman, Jharkhand Pollution Control Board, Jharkhand, Town Administrative Building, I.I.T.C., Dhruwa, Ranchi-824004, Jharkhand.
4. The Chief Conservator of Forests (Eastern), Regional Office (EZ), A/3, Chandrasekharpur, Bhubaneswar - 751 023, Orissa.
5. Monitoring Cell, Ministry of Environment and Forests, Parvathan Bhavan, CGO Complex, New Delhi.
6. Monitoring Cell
7. Guard File.
8. Record File.

  
(H. S. Malviya)  
Joint Director



Government of India  
Ministry of Environment and Forests

F. No. J-11011/99/2007-IA II (I)

Paryavaran Bhawan  
CGO Complex, Lodi Road  
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E-mail: [tchand2003@yahoo.co.uk](mailto:tchand2003@yahoo.co.uk)  
Telefax: 011: 2436 3963

Dated: 24<sup>th</sup> January 2014

To  
**M/s Steel Authority of India Limited**  
Bokaro Steel Plant  
Bokaro Steel City-827001  
Jharkhand  
Fax: 06542-40359

**Subject:** Expansion of Bokaro Steel Plant from 4 MT to 7 MT Crude Steel of **M/s Steel Authority of India Limited**, located at Bokaro Steel City, Jharkhand - **Extension of validity of Environmental Clearance -reg.**

Sir,

This is with reference to your letter No. ECD/EMS/1-342 dated 14.3.2013 requesting the Ministry for extension of validity of the Environmental Clearance (EC) granted by this Ministry vide letter dated 16.10.2008.

2. The above proposal was considered by the Reconstituted Expert Appraisal Committee (Industry) in its 10<sup>th</sup> meeting held on 29-31<sup>st</sup> July, 2013. It was noted that the proposed project could not be established within validity period of the granted Environmental Clearance mainly because of:-

- i. Due to recession, decision taken by the SAIL board to do the expansion in two phases
- ii. Inordinate delay has occurred due to the protest raised by the local people and trade unions against the extension of the existing boundary wall, necessary for enabling construction activities for Steel Melt Shop (SMS) -III

3. After taking into consideration the aforesaid facts, the committee recommended for the extension of validity of EC by a period of five years with effect from 15.10.2013 subject to environmental safeguards.

4. The Ministry accepts the recommendation of the REAC (Industry) and extends the validity of the Environmental Clearance letter no. J-11011/99/2007 - IA II (I) dated 16.10.2008 for a period of five years with effect from 15.10.2013 subject to environmental safeguards.

5. All other conditions stipulated in the environmental clearance letter no. J-11011/99/2007 - IA II (I) dated 16.10.2008 shall remain the same.

6. The company shall obtain fresh environmental clearance in case of any change in the scope of the project.

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This issues with the approval of the Competent Authority.

(Dr.T.Chandini)  
Director

**Copy:**

1. The Secretary, Department of Environment, Govt. of Jharkhand, Jharkhand.
2. The Additional Principal Chief Conservator of Forests, Regional Office (EZ), A/3, Chandrashekharpur, Bhubaneswar, 751023, Orissa.
3. The Chairman, Central Pollution Control Board Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
4. The Chairman, Jharkhand Pollution Control Board, Town Administrative Building, HEC, Dhurwa, Ranchi- 824004.
5. Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhawan, CGO Complex, New Delhi.
6. Guard File/Monitoring File/Record File.

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Government of India  
Ministry of Environment, Forests and Climate Change

F.N. I-11011/99/2007-IA.II(I)

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Tel: 011-24695313

To

Dated: 28<sup>th</sup> November 2014

M/s Steel Authority of India Ltd.,  
Bokaro Steel Plant,  
Bokaro Steel City – 827001, Jharkhand.

Sub: Expansion of Bokaro Steel Plant from 4MTPA to 7MTPA of Crude Steel of M/s Steel Authority of India Ltd., at Bokaro Steel Plant, Bokaro Steel City, Jharkhand – Amendment of EC No. I-11011/99/2007-IA.II(I) dated 16.10.2008 read with MOEF letter dated 24.01.2014 –reg.

Sir,

This is with reference to the Environmental Clearance (EC) for Expansion of Bokaro Steel Plant from 4.0 MTPA to 7.0 MTPA crude steel production vide memo no. I-11011/99/2007-IA.II(I) dated 16.10.2008. Extension of the EC was accorded by MoEF for a period of 5 years w.e.f. 15.10.2013 vide memo no. I-11011/99/2007-IA.II(I) dated 24.01.2014 until 14.10.2018.

2. You have vide letter No. ECD/EMS/01/2014-914 dated 26.06.2014 requested for an amendment of the aforesaid EC for upgradation of Sinter plant #1 and addition of one new Sinter plant and continuation of existing SMS-I with reduced capacity and state of art pollution control facility at Bokaro Steel Plant for production of crude steel within the provisions of the EC already accorded by MoEF.

3. The modifications sought are given below:

Facilities	As per EC Granted	EC amendment proposed	Remarks
Hot Metal	7.5 MTPA	5.77 MTPA	Reduction
Crude Steel	7.0 MTPA	4.606 MTPA	Reduction
Steel Melting Shop Complex	7.2 MTPA	4.606 MTPA	Production will be less than for which EC was granted. Pollution load will reduce
	SMS-I (cap.1.5MTPA) will be phased-out	SMS-I will be modified to produce 1.306 MTPA	
	SMS-II, capacity will be augmented to 3.3 MTPA	No Change	
	New SMS-III of capacity 3.9 MTPA will be installed	Installation of new SMS-III deferred	

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	8.9 MTPA	8.7 MTPA	
Sinter Plant Complex	By up-gradation of existing 3 nos. of Sinter M/Cs to 3x312 m from 3x252 -working area	By up-gradation of only 1 no. of Sinter M/c to 312 m and installation of new 3.7 MTPA Sinter Plant(1x 360m )	Production will be less than for which EC was granted. Pollution load will reduce

4. The aforesaid proposal was considered in the Expert Appraisal Committee (Industry) EAC(I) in its 23<sup>rd</sup> meeting held on 18<sup>th</sup>-19<sup>th</sup> September 2014. It was stated that the aforesaid modifications in the environmental clearance conditions will help improve with installation of new Sinter Plant with state-of-the-art technology and modern pollution control facilities including Waste Heat Recovery, instead of up-gradation of the existing Sinter Machines. Up-gradation of only one sinter machine instead of all the three existing sinter machines (as proposed at EC stage) implies lesser impact on the environment due to comparatively lesser environmental performance of retrofitted units.

Installation of following pollution control facilities in the modified unit of SMS-I:

- New convertor with recovery of BOF gas, to be used as fuel.
- No stack emission in normal operation.
- Secondary emission control facility
- Energy efficient slab casters

After up-gradation and stabilization of SMS-I, the energy inefficient ingot route will be phased out.

After detailed deliberations, the Committee recommended the project for amendment of EC as proposed above.

5. The Ministry of Environment, Forests & Climate Change, on the basis of the aforesaid recommendations of the EAC(I), hereby amends the Environmental Clearance (EC) dated 16.10.2008 for Expansion of Bokaro Steel Plant from 4.0 MTPA to 7.0 MTPA crude steel production read with MOEF letter dated 24.01.2014 for extension of validity of EC.

This issues with the approval of the Competent Authority.

(Dr. T. Chandini)  
Scientist F

Copy to:

- The Secretary, Department of Environment, Govt. of Jharkhand, Jharkhand.
- The Additional Principal Chief Conservator of Forests, Regional Office (EZ), A/3, Chandrashekharpur, Bhubaneswar, 751023, Orissa.
- The Chairman, Central Pollution Control Board Parivesh Bhavan, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
- The Chairman, Jharkhand Pollution Control Board, Town Administrative Building, HEC, Dhurwa, Ranchi- 824004.
- Monitoring Cell, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, New Delhi.
- Guard File/Monitoring File/Record File.

(Dr. T. Chandini)  
Scientist F

F. No. J-11011/99/2007- IA-II(I)

Government of India

Ministry of Environment, Forest and Climate Change  
(Impact Assessment Division)Indira Paryavaran Bhawan  
Jor Bagh Road, Aliganj,  
New Delhi - 110003  
E-mail: sharath.kr@gov.in  
Tel: 011-24695319Dated: 13<sup>th</sup> December, 2017

To

M/s Steel Authority of India Ltd  
Bokaro Steel Plant, Ispat Bhawan,  
Bokaro Steel City, District Bokaro  
Jharkhand-827001.

**Subject: 4.605 MTPA Steel Plant of M/s Steel Authority of India Limited located at - Amendment in Environmental Clearance for development of alternate system of drawl of raw water from Damodar River.**

Sir,

This has reference to your online application vide proposal no. IA/JH/IND/6949/2008 dated 23<sup>rd</sup> October 2017 seeking amendment in Environmental Clearance granted on 16<sup>th</sup> October 2008 for development of alternate system of drawl of raw water from Damodar River.

2.0 M/s Bokaro Steel Plant (BSL) was set up and commissioned in the year 1972-73 for production of 1.7 MTPA of flat rolled products. Subsequently, the plant was expanded to 4.0 MTPA for which EC was obtained in 1991 and proposed for further expansion from 4 MTPA to 7 MTPA and obtained EC in 2008. At present, SAIL-Bokaro is undergoing the expansion of existing Bokaro Steel Plant from 4 MTPA to 4.606 MTPA.

3.0 As part of modernization of the existing plant, addition of 2.0 MTPA Pellet plant and 7 m tall top charged Coke Oven battery of 0.768 MTPA production capacity were also proposed within the same plant premises without increasing the approved production capacity of the existing plant. EC application for the same has been submitted to MoEFCC.

4.0 The required raw water for BSL plant operations and township is being drawn from Tenughat Dam which is built on upstream of Damodar River at a distance of about 35 Km from Plant site. The maximum limit for drawl of water from Tenughat Dam is 23140 m<sup>3</sup>/hr. At present, the raw water drawl by BSL is about 17500 m<sup>3</sup>/hr.

5.0 Water is supplied through a Gravity Canal which is controlled by WRD, Govt. of Jharkhand (Tenu canal which is about 35 km long from the dam). The canal discharges water into the Cooling Pond-I (which serves as the re-circulating basin for the plant). The Canal is mainly built with earthen embankments, has PCC lining and has intermittent civil structures like RCC aqueducts or cross drainages over the nalas, small seasonal rivers, low lying land etc.

6.0 The canal is more than 50 years old. Its condition has deteriorated considerably. At many places the canal lining is damaged. Due to poor condition, causing complete disruption in water supply to BSL, which is affecting plant operations very often.

7.0 BSL is therefore, contemplating an alternate pipeline route for water drawl from Damodar River via Baidhmara Weir near Bokaro (approx. 5 km), to meet the water requirements of the plant and the township as an alternate route (same source) of raw water. In future, this will serve as a standby arrangement to Tenu canal during exigencies. The amount of water which is being released from Tenu Dam will be diverted through Damodar River and same water will be drawn from the upstream of Baidhmara weir by creating a pumping facility with pipe lines up to cooling pond - 1 for which NOC from Govt. of Jharkhand, Ministry of Water Resource Department has obtained on January 06, 2017.

8.0 The route survey was carried out and the land of ROW (right-of way) does not involve any eco-sensitive area and forest land. There shall be no change in the present water required for the existing Steel Plant complex and township.


9.0 The capital cost of the proposed diversion of pipeline is estimated around Rs. 118.45 Crores.

10.0 The proposal was considered during the 24<sup>th</sup> meeting of Expert Appraisal Committee [EAC] (Industry-I) held on 13<sup>th</sup> – 15<sup>th</sup> November, 2017. After detailed deliberations, the committee recommended for proposed amendment in the earlier EC for alternate pipeline route for water drawl from Damodar River via Baidhmara Weir near Bokaro.

11.0 The Ministry of Environment, Forest and Climate Change has considered the application based on the recommendations of the Expert Appraisal Committee (Industry-I) and hereby decided to accord amendment in the earlier EC vide even letter number dated 16<sup>th</sup> October 2008 for alternate pipeline route for water drawl from Damodar River via Baidhmara Weir near Bokaro subject to following conditions:

- i. No change in the scope of the project shall be made without prior approval of the ministry.
- ii. All the conditions prescribed in the environmental clearance letter No F. No. J-11011/99/2007- IA-II(I) dated 16<sup>th</sup> October 2008 shall be strictly complied with.
- iii. The Ministry may revoke or suspend the clearance, if implementation of any of the prescribed conditions is not satisfactory.
- iv. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
- v. The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

This issues with the approval of competent authority

  
(Sharath Kumar Pallerla)  
Scientist 'F' / Director

**Copy to:-**

1. **The Secretary**, Department of Environment, Government of Jharkhand, Secretariat, Ranchi.
2. **The Additional Principal Chief Conservator of Forests (C)**, Ministry of Environment and Forest, Regional Office (ECZ), Bungalow No. A-2, Shyamali Colony, Ranchi-834002.
3. **The Chairman**, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
4. **The Chairman**, Jharkhand State Pollution Control Board, T.A. Division Building (Ground Floor), HEC Campus, P.O. Dhurwa, Ranchi - 834004, Jharkhand.
5. **The Member Secretary**, Central Ground Water Authority, A2, W- 3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.
6. **The District Collector**, Bokaro District, State of Jharkhand,
7. **Guard File / Record file / Monitoring file.**
8. **MOEF&CC Website.**

*Sharath*  
13/12/17

**(Sharath Kumar Pallerla)**  
**Scientist 'F'/Director**