

F. No. J-11011/99/2007-IA.II(I)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)

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Dated: 17th March, 2021

To

Shri. Navin Prakash Srivastava,
Dy. General Manager,
M/s. Steel Authority of India Limited,
Bokaro Steel Plant,
Bokaro, Jharkhand - 827001
Email: kspp1955@rediffmail.com; Tel: 06542 246605

Subject: Modernization-cum-expansion of Bokaro Steel plant by up-gradation of existing SMS-I (1.306 MTPA), Debottlenecking of SMS-II (3.35 MTPA) & existing CRM complex (1.66 MTPA), installation of new kiln of 450 TPD in Lime plant, a new Sinter Plant (3.7MTPA) and Oxygen plant (1250 TPD on BOO basis) without increasing the overall production capacity of 5.77 MTPA hot metal by M/s SAIL located at Bokaro Steel City, Tehsil: Chas, District Bokaro, Jharkhand – Environment Clearance – regarding.

Sir,

1. This refers to the online application of M/s. SAIL-Bokaro made vide proposal no. IA/JH/IND/196242/2018 dated 04/02/2021 along with copy of EIA/EMP report and Form – 2 seeking Environment Clearance (EC) under the provisions of the EIA Notification, 2006 for the project mentioned above. The proposed project activity is listed at schedule no. 3(a) Metallurgical industries (ferrous & nonferrous) under Category “A” of the schedule of the EIA Notification, 2006 and appraised at Central Level.
2. The project proponent had earlier applied online vide proposal no. IA/JH/IND/168412/2018 dated 17/08/2020 which was appraised during 22nd meeting of the Re-constituted EAC (Industry-I) held during 26 – 28th August, 2020 wherein the Committee recommended to return the proposal in present form. The project proponent resubmitted the proposal vide no. IA/JH/IND/196242/2018 dated 04/02/2021 after compliance of the queries raised by EAC in the aforesaid meeting. The proposal was considered by the EAC (Industry 1) in its 31st meeting of the Re-constituted EAC (Industry-I) held on 25th -26th February, 2021. The EAC proceedings of the said meeting is furnished as below:

Details submitted by the project proponent

3. The details of the ToR are furnished as below:

Date of Application	Consideration	Details	Date of Accord
22/02/2018	29 th meeting of EAC held on 12-14 th March, 2018	Terms of Reference	10/04/2018

Environmental Clearance for "Modernization-cum-expansion of Bokaro Steel plant by up-gradation of existing SMS-I (1.306 MTPA), Debottlenecking of SMS-II (3.35 MTPA) & existing CRM complex (1.66 MTPA), installation of new kiln of 450 TPD in Lime plant, a new Sinter Plant (3.7MTPA) and Oxygen plant (1250 TPD on BOO basis) without increasing the overall production capacity of 5.77 MTPA hot metal by M/s SAIL, located at Bokaro Steel City, Tehsil: Chas, District Bokaro, Jharkhand."

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Date of Application	Consideration	Details	Date of Accord
20/05/2020	20 th meeting of Reconstituted EAC held on 25-26 th June, 2020	Amendment in ToR	13/07/2020

4. The project of M/s SAIL-Bokaro located in Bokaro Steel City, Chas block, Bokaro District, Jharkhand State is for Expansion-cum-modernisation of Bokaro steel plant from 4.5 MTPA hot metal to 5.77 MTPA hot metal.

5. Environmental Site Settings

S. No.	Particulars	Details
i.	Total land	6973.68 ha [Govt: 6973.68 ha] Land use: Industrial
ii.	Land acquisition details as per MoEF&CC O.M. dated 7/10/2014	All of 6973.68 ha of land is under ownership of SAIL-Bokaro
iii.	Existence of habitation & involvement of R&R, if any.	All land is under possession of SAIL-Bokaro and no R&R is involved
iv.	Latitude and Longitude of the project site	Latitude: 23.6459° N – 23.7174°N Longitude: 86.0671°E – 86.1439° E
v.	Elevation of the project site	243 AMSL
vi.	Involvement of Forest land if any.	Nil
vii.	Water body exists within the project site as well as study area	Project site: No natural water body Study area: i) Damodar River (6.5 km) ii) Garga Nadi (4.0 km) iii)Garga Reservoir (4.5 km)
viii.	Existence of ESZ/ ESA/ national park / wildlife sanctuary/ biosphere reserve/ tiger reserve/ elephant reserve etc. if any within the study area	Nil

6. The existing project was accorded environmental clearance vide Ir.no. J-11011/99/2007-IA II(I) dated 16-10-2008 and subsequently amended vide letters dated 28/11/2014 and 13/12/2017. Consent to Operate for the existing unit was accorded by Jharkhand State Pollution Control Board vide Ir. no. JSPCB/HO/RNC/CTO-9092257/2021/80. The validity of CTO is up to 31/12/2024.

7. Implementation status of the existing EC:

Sl. No.	Facilities/ Units	Capacity as per EC dated 16/10/2008 & amendments dated 28/11/2014 & 13/12/2017	Implementation Status as on date
1.	Coke Oven Complex	3.442 MTPA	Completed

Sl. No.	Facilities/ Units	Capacity as per EC dated 16/10/2008 & amendments dated 28/11/2014 & 13/12/2017	Implementation Status as on date
2.	Blast Furnace Complex	5.77 MTPA	Completed
3.	SMS Complex	SMS-1: 1.306 MTPA SMS-2 : 3.3 MTPA TOTAL: <u>4.606 MTPA</u>	<ul style="list-style-type: none"> • SMS-I up-gradation to 1.306 MTPA has not been completed. Converter modification completed before the expiry of EC. • ~80% of Caster completed before the expiry of EC. • ~70% work completed for Construction of steel Refining Unit before the expiry of EC. • SMS-2 completed.
4.	Slabbing Mill	Universal Slabbing Mill with 7 no. soaking pit batteries to be phased out after SMS-1 up-gradation	As SMS-1 upgradation is still not complete, the facility is present.
5.	Sinter Plant Complex	Existing: 5.0 MTPA New plant: 3.7 MTPA TOTAL: <u>8.7 MTPA</u>	~40% Work for new Sinter Plant was completed before the expiry of EC.
6.	Lime-Dolo Kiln	Existing: 0.2449 MTPA New expansion unit: 0.2909 MTPA TOTAL: <u>0.5358 MTPA</u>	New Expansion unit deferred.
7.	Hot Strip Mill	4.5 MTPA	Completed
8.	CRM complex	2.4 MTPA	Completed
9.	Oxygen Plant	Captive: 1450 TPD BOO: 2 x 1250 TPD TOTAL: <u>3950 TPD</u>	<ul style="list-style-type: none"> • 2700 TPD (1450 TPD captive plant & 1x1250 TPD BOO plant) already installed. • Other 1250 TPD BOO plant not yet installed.

8. The unit configuration and capacity of existing and proposed project is given as below:

Sn	Name of units/products	Capacity of units (as per existing EC)	Proposed units	Total (Existing + Proposed)
1.	Coke Oven Complex	3.442 MTPA	0.77 MTPA	<u>4.212 MTPA</u>
2.	Blast Furnace Complex	5.77 MTPA	<u>No change</u>	5.77 MTPA

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Sn	Name of units/products	Capacity of units (as per existing EC)	Proposed units	Total (Existing + Proposed)
3.	Sinter Plant Complex	Existing: 5.0 MTPA New plant: 3.7 MTPA TOTAL: <u>8.7 MTPA</u>	<u>No change</u> New Sinter Plant of 3.7 MTPA Could not be installed within existing EC Validity period	Existing: 5.0 MTPA New plant: 3.7 MTPA TOTAL: <u>8.7 MTPA</u>
4.	SMS Complex	SMS-I: 1.306 MTPA SMS-II: 3.3 MTPA TOTAL: <u>4.606 MTPA</u>	<u>No change in SMS-1.</u> Stage-I of SMS-I up-gradation to 1.306 MTPA Could not be completed within existing EC Validity period. Augmentation to 3.35 MTPA by debottlenecking	SMS-I: 1.306 MTPA SMS-II: 3.35 MTPA TOTAL: <u>4.656 MTPA</u>
5.	Slabbing Mill	Slabbing Mill with 7 no. soaking pits	<u>No change</u>	Slabbing Mill with 7 no. soaking pits
6.	Lime-Dolo Kiln	Existing: 0.2449 MTPA New unit: 0.2909 MTPA TOTAL: <u>0.5358 MTPA</u>	New kiln of 0.1642 MTPA envisaged in earlier EC along with proposed Sinter plant. Could not be completed within existing EC Validity period	Existing: 0.2449 MTPA New kiln: 0.1642 MTPA TOTAL: <u>0.4091 MTPA</u>
7.	Pellet Plant	-	2.0 MTPA	<u>2.0 MTPA</u>
8.	Hot Strip Mill	4.5 MTPA	No change	<u>4.5 MTPA</u>
9.	CRM complex	2.4 MTPA	Increase by 0.46 MTPA by debottlenecking	<u>2.86 MTPA</u>
10.	Oxygen Plant	Captive: 1450 TPD BOO: 2 x 1250 TPD TOTAL: <u>3950 TPD</u>	<u>No increase.</u> Installation of New 1250 TPD Oxygen Plant (BOO).	Captive: 1450 TPD BOO: 2 x 1250 TPD TOTAL: <u>3950 TPD</u>

9. The details of the raw material requirement for the expansion cum proposed project along with its source and mode of transportation is given as below:

S n	Raw Material	Quantity required per annum			Source	Mode of Transportation
		At 4.5 MTPA HM stage (TPA)	Additional at 5.77 MTPA HM stage (TPA)	Total at 5.77 MTPA HM stage (TPA)		
1	Lump Iron Ore	2196000	-1239700	956300	Captive mines of RMD SAIL	Rail

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S n	Raw Material	Quantity required per annum			Source	Mode of Transportation
		At 4.5 MTPA HM stage (TPA)	Additional at 5.77 MTPA HM stage (TPA)	Total at 5.77 MTPA HM stage (TPA)		
					(Bolani, Kiriburu, Meghahatuburu, Gua, Kalta, Manoharpur)	
2	Iron Ore Fines	5450000	5335290	10785290	Captive mines of RMD SAIL (Bolani, Kiriburu, Meghahatuburu, Gua, Kalta, Manoharpur)	Rail
3	Manganese Ore	259000	-259000	0	Not required	-
4	Limestone	3301000	-2463740	837260	SAIL Captive mines at Khanabhanjari and purchased from Jaisalmer	Rail
5	Dolomite	169000	206000	375000	Captive mines at Tulsidamar/ purchased from Bhutan	Rail
6	Coking coal	4470500	112167	4582667	BCCL mines & imported from Australia, New Zealand	Sea/Rail
7	Coal (CDI)	238500	338500	577000	Imported	Sea/Rail
8	Bentonite	0	23760	23760	Purchased from Kuchch region	Road
TOTAL		16084000	2053277	18137277		By rail – 99.87% By Road – 0.13%

10. The water requirement for the project is estimated as 357600 m³/day at 5.77 MTPA HM stage, of which 44400 m³/day is the estimated water requirement for steel production, and all of which will be obtained from the Damodar River via Tenu canal/Alternate water pipeline. The permission for drawl of surface water is obtained from Water Resource Department (WRD), GoJ vide Agreement No. TDC/SAIL/RAGT-I/113/09-10 dated 23/03/2010.

11. The power requirement for the project at 5.77 MTPA HM stage is estimated as 416 MW which will be obtained from the existing captive power plant of BPSCL and balance will be imported from DVC.

12. Baseline Environmental Studies:

Period:	Summer 2018 (March, April, May)*	Summer 2020 (March, April, May)**
AAQ parameters at 08 locations	PM _{2.5} = 27 to 59 µg/m ³ PM ₁₀ = 49 to 99 µg/m ³ SO ₂ = 8 to 40 µg/m ³ NO _x = 23 to 63 µg/m ³	PM _{2.5} = 21 to 47 µg/m ³ PM ₁₀ = 34 to 90 µg/m ³ SO ₂ = 7 to 40 µg/m ³ NO _x = 6 to 54 µg/m ³
AAQ modelling	Incremental GLCs in study area for: PM ₁₀ = 0.3 to 1.2 µg/m ³ SO ₂ = 1.6 to 3.8 µg/m ³ NO _x = 0.8 to 2.2 µg/m ³	
*Monitored by MECON Ltd. in Summer '2018.		
**Furnished by SAIL-Bokaro		

Period:	Summer 2018 (March, April, May)*
Ground water quality at 08 locations	pH: 6.5 to 7.5, Total Hardness: 108 to 464 mg/l, Chlorides: 39 to 202 mg/l, Fluoride: 0.26 to 1.37 mg/l. Heavy metals are within the limits.
Surface water quality at 09 locations	pH: 7.3 to 7.8; DO: 5.2 to 6.6 mg/l and BOD: 1 to 3 mg/l.
Noise levels	40.5 to 62.9 dB(A) for the day time and 40.3 to 43.4 dB(A) for Night time.
Traffic assessment study findings	<ul style="list-style-type: none"> • Carrying capacity of NH23/NH32 : 3600 PCUs/hr • Present traffic load on NH23/NH-32: 3061 PCUs/hr • Additional traffic load due to proposed project: 28 PCUs/hr (~7 trucks/day) • Total traffic load in future due to project: 3089 PCUs/hr (which is still within the Carrying capacity of NH23/32 of 3600 PCUs/hr)
Flora and fauna	No schedule-1 fauna exists in the study area.
*Monitored by MECON Ltd. in Summer '2018.	

13. The details of solid and hazardous waste generation along with its mode of treatment/disposal is furnished as below:

S. No.	Type of waste	Source	Quantity generated (TPA)	Mode of treatment/Disposal
SOLID WASTES				
1	BF Slag	Blast furnace	2192750	Will be 100% granulated in CHSGP and utilised in cement making
2	BF Flue Dust		64643	100% will be reused in sinter plant
3	BF Sludge		28850	Will be sold in secondary market
4	BOF slag	SMS complex	512159	~80% will be reused in sinter plant/SMS and used to make bricks by combining with Fly ash/road making and rest sold.
5	BOF Sludge		37248	Will be sold in secondary market
6	Mill Scale	Mills area	85645	100% will be reused in sinter plant

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S. No.	Type of waste	Source	Quantity generated (TPA)	Mode of treatment/Disposal
7	Waste Refractory	Coke ovens	8151	100% will be used for Refractory / mortar production
8	Coke Breeze		459784	100% will be reused in sinter plant
9	Ferric Oxide	Misc.	7557	100% sold as scrap
10	ESP (RMP) dust	RMP	18972	100% will be reused in sinter plant
HAZARDOUS WASTES				
11	Acidic Tar Sludge	By Product plant of Coke Ovens	1588	Will be disposed in captive secured land fill
12	Spent Vanadium Pentoxide		0.14	Will be disposed in captive secured land fill (SLF)
13	Sulphur Sludge		307	Will be disposed in captive SLF
14	Decanter Tar Sludge		1339	Will be partly charged in Coke oven & partly disposed in SLF
15	Tar Muck with Sand etc.		309	Will be disposed in captive SLF
16	Oil & Grease Muck	Mills area	192	Will be Disposed in captive SLF. Also, will be used in proposed Waste-to-Energy plant (BOO).
17	Asbestos Rope	Coke oven area	13	Will be disposed in captive SLF
18	Transformer oil	DNW	43 KL	Will be sold to authorized buyer
19	Oil sludge from oil regeneration unit	Oil regeneration unit	1.2	Will be disposed in captive SLF. Also, will be used in proposed Waste-to-Energy plant (BOO).
20	Zinc dross	HDGC/CRM	1548	Will be sold to authorized buyer
21	Zinc ash		215	Will be sold to authorized buyer

14. Public Consultation:

Details of Advertisement given	03/11/2018
Date of Public Consultation	08/12/2018
Venue	Bokaro Steel City
Presiding Officer	Additional District Collector
Major Issues Raised	(i) Repair & maintenance of hand pumps (ii) Development of roads (iii) Plantation in villages (iv) Promotion of solar energy (v) Plastic Pollution control (vi) Action for Padlocked schools

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Public Consultation Point-wise Action plan as per MoEF&CC O.M. dated 30/9/2020

Sn	Sector	Physical targets	Amount to be spent (in Rs. lakhs)
			Total in 05 years
(A) Based on Need based SIA			
1	For education:		
i	Provision of housing shelter & school under Gyan Jyoti Yojana-Adoption of 15 of Birhor Children	No. of shelters (Rs. In lakhs)	05 (75)
ii	Repair & maintenance of BSL school buildings where more than 80% non- BSL students are studying	No. of schools (Rs. In lakhs)	10 (75)
iii	Repair & maintenance of two Schools run by Mahila Samiti	Civil Quantity (m ³) (Rs. In lakhs)	505 (42)
iv	Development of Infrastructure to provide education to girls/women (maintenance of existing facilities)	No. of facilities (Rs. In lakhs)	3 (45)
2	For Healthcare		
i	Maintenance of Sarva Swasthya Kendra, Sector- V	Civil quantity(m ³) (Rs. In lakhs)	200 (15)
ii	Maintenance of shelter for Low-cost Sanitary Napkin project	Civil quantity(m ³) (Rs. In lakhs)	160 (12.5)
3	For Livelihood Generation		
i	Providing infrastructure and financial support to Bokaro Pvt ITI	Persons trained (Rs. In lakhs)	300 (180)
ii	Establishment of sericulture infrastructure & other facilities for development of self help group of 30 to 35 women in peripheral villages	No. of rearing shelter for sericulture (Rs. In lakhs)	05 (30)
iii	Development of additional infrastructure for providing employment to women (maintenance of existing facilities)	No. of facilities (Rs. In lakhs)	03 (25)
iv	Facility for fruit-bearing tree plantation in peripheral villages	No. of plantations (Rs. In lakhs)	5 lakhs (50)
4	For Sanitation		
i	Maintenance of 105 toilets under SVA	Toilets maintained (Rs. In lakhs)	105 (125)
5	Rural Infrastructure Development		
i	Miscellaneous civil work in peripheral villages and other sites	Vol. of civil work (m ³) (Rs. In lakhs)	625 (50)
ii	Development of infrastructure for promoting sports and wellbeing in peripheral villages (maintenance of existing facilities)	No. of facilities maintained (Rs. In lakhs)	05 (55)

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Sn	Sector	Physical targets	Amount to be spent (in Rs. lakhs)
			Total in 05 years
SUB-TOTAL OF EXPENDITURE in Rs. (A)			779.5 lakhs
(B) Based on Public consultation issues			
6	Annual repair & maint. of hand-pumps installed in peripheral villages, construction of toilets	<i>No. of Toilets</i>	20
		<i>hand pumps repaired</i>	100
		(Rs. In lakhs)	(60)
7	Repair of roads in nearby areas in Township	<i>Road repaired (km)</i> (Rs. In lakhs)	30 (400)
8	Infrastructural development as well as financial support to Bokaro Balika Kalyan Vidyalaya as well as Bokaro Steel Kalyan Vidyalaya. Additionally funding and operation of 8 different schools in township as well as peripheral areas.	<i>No. of schools provided with infrastructure</i> (Rs. In lakhs)	10 (435)
9	Repair & maintenance of roads in peripheral villages (both PCC & pre-mix types)	<i>Road repaired (km)</i> (Rs. In lakhs)	40 (15)
10	Greenbelt development in outside plant area (near Garga Basin)	<i>No. of plantations</i> (Rs. In lakhs)	100000 (25)
11	Greenbelt development in peripheral villages (including Satanpura village)	<i>No. of plantations</i> (Rs. In lakhs)	50000 (10)
SUB-TOTAL OF EXPENDITURE in Rs. (B)			945
GRAND TOTAL BUDGET (A+B)			1724.5
			17.245 Crores

15. The capital cost of the project is Rs 5219.1 Crores and the capital cost for environmental protection measures is proposed as Rs 365 Crores. The annual recurring cost towards the environmental protection measures is proposed as Rs 91.4 Crores. The employment generation from the proposed project is 3285 (i.e. 785 nos. during operation & 2500 nos. during construction period). The details of cost for environmental protection measures is as follows:

Sn.	Description	Capital Cost (in Cr.)	Recur. Cost/annum (In Cr.)
1.	Air & Noise Pollution Control Systems	185	42.7
2.	Water Conservation & Pollution Control	38	12.8
3.	Solid/ Waste Management System/Noise control/rainwater harvesting	140	35.8
4.	Green belt development	2	0.1
Sub-total Cost for Environmental Protection Measures		365	91.4
5.	Cost of addressing focus areas identified in Public consultation	9.45	

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16. Greenbelt is already developed in 1923.99 ha which is about 27.59% of the total project area. Additional greenbelt will be developed in 390 ha which will increase total greenbelt area to 2313.99 ha which is about 33.18% of the total project area. A 25m-100 m wide greenbelt, consisting of at least 3 tiers around plant boundary will be developed as greenbelt and green cover as per CPCB/MoEF&CC, New Delhi guidelines. Local and native species will be planted with a density of 2500 trees per hectare. Total no. of 975000 saplings will be planted and nurtured in additional 390 ha in 05 years.

17. Summary of show cause related to the project under consideration is as below:

- i. MoEF&CC issued Show cause notice to BSL vide letter J-11011/99/2007-IA.II(I) dated 22/09/2020 regarding construction activities at the site after the expiry of the validity of the EC and non-compliance of EC conditions.
- ii. BSL submitted its response against the show cause vide letter dated 5/10/2020 with reiterating its commitment to adhering to EC condition.
- iii. RO, MoEF&CC visited SAIL/ Bokaro Steel plant on 30.10.2020 to verify the action taken report submitted by BSL and submitted its report to MoEF&CC on 17/11/2020.
- iv. On the basis of RO's Inspection report & BSL's reply, MoEF&CC asked SAIL/BSL to submit undertaking on non-judicial stamp paper that "No construction activities were performed beyond the validity period of EC" and time bound action plan for partially complied conditions. BSL submitted time bound action plan on the partially complied EC conditions reported by the RO in its report dated 17/11/2020 along with the requisite undertaking from authorized representative stating that no construction activity was carried out after expiry of validity of EC.
- v. Response submitted by BSL on 21/12/2020. The said response was examined by MoEF&CC. Subsequently, MoEF&CC vide letter dated 11/01/2021 withdrawn the SCN issued to M/s SAIL-Bokaro. Further, it was directed that the project proponent shall comply with all the conditions stipulated in the Environment Clearance issued for the existing project vide letter no. J-11011/99/2007-IA.II(I) dated 16/10/2008 and its subsequent amendments.

18. Name of the EIA consultant: M/s MECON Limited [S.No. 48, List of ACOs with their Certificate / Extension Letter no. Rev. 07, Feb. 10, 2021].

Certified compliance report from Regional Office:

19. The Status of compliance of earlier EC was obtained from Regional Office, Jharkhand vide letter no. 103-211/13/EPE/4362 dated 17/03/2020 in the name of M/s. SAIL-Bokaro Steel plant. The Action taken report regarding the partially complied condition was submitted to MoEF&CC vide letter no. ECD/EMS/01/2020-2212 dated 21/12/2020. MoEF&CC evaluated the same and issued letter dated 17/11/2020. The details of the observations made by RO in the report dated 17/11/2020 along with its action plan for closure as submitted to MoEF&CC and furnished by SAIL-Bokaro is given as below:

Sn	Non-compliances/ partial compliances details	Observation of RO (abridged)	Condition no.			Response by SAIL- Bokaro
			EC date	Specific	General	
1	Partially complied	PP reported 30-50 m ³ /hr of water from seepage drain of cooling pond flowing	16/10/2008	(v)	-	• No waste water is being discharged outside the Bokaro Steel Plant. 100% (Total quantity) of effluent generated i.e.3500 m ³ /hr is being

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Sn	Non-compliances/ partial compliances details	Observation of RO (abridged)	Condition no.			Response by SAIL- Bokaro
			EC date	Specific	General	
		through storm water channel and no waste water is being discharged. As per the condition, entire quantity of water to be recycled.				<p>treated in two ETPs at OF-1 & OF-2 and recycled back in the system through cooling ponds. However, around 30-50 m³/hr of water (Clean water) from seepage drain of cooling ponds is flowing through storm water channel.</p> <ul style="list-style-type: none"> BSL has delineated Action plan to recycle the balance quantity of seepage water by March 2022.
2	Partially complied	As per the condition Zero effluent discharge shall be strictly followed and no waste water shall be discharged outside the premises.	16/10/2008	(vi)	-	<ul style="list-style-type: none"> - Same as above
3	Partially complied	As per the condition Industrial waste water after conforming to the standards should be utilised for plantation purpose.	16/10/2008	-	(vi)	<ul style="list-style-type: none"> No waste water is being discharged outside the Bokaro Steel Plant. BSL has delineated Action plan to recycle the balance quantity of seepage water by March 2022. Action plan submitted & approved to MoEFCC vide MoEF&CC's letter dated 11/01/2021 Industrial waste water from Coke Oven-By Product Plant and CRM-III is collected and treated in the respective Effluent Treatment Plants (ETPs). The effluent collected from all other shops is treated through

Environmental Clearance for "Modernization-cum-expansion of Bokaro Steel plant by up-gradation of existing SMS-I (1.306 MTPA), Debottlenecking of SMS-II (3.35 MTPA) & existing CRM complex (1.66 MTPA), installation of new kiln of 450 TPD in Lime plant, a new Sinter Plant (3.7MTPA) and Oxygen plant (1250 TPD on BOO basis) without increasing the overall production capacity of 5.77 MTPA hot metal by M/s SAIL, located at Bokaro Steel City, Tehsil: Chas, District Bokaro, Jharkhand."

Sn	Non-compliances/ partial compliances details	Observation of RO (abridged)	Condition no.			Response by SAIL- Bokaro
			EC date	Specific	General	
						<p>ETPs at the Outfall#1&2 before recycling. Relevant photographs submitted to MoEFCC.</p> <ul style="list-style-type: none"> Quality of treated water is being monitored on regular basis by the in-house laboratory and also through NABL accredited laboratory. The water quality conforms to the prescribed standard and the treated water from the Coke Oven-By Product Plant is utilised for coke quenching, the same from the CRM-III is recycled back as process water and the remaining treated water is consumed for plantation purpose.
4	Partially complied	<p>RO reported safeguards recommended in EIA/EMP such as:</p> <ul style="list-style-type: none"> Replacement of battery cyclone by ESP in Sinter Plant has been partially complied Gases generated during steel making in the converter has not been used as fuel in the Plant at present and expected completion date reported to be Jan.'21 which can be 	16/10/2008	-	(x)	<ul style="list-style-type: none"> Point-wise action plan have been submitted to MoEFCC, as below: Project for replacement of the existing Battery Cyclones with ESPs in the Sinter Plant is under execution. The time schedule for completion of the project as submitted to MoEFCC is by 2023. Facility for recovery of converter gas and its usage as fuel has already been installed. Facility is scheduled to be put into operation by January, 2021 after compliance of all safety measures. Tertiary treatment plant has been proposed to treat and recycle treated sewage water back to the plant. The timeline for installation, as

Environmental Clearance for "Modernization-cum-expansion of Bokaro Steel plant by up-gradation of existing SMS-I (1.306 MTPA), Debottlenecking of SMS-II (3.35 MTPA) & existing CRM complex (1.66 MTPA), installation of new kiln of 450 TPD in Lime plant, a new Sinter Plant (3.7MTPA) and Oxygen plant (1250 TPD on BOO basis) without increasing the overall production capacity of 5.77 MTPA hot metal by M/s SAIL located at Bokaro Steel City, Tehsil: Chas, District Bokaro, Jharkhand."

Sn	Non-compliances/ partial compliances details	Observation of RO (abridged)	Condition no.			Response by SAIL- Bokaro
			EC date	Specific	General	
		verified only after Jan.'21. • Township sewage water is yet to be recycled for use in the plant.				submitted to MoEFCC is by December, 2022.

Written submissions during the course of meeting

20. PP has submitted written clarifications on the following points during the course of meeting:

S.No.	Written submissions on	Commitment made
i.	Revised Public hearing action plan as per MoEF&CC O.M. dated 30/09/2020	Revised action plan submitted is given at s.no. 14 above.
ii.	Specific water consumption	The specific water consumption of SAIL-Bokaro Steel Plant will be reduced to ≤ 3 m ³ /tcs by Dec 2025.
iii.	Specific energy consumption	The specific energy consumption of SAIL-Bokaro Steel Plant will be reduced to ≤ 6 Gcal/tcs by Dec 2025.
iv.	Reduction in CO ₂ emission level	The CO ₂ emission of SAIL-Bokaro Steel Plant will be reduced to ≤ 2.1 T-CO ₂ /tcs by Dec 2025.
v.	Green belt development	With respect to green cover of 33.18%, the total area of the plant under consideration i.e. 6973.68 ha includes the water bodies.
vi.	Data flow from CEMS	CEMS (Continuous Emission Monitoring System) data of SAIL-Bokaro Steel Plant is being transferred to CPCB & JSPCB server as per the latest CPCB guidelines & protocol.
vii.	Replacement of existing stove arrangement in blast furnace	The replacement of existing stove arrangement in Blast furnaces with new stove arrangement along with WHRS (Waste Heat Recovery System) will be taken either during major shut-down for change in linings of Blast Furnace or as per committed schedule, whichever is earlier.

Observations of the Committee

21. The EAC noted the following:

- i. The EAC found that the EIA/EMP report is in order reflecting the present environmental concerns and the projected scenario for all the environmental components arising out of the proposed project with respective mitigation measures.

Environmental Clearance for "Modernization-cum-expansion of Bokaro Steel plant by up-gradation of existing SMS-I (1.306 MTPA), Debottlenecking of SMS-II (3.35 MTPA) & existing CRM complex (1.66 MTPA), installation of new kiln of 450 TPD in Lime plant, a new Sinter Plant (3.7MTPA) and Oxygen plant (1250 TPD on BOO basis) without increasing the overall production capacity of 5.77 MTPA hot metal by M/s SAIL, located at Bokaro Steel City, Tehsil: Chas, District Bokaro, Jharkhand."

The EAC also noted that the baseline data reported and incremental GLC due to the proposed project were within NAAQ standards.

- ii. The EAC also deliberated on the public hearing issues as well as action plan to address the issues raised during public hearing and found it satisfactory.
- iii. The Committee also deliberated upon the certified compliance report of RO and found satisfied with the action taken report submitted by the proponent.
- iv. The EAC noted that the written submissions made by the project proponent during the course of meeting are addressing the concerns of the Committee and acceded to the same.
- v. MoEF&CC vide letter dated 11/01/2021 withdrawn the SCN issued to M/s SAIL-Bokaro. Further, it was directed that the project proponent shall comply with all the conditions stipulated in the Environment Clearance issued for the existing project vide letter no. J-11011/99/2007-IA.II(I) dated 16/10/2008 and its subsequent amendments.
- vi. The Committee requested the Ministry to issue consolidated EC in supersession of all the existing ECs accorded by the Industry 1 sector of MoEF&CC.

Recommendations of the Committee

22. In view of the foregoing and after detailed deliberations, the committee recommended the instant proposal for grant of Environment Clearance under the provisions of EIA Notification, 2006 in supersession of all the existing ECs for the said integrated steel plant subject to the stipulation of specific conditions and general conditions as per the Ministry's Office Memorandum No. 22-34/2018-III dated 9/8/2018 pertaining to integrated steel plants based on project specific requirements.

Decision of MoEF&CC

23. The Ministry of Environment, Forest and Climate Change has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the Expert Appraisal Committee (Industry-1) hereby decided to grant Environment Clearance for instant proposal of M/s. SAIL-Bokaro under the provisions of EIA Notification, 2006 in supersession of all the existing ECs subject to the following specific conditions and general conditions as per the Ministry's Office Memorandum No. 22-34/2018-III dated 9/8/2018 pertaining to integrated steel plants based on project specific requirements:

A. Specific conditions

- i. CDQ shall be installed in coke ovens. Modified wet quenching tower shall be used as standby quenching in coke ovens battery.
- ii. Particulate matter emissions shall be less than 30 mg/Nm³ in new units and in all old units it shall be achieved by Dec 2023 except for Coke oven chimneys which shall be less than 50 mg/Nm³.
- iii. New Blast Furnace shall be equipped with TRT, dry gas cleaning plant, stove waste heat recovery, cast house and stock house ventilation system and slag granulation facility.
- iv. New sinter plant shall be equipped with power generation facility from waste heat recovered from sinter cooler.
- v. Dust collected by road sweepers shall be pelletised/briquetted and used in pellet plant.
- vi. WHRS in BF stoves shall be installed in various BFs as per following schedule- BF3- FY 22-23; BF5 – FY- 24-25. and BF2- FY- 29-30; & BF4- FY- 31-32 or earlier during major shut down of the furnaces.
- vii. Secondary fume extraction system in BOF 2 shall be provided by Dec 2023.

Environmental Clearance for "Modernization-cum-expansion of Bokaro Steel plant by up-gradation of existing SMS-I (1.306 MTPA), Debottlenecking of SMS-II (3.35 MTPA) & existing CRM complex (1.66 MTPA), installation of new kiln of 450 TPD in Lime plant, a new Sinter Plant (3.7MTPA) and Oxygen plant (1250 TPD on BOO basis) without increasing the overall production capacity of 5.77 MTPA hot metal by M/s SAIL, located at Bokaro Steel City, Tehsil: Chas, District Bokaro, Jharkhand."

- viii. Waste to energy system for using oily scum and sludge shall be installed by March, 2023.
- ix. Project proponent shall undertake rain water harvesting and recharge to the tune of 152,44,521 m³/year by end of 2025. Level monitoring indicators for online real time measurement of rain water harvesting shall be provided.
- x. Green belt shall be developed in 33.18 % of total plant area of 6973.68 ha (including water reservoir) covering entire periphery of the plant. Native plant species shall be chosen and plantation density for green belt shall be 2500 trees per ha.
- xi. Specific performance indicators after implementation of the proposal shall be as under;
- Specific Water Consumption- 3.00 Cum/tcs by 2025.
 - Specific Energy Consumption as- 6.00 Gcal/tcs by 2025.
 - CO₂ emission – 2.1 T-CO₂/tcs by 2025.
- xii. PP shall prepare and implement an action plan giving annual improvement targets for resource conservation and environment improvement. This plan shall be monitored by the concerned Regional Office of the MoEF&CC.
- xiii. The heat rate of coal based power plant as specified by Central Electricity Authority shall be maintained and monitored.
- xiv. Energy efficient drives, VFD for auxiliary motors and slip power recovery system for motors above 1000 kw shall be provided.
- xv. PTFE Membrane bags shall be used in filter bag house and designed for 150% of normal design air flow.
- xvi. Shall use ultralow NOx burner with three stage combustion, flue gas recirculation and auto combustion control system. Shall use Post combustion control system (SCR/SCNR process) with NH₃ monitoring when Ammonia is used.
- xvii. Coke Oven Gas shall be desulfurized.
- xviii. 100 percent solid waste generated shall be recycled, reused and/or sold. No dumping is permitted and storage for more than ninety days is not permitted.

B. General conditions

I. Statutory compliance:

- i. The Environment Clearance (EC) granted to the project/ activity is strictly under the provisions of the EIA Notification, 2006 and its amendments issued from time to time. It does not tantamount/ construe to approvals/ consent/ permissions etc., required to be obtained or standards/conditions to be followed under any other Acts/Rules/Subordinate legislations, etc., as may be applicable to the project.

II. Air quality monitoring and preservation

- i. The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emission as well as 04 Nos. Continuous Ambient Air Quality Station (CAAQS) for monitoring AAQ parameters with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time. The CEMS and CAAQMS shall be connected to SPCB and CPCB online servers and calibrate these systems from time to time according to equipment supplier specification through labs recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories.

- P. 2
- ii. The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through laboratories recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories.
 - iii. Sampling facility at process stacks and at quenching towers shall be provided as per CPCB guidelines for manual monitoring of emissions.
 - iv. Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed stack emission and fugitive emission standards.
 - v. The project proponent shall provide leakage detection and mechanized bag cleaning facilities for better maintenance of bags.
 - vi. Sufficient number of mobile or stationery vacuum cleaners shall be provided to clean plant roads, shop floors, roofs, regularly.
 - vii. Recycle and reuse iron ore fines, coal and coke fines, lime fines and such other fines collected in the pollution control devices and vacuum cleaning devices in the process after briquetting/ agglomeration.
 - viii. The project proponent use leak proof trucks/dumpers carrying coal and other raw materials and cover them with tarpaulin.
 - ix. Facilities for spillage collection shall be provided for coal and coke on wharf of coke oven batteries (Chain conveyors, land based industrial vacuum cleaning facility).
 - x. Land-based APC system shall be installed to control coke pushing emissions.
 - xi. Monitor CO, HC and O₂ in flue gases of the coke oven battery to detect combustion efficiency and cross leakages in the combustion chamber.
 - xii. Vapor absorption system shall be provided in place of vapour compression system for cooling of coke oven gas in case of recovery type coke ovens.
 - xiii. Wind shelter fence and chemical spraying shall be provided on the raw material stock piles.
 - xiv. Design the ventilation system for adequate air changes as per prevailing norms for all tunnels, motor houses, Oil Cellars.

III. Water quality monitoring and preservation

- i. The project proponent shall install 24x7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules 1986 vide G.S.R 277 (E) dated 31st March 2012 (Integrated iron & Steel); G.S.R 414 (E) dated 30th May 2008 (Sponge Iron) as amended from time to time; S.O. 3305 (E) dated 7th December 2015 (Thermal Power Plants) as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories.
- ii. The project proponent shall monitor regularly ground water quality at least twice a year (pre- and post-monsoon) at sufficient numbers of piezometers/sampling wells in

the plant and adjacent areas through labs recognized under Environment (Protection) Act, 1986 and NABL accredited laboratories.

- iii. The project proponent shall provide the ETP for coke oven and by-product to meet the standards prescribed in G.S.R 277 (E) dated 31st March 2012 (Integrated iron & Steel); G.S.R 414 (E) dated 30th May 2008 (Sponge Iron) as amended from time to time; S.O. 3305 (E) dated 7th December 2015 (Thermal Power Plants) as amended from time to time as amended from time to time;
- iv. Sewage Treatment Plant shall be provided for treatment of domestic wastewater to meet the prescribed standards.
- v. Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run off.
- vi. Tyre washing facilities shall be provided at the entrance of the plant gates.
- vii. Treated water from ETP of COBP shall not be used for coke quenching.
- viii. Water meters shall be provided at the inlet to all unit processes in the steel plants.

IV. Noise monitoring and prevention

- i. Noise pollution shall be monitored as per the prescribed Noise Pollution (Regulation and Control) Rules, 2000 and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report.

V. Energy Conservation measures

- i. Use torpedo ladle for hot metal transfer as far as possible. If ladles not used, provide covers for open top ladles.
- ii. Restrict Gas flaring to < 1%.
- iii. Provide solar power generation on roof tops of buildings, for solar light system for all common areas, street lights, parking around project area and maintain the same regularly;
- iv. Provide LED lights in their offices and residential areas.
- v. Ensure installation of regenerative type burners on all reheating furnaces.

VI. Waste management

- i. An attrition grinding unit to improve the bulk density of BF granulated slag from 1.0 to 1.5 Kg/l shall be installed to use slag as river sand in construction industry.
- ii. Carbon recovery plant to recover the elemental carbon present in GCP slurries for use in Sinter plant shall be installed.
- iii. Used refractories shall be recycled as far as possible.
- iv. 100% utilization of fly ash shall be ensured. All the fly ash shall be provided to cement and brick manufacturers for further utilization and Memorandum of Understanding in this regard shall be submitted to the Ministry's Regional Office.
- v. Oil Collection pits shall be provided in oil cellars to collect and reuse/recycle spilled oil. Oil collection trays shall be provided under coils on saddles in cold rolled coil storage area.
- vi. Kitchen waste shall be composted or converted to biogas for further use.

VII. Green Belt

- i. The project proponent shall prepare GHG emissions inventory for the plant and shall submit the programme for reduction of the same including carbon sequestration by trees.

VIII. Public hearing and Human health issues

- i. Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.
- ii. The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms of Factory Act.
- iii. Occupational health surveillance of the workers shall be done on a regular basis and records maintained.

IX. Corporate Environment Responsibility

- i. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 30/09/2020.
- ii. The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest / wildlife norms / conditions and / or shareholders / stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.
- iii. A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.

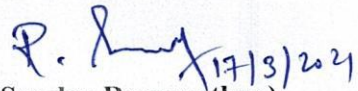
X. Miscellaneous

- i. The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
- ii. The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
- iii. The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
- iv. The project proponent shall monitor the criteria pollutants level namely; PM₁₀, SO₂, NO_x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
- v. The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.

Environmental Clearance for "Modernization-cum-expansion of Bokaro Steel plant by up-gradation of existing SMS-I (1.306 MTPA), Debottlenecking of SMS-II (3.35 MTPA) & existing CRM complex (1.66 MTPA), installation of new kiln of 450 TPD in Lime plant, a new Sinter Plant (3.7MTPA) and Oxygen plant (1250 TPD) on BOO basis) without increasing the overall production capacity of 5.77 MTPA hot metal by M/s SAIL, located at Bokaro Steel City, Tehsil: Chas, District Bokaro, Jharkhand."

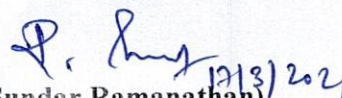
- vi. The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.
- vii. The project proponent 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, commencing the land development work and start of production operation by the project.
- viii. The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
- ix. No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).
- x. Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.
- xi. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.
- xii. The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.
- xiii. The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.
- xiv. Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

24. This issues with the approval of the Competent Authority.


(Sundar Ramanathan)
Scientist 'E'

Copy to:-

1. Secretary, Department of Environment, Government of Jharkhand Secretariat Ranchi.
2. Regional Officer, Ministry of Environment, Forest and Climate Change, Regional Office (ECZ), Bunglow No. A-2, Shyamali Colony, Ranchi-834002.
3. Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
4. Chairman, Jharkhand State Pollution Control Board, H.E.C., Dhurwa, Ranchi-834004 (Jharkhand).
5. Member Secretary, Central Ground Water Authority, West Block -II, Wing -3, Sector I, R.K.Puram, New Delhi - 110086.
6. District Collector, Bokaro District, Jharkhand.
7. Guard File / Record file / Monitoring file.
8. MOEF&CC Website.


(Sundar Ramanathan)
Scientist 'E'