



Government of India  
Ministry of Environment, Forest and Climate Change  
(Impact Assessment Division)

To,

The Chief (Mine Planning and Projects)  
TATA STEEL LIMITED KHONDBOND IRON AND MN MINES

Registered Office  
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D. Vijayendra,  
Head (Planning), Noamundi  
M/s Tata Steel Ltd., Noamundi Iron Mine  
P.O. Noamundi, Thana: Noamundi  
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**Subject:** Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the Ministry vide proposal number IA/OR/MIN/240369/2020 dated 30 Nov 2021. The particulars of the environmental clearance granted to the project are as below.

|  |   |
|--|---|
| 1. EC Identification No.                   | EC23A001OR114343  |
| 2. File No.                                | J-11015/215/2008-IA.II(M)   |
| 3. Project Type                            | Expansion   |
| 4. Category                                | A   |
| 5. Project/Activity including Schedule No. | 1(a) Mining of minerals   |
| 6. Name of Project                         | Proposed expansion of production of Iron ore from 12 MTPA to 19.5 MTPA (ROM) with total excavation of 22.94 MTPA and Beneficiation Plant throughput capacity increase from 12 MTPA to 17.6 MTPA in Joda East Iron Mine within ML area of 671.093 ha located in the villages Joda, Kamarjoda, Banspani, Khuntpani & Baitarani Reserve Forest (R.F) in Barbil Taluka, Keonjhar District, Odisha |
| 7. Name of Company/Organization            | TATA STEEL LIMITED KHONDBOND IRON AND MN MINES  |
| 8. Location of Project                     | Orissa  |
| 9. TOR Date                                | N/A   |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 13/04/2023

(e-signed)  
Pankaj Verma  
Scientist E  
IA - (Non-Coal Mining sector)

PARIVESH

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*Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH. Please quote identification number in all future correspondence.*

*This is a computer generated cover page.*



**F. No. J-11015/215/2008-IA.II(M)**  
Government of India  
Ministry of Environment, Forest and Climate Change  
Impact Assessment Division

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2<sup>nd</sup> Floor, Prithvi Block  
Indira Paryavaran Bhawan  
Jor Bagh Road, Aliganj  
New Delhi- 110 003

Dated: 13<sup>th</sup> April, 2023

To

Chief (Mine Planning and Projects)  
M/s Tata Steel Limited,  
Khondbond Iron & Mn. Mines,  
P.O./P.S.-Joda, Distritc-Keonjhar,  
Odisha – 758034.

**Sub: Proposal for Environmental Clearance of M/s Tata Steel Limited for Joda East Iron mine with expansion of production of Iron ore from 12.0 MTPA to 19.5 MTPA (ROM) with total excavation of 22.94 MTPA [Iron ore (ROM): 19.5 MTPA + OB waste: 2.64 MTPA + Re-handling of MR dump: 0.8 MTPA] and Beneficiation Plant throughput capacity increase from 12.0 MTPA to 17.6 MTPA in the mine lease area of 612.700 ha [567.087 ha (Stage II FC available) + 45.613 ha (Non Forest land)] out of 654.743 ha [671.093 ha (Joda East Iron Ore mine) – 16.35 ha (Manmora Manganese mine)], located at Villages Joda, Kamarjoda, Banspani, Khuntpani & Baitarani Reserve Forest (R.F) in Barbil Taluka, Keonjhar District, Odisha – [File No: J-11015/215/2008-IA.II(M), Proposal No: IA/OR/MIN/240369/2020] – Environmental Clearance (EC) - regarding.**

Sir,

This has reference to the online proposal no. IA/OR/MIN/240369/2020 of M/s Tata Steel Limited is for Joda East Iron mine with expansion of production of Iron ore from 12.0 MTPA to 19.5 MTPA (ROM) with total excavation of 22.94 MTPA [19.5 MTPA (ROM), OB Waste: 2.64 MTPA and Rehandling of MR dump: 0.8 MTPA] and Beneficiation Plant throughput capacity increase from 12.0 MTPA to 17.6 MTPA in the mine lease area of 612.700 ha [567.087 ha (Stage II FC available) + 45.613 ha (Non Forest land)] out of 654.743 ha [671.093 ha (Joda East Iron Ore mine) – 16.35 ha (Manmora Manganese mine)], located at Villages Joda, Kamarjoda, Banspani, Khuntpani & Baitarani Reserve Forest (R.F) in Barbil Taluka, Keonjhar District, Odisha. The mine lease area is located between Latitude 21°59' to 22°03' N and Longitude: 85°25' to 85°27' E. The mine lease area falls under the Survey of India Toposheet No: 73 F/8 and 73 G/5 and falls in Seismic



Zone-II. The Project Proponent presented the KML file during the presentation to indicate the location of mine lease on Google Earth.

2. M/s Tata Steel Limited has made an online application vide proposal no: IA/OR/MIN/240369/2020 dated 30.11.2021 and submitted Form-2 and EIA report under the provisions of the EIA Notification, 2006. The proposed project activity is listed at schedule no. 1(a) Mining of Minerals and 2(b) Mineral beneficiation under Category "A" of the schedule of the EIA Notification, 2006 as the mining lease area is greater than 100 ha and appraised at Central level.

3. The proposal was earlier considered in the 43<sup>rd</sup> EAC (Non-Coal Mining) meeting held during 14<sup>th</sup> – 16<sup>th</sup> December, 2021. After detailed deliberations made by the Project Proponent and the Consultant, the Committee noted that the instant proposal has been accorded EC by Ministry on 11.03.2013 for enhancement of production of ROM of Iron ore from 6 MTPA to 12 MTPA and PP is also having a separate EC for Manmora Manganese lease granted by SEIAA on 29.06.2011 for Production of 12,000 TPA Manganese ore and Slime storage facility to reclaim a part of the mined-out pit over a lease area of 16.35 ha which is located in the Northern side of the mine lease area in the part of Joda East Iron mine covering an area of 671.093 ha. The Committee also noted that the extraction of Manganese ore is exhausted; however, the PP has not implemented the Mine Closure Plan with a possibility of extracting manganese from dump. Since, the instant proposal is for enhancement of production of Iron ore and there is no mention of Manganese ore in Form 2. The Committee observed that the Project Proponent has prepared the EMP for normative production only. Therefore, the Committee deferred the proposal for want of requisite information. The Project Proponent vide Lr No MD/ENV/74/100/2022 dated 28.02.2022 submitted the information sought by the EAC in its meeting held during 14<sup>th</sup> – 16<sup>th</sup> December, 2021 and accordingly the proposal was reconsidered in the 49<sup>th</sup> EAC (Non Coal Mining) meeting held during 19<sup>th</sup> – 21<sup>st</sup> April, 2022.

4. The details of the previous Environmental Clearance (EC) are furnished as below:

| Date of application | Proposal No/File No   | Consideration | Details   | Date of accord |
|---------------------|---|---------------|---|----------------|
| 26.09.2011          | IA/OR/MIN/<br>20472/2011<br><br>J-11015/<br>215/2008-IA<br>.II(M) | -             | Environmental Clearance for enhancement of production of ROM of iron ore from 6 MTPA to 12 MTPA and expansion of beneficiation plant from 6 MTPA to 12 MTPA throughout for 567.087ha of forest land for which FC is available and 62.187 ha of non-forest | 11.03.2013     |



|  |   |                            |   |            |
|--|---|----------------------------|---|------------|
|  |   |                            | land, i.e., a total of 629.274 ha.  |            |
| PP applied on 07.05.2018 for amendment in EC dated 11.03.2013. | IA/OR/MIN/61373/2013<br><br>J-11015/215/2008-IA.II(M) | June 21-22, 2018           | The Committee clarified that there is no change in the definition of ROM and the Environmental Clearance was granted for 12.0 million TPA of Iron ore (ROM) as mentioned in EIA/EMP report and approved mining plan. The PP shall handle the material other than ROM as per approved Mining Plan and EIA/EMP report submitted to the Ministry | 07.09.2018 |
| PP applied on 31.03.2019 for amendment in EC dated 11.03.2013  | IA/OR/MIN/99283/2019<br><br>J-11015/215/2008-IA.II(M) | 30 <sup>th</sup> May, 2019 | In respect of modernization of beneficiation plant.   | 29.07.2019 |
| <b>Details of Environmental Clearance for Mn Mines.</b>        |   |                            |   |            |
| -  | Ref No. SEIAA/329                                     | -                          | Environmental Clearance for production of 12,000 TPA Manganese ore and Slime storage facility to reclaim a part of the mined-out pit over a lease area of 16.35 ha  | 29.06.2011 |
| 28.04.2016   | Ref No. SEIAA/1925                                    | -                          | Extension of validity of Environmental Clearance for up to 30 years or up to the lease period or the life of the mine whichever is less.  | 31.08.2016 |

5. The details of the Terms of Reference (ToR) are furnished as below:

| Date of application | Proposal No           | Consideration              | Details   | Date of accord |
|---------------------|-----------------------|----------------------------|---|----------------|
| 31.07.2020          | IA/OR/MIN/166045/2020 | 20 <sup>th</sup> Aug, 2020 | Expansion of its mine from 12 MTPA to 19.5 MTPA ROM | 18.09.2020     |

|            |                           |   |   |            |
|------------|---------------------------|---|---|------------|
|            |                           |   | with total excavation of 22.14 MTPA, and its beneficiation plant throughput capacity is planned to increase from 12 MTPA to 17.6 MTPA in the mine lease area of 671.093 ha along with the recommendation made by NEERI in its carrying capacity study for Odisha. |            |
| 01.12.2020 | IA/OR/MIN/<br>166045/2020 | - | Corrigendum in ToR for change in total excavation of 22.94 MTPA instead of 22.14 MTPA.  | 09.08.2021 |

6. The Project Proponent submitted that the lease block of Joda East Iron Mine covering an area of 671.093 ha along with the adjoining region was secured by M/s TISCO Ltd under a prospecting license in the year 1916. The mining lease was granted in favor of M/s TISCO Ltd over an area of 2.59 sq.m for 30 years from 01.07.1925 to 30.06.1955 in village Joda east, Keonjhar District. The lease deed was executed on 12.02.1926 and registered on 29.04.1926. The 1<sup>st</sup> renewal of lease for Iron Ore over an area of 2.59 sq.m was granted for 30 years from 01.07.1955 to 30.06.1985 by Government order dated 21.08.1957. The lease deed was executed on 28.03.1956 and registered on 19.07.1956. The 2<sup>nd</sup> renewal of lease for Iron Ore over an area of 671.093ha was granted for 20 years from 01.07.1985 to 30.06.2005. The lease deed was executed on 18.12.1997 and registered on 20.01.1999. The PP made application for 3<sup>rd</sup> renewal of the mining lease on 27.04.2004 for Iron ore over an area of 671.093 ha which is before one year of the expiry of the 2<sup>nd</sup> RML period i.e. 30.06.2005 accordingly, Steel & Mines Department, Government of Odisha vide letter no. III(A) SM - 13/2012/3283/SM, Bhubaneswar dated 18.04.2015 have extended the validity period of above mining lease over an area of 671.093ha under MMDR Act, 1957 as amended by the MMDR Amendment Act, 2015 from 01.07.2015 to 31<sup>st</sup> March, 2030. The supplementary lease deed was executed on 05.05.2015.

7. The Project Proponent submitted that the Manmora Manganese lease was granted to Tata Steel for the mining of Manganese ore from the Joda East Mine lease area. The total Joda East Mine lease area is 671.093 ha out of which 16.35 ha of mine lease area is Manmora Manganese lease. Manmora lease lies in the northern part of the Joda East Mine lease area which is held by Tata Steel since 1966. Also, PP submitted that Manmora manganese mine is not operational as manganese ore is completely exhausted. PP submitted that the extension of validity period of mining lease for Manganese ore issued by Department of Steel & Mines, Govt. of Odisha vide Lr No. 3273/III(MN)SM(RML)-01/2008/S&M, Bhubaneswar dated 18.04.2015 from the date of expiry of the last valid period of lease i.e., 01.07.2005 up to 31.03.2030 over an area of



16.36 ha. PP also submitted that the supplementary lease deed made on 06.05.2015 and registered vide e-registration no. 11031500226 dated 07.05.2015 between the Governor of Odisha and M/s Tata Steel Limited for the period up to 31.03.2030. PP reported that no active mining operation has been carried out since 2010-11 within the lease as already all manganese ore has been mined out and only the manganese ore recovery from the available stocks of sub grade and mineral rejects was carried out along with some reclamation activities such as back filling, levelling, plantation, etc.

**8. Land Area Breakup:**

| <b>Forest Land</b>   | <b>Area, ha</b> | <b>Non-Forest land</b> | <b>Area, ha</b> |
|--|-----------------|------------------------|-----------------|
| Reserve Forest   | 520.727         | Waste Land             | -               |
| Khasra Forest  | 0.927           | Grazing Land           | -               |
| Non-forest Govt. land treated as forest land as per DLC Report | 87.252          | Agriculture Land       | -               |
| Non-forest land treated as forest as on 25.10.1980 (SABIK)     | 16.574          | Tenanted Land          | 7.754           |
|  |                 | Others                 | 37.859          |
| <b>Sub Total</b>   | <b>625.480</b>  | <b>Sub Total</b>       | <b>45.613</b>   |
| <b>Total</b>   |                 | <b>671.093 ha</b>      |                 |

**9.** The Project Proponent submitted the Approval of Review of Mining Plan along with the Progressive Mine Closure Plan approved by Regional Controller of Mines, Indian Bureau of Mines vide letter no RMP/A/43-ORI/BHU/2019-20 dated 21.02.2020 for the period 2020-21 to 2024-25 for Joda East Iron Mine over an area of 671.093ha. PP also submitted that the scheme of mining including Progressive Mine Closure Plan of Manmora Manganese mine approved by Indian Bureau of Mines (IBM) vide letter no. MS/OTFM/41-ORI/BHU/2014-15/138 dated 07.04.2015 for the period 2015-16 to 2019-20 over an area of 16.35 ha. Further, PP submitted that the MoEF&CC Regional Office Bhubaneswar, in its inspection report has also certified compliance to the approved Progressive Mine Closure Plan based on their site visit on 02.02.2022 and issued the Certified compliance report vide letter no. 109-41/21/EPE/364 dated 18.02.2022. PP submitted that since there are no extractable reserves of Manganese ore in Manmora Manganese Mine, proposal for review of mining plan was not approved by IBM and hence we have prepared a draft Final Mine Closure Plan (FMCP) which is ready for submission to IBM for approval. PP submitted that they are waiting for the issue of final notification for submission of FMCP as per the new format which is likely to be published shortly.

**10.** The Project Proponent submitted that the opencast mechanized method of mining with the help of shovel-dumper combination has been adopted for mining of iron ore. PP reported that total Geological resources is 249.55 Million Tonnes and Mineable reserves is 188.52 Million Tonnes. Life of the mine will be 10 years. The bench height of 9m and bench

width of 20-25m (at present) and 9-11 m (at conceptual Stage) will be maintained. The Overall pit slope will be 45°. The blasted material will be excavated by shovels of 5.7/5.9 cu.m capacity and loaded into 100 tonne dumpers for transportation of the ore, mineral reject and waste. At present, Joda East Iron ore mine is having both Wet and Dry processing facilities. The total existing capacity of dry processing and wet processing is 12.0 MTPA. ROM is fed to beneficiation and processing plant. After beneficiation and processing, product is transported through a series of closed conveyor belts for stacking. Stacked product is reclaimed as per blending requirement and transported again in closed conveyor belts to the Rapid Loading System (RLS) where product is loaded into railway wagons. Entire product is transported out of the lease to own steel plants & sister concerns only through rail. PP reported that the existing stock of Over-burden is 9.569 MT, Mineral Reject is 30.279 MT and Tailings is 11.24 MT. PP also reported that during plan period Over-burden of 10.19 MT, Mineral Reject of 4.8 MT (2.4 MT from existing stock will be re-handled and stored in specified dumps) and Tailings of 5.346 MT will be generated. Till the life of the mine, Over-burden of 19.21 MT, Mineral Reject of 5.2 MT and Tailings of 5.7 MT will be generated. PP submitted that during the plan period, it is proposed to dump the generated waste in five numbers of waste dumps. The part of the waste generated during the plan period shall be used for making the embankments of the in-pit slime dam. Slime generated from the existing & proposed new beneficiation plants shall be stored in tailing dam 2. PP reported that the ultimate depth of mining will be 486 mRL at Conceptual Stage and as per the observations from nearby wells and water bodies, the minimum depth of water table is 472mRL and maximum depth of water table is 463mRL. As all mining activity are concentrated on hill top, mining activity shall not intersect ground water table during the entire mine life.

11. Nearest village / town/ highway/railway station / water bodies:

| Particulars             | Details         | Distance and Direction |
|-------------------------|-----------------|------------------------|
| Nearest Villages/Town   | Joda            | 0.9 km, W              |
|                         | Barbil          | 9.5 km, NW             |
| Nearest Highway         | NH-215          | 0.7 km, N              |
| Nearest Railway station | Banspani        | 0.1 km, WSW            |
|                         | Barbil          | 10.9 km NW             |
| Streams/Rivers          | Kundra Nala     | 0.2 km, NW             |
|                         | Baitarani River | 1.3 km, E              |
|                         | Mahadeba Nala   | 4.0 km, NNE            |

12. Water requirement:

|                         |   |                         |          |
|-------------------------|---|-------------------------|----------|
| Total water requirement | Existing: 5000 m <sup>3</sup> /day;<br>Proposed: 14556m <sup>3</sup> /day | Mine Dust Suppression   | 1800 KLD |
|                         |   | Domestic and Sanitation | 200 KLD  |
|                         |   | Beneficiation plant     | 4700 KLD |



|            |   |  |          |
|------------|---|--|----------|
|            |   | Plantation   | 200 KLD  |
|            |   | Other Provisions (Supply to Ferro Alloy Plant, Domestic supply to colonies, Village Supply, Slurry Pipeline) | 7656 KLD |
| Source     | Kundra Nala   |  |          |
| Permission | <p>i. NOC from CGWA for ground water withdrawal obtained vide NOC no. CGWA/NOC/MIN/REN/1/2021/6428 and is valid up to 09.10.2022 for abstraction of 460 cu.m/day of ground water.</p> <p>ii. Current surface water drawl permission for 9,052 KLD (3.70 cusecs) granted vide Memo no. 39937 dated 18.11.2015 by Water Resources Department, GoO. The approval for allotment of water has been obtained from Industrial Promotion &amp; Investment Corporation of Odisha (IPICOL), GoO and further grant of permission by WRD is in process.</p> |  |          |

13. The Project Proponent reported that the total mine lease area is 671.093 ha out of which 625.48 ha forest land and 45.613 ha is non-forest land. PP submitted that in EC letter dated 11.03.2013, the forest land is mentioned as 608.906 ha. As per the guideline no. F.No.8-78/1996-FC(pt.) dated 10.03.2015 of MoEF&CC, "...in all such virgin/unbroken areas falling in the mining leases which were or are recorded as 'forest' in the Government record on or after 25th October 1980, but while processing and/or approving the proposals under the FC Act for use of forest land located in such mining leases for non-forest purpose, were treated as 'non-forest', is undertaken only if the prior approval of Central Government under the FC Act for use of such areas for mining purposes has been obtained or is obtained...." PP submitted that the post this guideline, the Tehsildar vide Lr No. 2726/Date 04.06.2016 certified that land schedule of Sabik Forest land over 16.574 ha falls within the lease hold of Joda East Iron & Manmora Mn mines out of 671.093 ha of lease. This Sabik Forest land of 16.574 ha was categorized as forest land only after 10.03.2015. After 10.03.2015, the total forest area increased to 625.480 ha (608.906 ha + 16.574 ha). Therefore, the total lease area of 671.093 ha consists of 625.480 ha of forest land and 45.613 ha of non-forest land. PP submitted that MoEF&CC accorded Stage-II Forest Clearance vide letter no. F. No. 8-32/1993-FC (vol.II) dated: 24.09.2007 over an area 567.087 ha. For the balance forest area, PP applied for the diversion of 41.819 ha forest area which includes 32.425 ha of forest area & 9.394 ha of safety zone vide letter no. MD/LO/823/394/2006 dated 15.11.2006 and 16.574 Ha of Forest land vide letter No. JCO/13/453/5-B dated 01.07.2016. PP also submitted that payment for total NPV of Rs 37.50 Crores over an area of 625.48 ha and Compensatory afforestation (CA) of Rs.0.57 Crores over an area of 401.792 ha till date already made as per demand raised by forest

officials. PP also reported that part of the lease is in Baitarani R.F and Sidhamath R.F (2.8 km, W), Thakurani R.F (0.8 km, N) and Chamakpur R.F (1.3 km, SE) are found in the 10km radius of the study area. Further, PP submitted that there are no National Park, Wildlife Sanctuary, Eco Sensitive Zone, Elephant/Tiger Reserve, Biosphere Reserve within 10km radius of the mining lease area.

14. The Project Proponent reported that following Schedule-I species such as Indian elephant, Sloth Bear, Pangolin Grey Wolf, Python, Common Indian Monitor, Peacock and Baza are reported in the study area of 10km radius. PP submitted that the Site-Specific Wildlife Conservation Plan (SSWLCP) along with the authenticated list of flora and fauna approved by Principal Chief Conservator of Forests (WL) & Chief Wildlife Warden, Odisha vide Memo 3195/1 WL-SSP-97/2016 dated 25.04.2016 with a budget of Rs.819.91 Lakhs.

15. The Project Proponent reported that the total area proposed for greenbelt/plantation will be 509.269 ha. PP also reported that 82,177 no. of saplings have been planted over an area of 61.653 ha till the FY 2019-2020. PP submitted that during plan period about 28,488 no.s of saplings will be developed over an area of 201.34 ha. PP earmarked a budget of Rs 16.62 Cr towards development of green plant & plantation till the end of life of mine.

16. The primary baseline data for specific micro-meteorology data, ambient air quality, waste quality, noise level, soil and flora & fauna has been collected during Summer season. The Monitoring results of ambient air, surface water, soil, ambient noise and ground water for the month of March to May, 2020 have been reported and no major divergence was observed with respect to concentration values of various parameters of collected samples.

| Baseline Data (Air / Water / Noise / Soil / Ground water table/ others) |                                |  |   |                                     |                                    |
|---|--------------------------------|--|---|-------------------------------------|------------------------------------|
| Period of baseline data collection                                      |                                |  | March to May, 2020                                  |                                     |                                    |
| Season (Summer / Pre-monsoon / Post-monsoon / Winter)                   |                                |  | Summer season                                       |                                     |                                    |
| Period  | Results of Baseline monitoring |  |   |                                     |                                    |
| AAQ parameters at 10 locations  | Pollutant                      | Min, $\mu\text{g}/\text{m}^3$                    | Max, $\mu\text{g}/\text{m}^3$                       | 98 %ile, $\mu\text{g}/\text{m}^3$   | Standard, $\mu\text{g}/\text{m}^3$ |
|   | PM2.5                          | 26.5   | 44.9  | 44.6                                | 60                                 |
|   | PM10                           | 37.4   | 64.7  | 64.3                                | 100                                |
|   | SO2                            | 8.3  | 16.2  | 16.2                                | 80                                 |
|   | NOx                            | 10.3   | 18.5  | 18.4                                | 80                                 |
| AAQ modelling (Incremental GLC)   | Pollutant                      | Baseline Concentration, $\mu\text{g}/\text{m}^3$ | Incremental Concentration, $\mu\text{g}/\text{m}^3$ | Total GLC, $\mu\text{g}/\text{m}^3$ | Standard                           |
|   |                                |  |   |                                     |                                    |



|                                      |  |      |     |      |     |
|--------------------------------------|--|------|-----|------|-----|
|                                      | PM2.5  | 44.9 | 2.1 | 47.0 | 60  |
|                                      | PM10   | 64.7 | 8.1 | 72.8 | 100 |
|                                      | SO2  | 16.2 | 0.1 | 16.3 | 80  |
|                                      | NOx  | 18.5 | 5.5 | 24.0 | 80  |
| Noise level at 11 locations          | Day Time: 41.4 to 66.6 Leq dB (A)<br>Night Time: 38.2 to 63.5 Leq dB (A)   |      |     |      |     |
| Surface water quality at 4 locations | pH varied between 6.58 to 6.95, Electrical Conductivity (EC) ranged between 228 $\mu$ S/cm to 442 $\mu$ S/cm, Dissolved Oxygen (DO) observed to be in the range of 5.2 mg/l to 5.7 mg/l. BOD values observed < 3mg/l. The analysis revealed that most of the parameters are well within the permissible limits as per IS: 2296-Class C.  |      |     |      |     |
| Ground water quality at 10 locations | PH varied between 6.02 to 7.61, EC ranged between 183 – 1170 $\mu$ S/cm, Total Dissolved Solids (TDS) ranged between 98 – 674 mg/l, Total Hardness ranged between 55.1 – 278.6 mg/l. The analysis reveals that all the parameters are found to comply with the requirements of IS: 10500 specification of ground water.  |      |     |      |     |
| Soil quality at 10 locations         | The physical characteristics of soils reveals that are fine texture, having low bulk density, imperatively high water holding capacity, and slow permeability. Chemical characteristics reveals that soil reaction (pH) soils are slightly acidic to neutral and electrical conductivity (EC) is non saline (normal). Organic matter is mostly low. Macro nutrient like nitrogen is low and phosphorus is medium to sufficient, potassium is very low to low, calcium, magnesium are moderate and base saturation is high. Sodium is below the limit to make soil saline or sodic or alkali. No contamination of heavy metals like Cr.Pb, Ni, As, Hg, and Cd.  |      |     |      |     |
| Ground Vibration                     | PP submitted the data monitored for ground vibration for the period FY21 & FY22 (till Dec'21). PP reported that the maximum vibration recorded was 5.693 mm/s with dominant peak frequency of 7.2 Hz at near Weigh Bridge at 480 m from the blast conducted at Baspani (D-Block) bench face. In the same blast the vibration recorded towards Baspani Village at 670 m was below 0.5 mm/s. The maximum level of air over-pressure/noise recorded was 111.1 dB (L) at 480 m (near Weigh Bridge) from the blast conducted at Baspani (D-Block) face. PP also reported that the statutory limit prescribed for ground vibration as per DGMS technical circular 7 of 1997, concerning to blast vibration standard is 5 mm/s (for domestic houses/ structures not belonging to owner) and it was observed that the ground vibration due to blasting activities at Joda East Iron Mine is well within the prescribed limits. |      |     |      |     |



**17. Public Hearing (PH) Details:**

|  |  |
|--|--|
| Advertisement for PH with date                         | Odisha Dharitrii and Times of India on 28-08-2021.   |
| Date of PH   | 28.09.2021   |
| Venue  | Central Playground, Khata no. 115/13, Plot no. 222, Joda in Keonjhar district, Odisha  |
| Chaired by   | Additional District Magistrate, Keonjhar   |
| Main issues raised during PH                           | Provision of employment to local people, education, medical facilities, infrastructural development and welfare activities, environmental management, tree plantation and support in agricultural practices. |
| Budget proposed for addressing issues raised during PH | Rs. 62.21 Crores   |

**18.** The Project Proponent submitted the Consent to Operate issued by the State Pollution Control Board, Odisha vide Order No: 4789/IND-I-CON-184, dt.24.03.2021 for production of 12.0 MTPA (ROM) of Iron Ore along with operation of wet beneficiation plant of throughput capacity 7.0 MTPA, operation of dry crushing plant of capacity 1x1000 TPH (5 MTPA throughput capacity) and operation of railway siding of handling capacity of 12.0 MTPA for the period up to 31.03.2022. PP also submitted the Consent to Operate issued by OSPCB vide Order no. 5276 dated 26.03.2021 for Manmora Manganese mine for production of 5000 TPA which is valid till 31.03.2022. PP submitted the EC Compliance report certified by Integrated Regional Office (IRO), Bhubaneswar vide Lr no. 101-529/09/EPE/835 dated 04.05.2021 wherein IRO observed that the non-compliances detected. PP submitted the action taken report vide letter dated 13.05.2021. IRO vide Lr No. 101-529/09/EPE dated 03.06.2021 examined the reply of the PP w.r.t. non-compliances and observed that the project authorities have complied/are in the process of complying or assured to comply with the conditions stipulated by the Ministry. Accordingly, the action taken report may be considered for further necessary action. PP also submitted that the compliance of NEERI conditions has already been certified by IRO MoEFCC Bhubaneswar. PP also submitted the certified EC compliance report issued by Integrated Regional Office, Bhubaneswar vide letter no. 109-41/21/EPE/364 dated 18.02.2022 for the EC dated 29.06.2011 for Manmora Manganese lease wherein the IRO mentioned that no non-compliances detected.

**19.** The Project Proponent submitted the past production details (Iron Ore) from 1993-1994 to 2020-21 authenticated by DMG, Joda, Keonjhar vide memo No. 6741/Mines dated 17.11.2021. In addition to this PP also submitted the duly filled annexure-III as per which, PP obtained the EC on 11.03.2013 for Iron Ore mine prior to that PP did not having the EC, thus, the instant proposal attracts the Hon'ble Supreme Court judgment dated 02.08.2017 in the matter of Common Cause Vs Union Of india(W.P.(c) 114 of 2014) and



after grant of last EC 11.03.2013 the production of Iron Ore is within the EC capacity. PP also submitted that demand notice raised by DDM vide letter No. 4138/Mines dated 02.09.2017 for the carrying the mining operations and produced the Iron Ore by PP without valid EC during the period of 2000-01 to 2010-11. PP submitted that as demand raised by DDM, the payment of Rs 243,64,11,380.00 (Rupees Two hundred and forty-three crores sixty-four lakhs Eleven Thousand Three hundred eighty only) is made to DDM, Joda Circle. The same was intimated by PP to DDM vide letter no.GM/PL/751/225/17 dated 22<sup>nd</sup> December, 2017. PP also submitted that DDM has raised the demand notice vide Lr No 5190/Mines, dated 23.10.2017 for violation of Mining Plan and CTO Demand. Revision application was filed before the Revision Authority (RA), Ministry of Mines. PP has also submitted the copy of the revision authority imposed the stay order Mining Plan and CTO demand dated 23.10.2017, RA order dated 8th March, 2018. PP obtained the No Objection Certificate (NOC) from Directorate of Mines vide letter No. 5015/DM dated 28.06.2018 for processing of ToR/EC application. PP also submitted the past production details duly authenticated by Joint Director Mines, Joda vide Lr Memo No. 741/Mines, dated 15.02.2022 for the period 1993-94 to 2020-21 for Manmora Manganese lease. PP also submitted an undertaking by way of Affidavit in a non-judicial stamp vide certificate No, 46AA 814249 dated 26.01.2020 in pursuance to MoEF&CC OM vide No. 3-50/2017-414.III(Pt) dated 30th May 2018, and has stated that "this is to undertake that Tata Steel Limited would comply with all the statutory requirements and Judgement of Hon'ble 'Supreme Court dated 2<sup>nd</sup> August 2017 in the Writ Petition (civil) No 114 of 2014 in the matter of common cause versus Union of India and Ors. with respect of Joda East Iron Mine owned and operated by it. This undertaking is without prejudice to rights and contentious of the Project Proponent with respect to the present.

**20. Court case details:**

|            |  |
|------------|--|
| Court Case | PP submitted that the credible action initiated against PP u/s 15 of EP Act in the court of J.M.F.C Barbil (vide case no 2(C) C.C.No.96/2013) for production of iron-ore in excess of EC permitted quantity. |
|------------|--|

**21.** The Project Proponent submitted that the Rehabilitation & Resettlement issues are not involved for the proposed expansion project.

**22. Details of project cost and employment:**

| Particulars                                     | Budget (Rs. In Crore) |
|---|-----------------------|
| Capital Cost for Environment Protection         | 93.7                  |
| Budget for addressing the Public Hearing issues | 62.21                 |
| Total Cost for EMP                              | 155.91 (93.7 + 62.21) |

|                        |   |
|------------------------|---|
| Recurring Cost for EMP | 8.395   |
| Project Cost           | 1915  |
| Employment             | Additionally, around 803 persons will be employed due to the expansion project. |

**23. Observation and Recommendation of the Committee:**

The proposal for Environmental Clearance was considered in the 49<sup>th</sup> EAC (Non Coal Mining) meeting held during 19<sup>th</sup>- 21<sup>st</sup> April, 2022. After detailed deliberations made by the Project Proponent and the Consultant, the Committee recommended the proposal for grant of Environmental Clearance for M/s Tata Steel Limited for Joda East Iron mine with expansion of production of Iron ore from 12.0 MTPA to 19.5 MTPA (ROM) with total excavation of 22.94 MTPA [19.5 MTPA (ROM), OB Waste: 2.64 MTPA and Rehandling of MR dump: 0.8 MTPA] and Beneficiation Plant throughput capacity increase from 12.0 MTPA to 17.6 MTPA in the mine lease area of 612.700 ha [567.087 ha (Stage II FC available) + 45.613 ha (Non Forest land)] out of 654.743 ha [671.093 ha (Joda East Iron Ore mine) – 16.35 ha (Manmora Manganese mine)], located at Villages Joda, Kamarjoda, Banspani, Khuntpani & Baitarani Reserve Forest (R.F) in Barbil Taluka, Keonjhar District, Odisha subject to the specific conditions in addition to the standard EC conditions applicable for non-coal mining projects.

**24.** The EAC has examined the proposal in accordance with the Environmental Impact Assessment Notification, 2006 and further amendments thereto and the undersigned is directed to say that the Ministry of Environment, Forest and Climate Change after accepting the recommendations of 49<sup>th</sup> EAC (Non Coal Mining) meeting held during 19<sup>th</sup>- 21<sup>st</sup> April, 2022, hereby accords the above mentioned proposal for grant of Environmental Clearance for M/s Tata Steel Limited for Joda East Iron mine with expansion of production of Iron ore from 12.0 MTPA to 19.5 MTPA (ROM) with total excavation of 22.94 MTPA [19.5 MTPA (ROM), OB Waste: 2.64 MTPA and Rehandling of MR dump: 0.8 MTPA] and Beneficiation Plant throughput capacity increase from 12.0 MTPA to 17.6 MTPA in the mine lease area of 612.700 ha [567.087 ha (Stage II FC available) + 45.613 ha (Non Forest land)] out of 654.743 ha [671.093 ha (Joda East Iron Ore mine) – 16.35 ha (Manmora Manganese mine)], located at Villages Joda, Kamarjoda, Banspani, Khuntpani & Baitarani Reserve Forest (R.F) in Barbil Taluka, Keonjhar District, Odisha subject to the following specific conditions in addition to the standard EC conditions applicable for non-coal mining projects.

**A. Specific conditions:**

- i. The Environmental Clearance will be valid upto 31<sup>st</sup> March, 2030.
- ii. This Environmental Clearance will be restricted only to Joda East Iron Ore mine in the mine lease area of 612.700 ha [567.087 ha (Stage II FC available) + 45.613 ha



(Non Forest land)] out of 654.743 ha [671.093 ha (Joda East Iron Ore mine) – 16.35 ha (Manmora Manganese mine)]. Mining activity will be restricted to non-forest land and the area for which Stage-II Forest Clearance (FC) available.

- iii. The Project Proponent shall ensure that in any case total excavation should not be more than 22.94 MTPA.
- iv. The ground induced blasting vibrations shall be monitored regularly for every blast performed and the values of “Peak Particle Velocity” and “Air Over Pressure” shall be maintained below the permissible values prescribed by the DGMS, from time to time.
- v. The Project Proponent should install the continuous ambient air quality monitoring stations in such numbers as per the scientific study and in consultation with CPCB.
- vi. The Project Proponent shall get a study conducted to explore the feasibility of installation of sensor-based water sprinklers and based on the recommendations, the same shall be implemented.
- vii. The budget of Rs 62.21 Cr to address the concerns raised by the public including in the public hearing to be completed within 3 years from the date of start of mining operations. PP shall comply with all action plans made for public hearing concerns and make regular maintenance and record the progressive activity outcomes.
- viii. The Project Proponent shall undertake the plantation by planting the seedling of 10 ft height with at least 90% survival rate and the entire peripheral plantation and the safety barrier plantation and gap plantation shall be completed within 6 months from the start of mining operations. The causalities of each year shall be replaced every year with new saplings and such number of saplings shall not be counted in the number of saplings proposed to plant in that year. The data for such saplings should be furnished during six monthly compliance report along with the progressive plantation. PP shall undertake the progressive bench plantation up to HFL for eco restoration of water bodies. PP shall ensure that the afforestation should be only of Sal which is a native species.
- ix. The Project Proponent shall also organize employment-based apprenticeship/ internship training program every year with appropriate stipend for the youth and other programs to enhance the skill of the local people. The data should be maintained for the training imparted to the persons and the outcome of the training, for the assessment of the training program should be analyzed periodically and improved accordingly.
- x. The Project Proponent should obtain permission for withdrawal of surface water before starting mining operations.

- xi. The Project Proponent should periodically monitor and maintain the health records of the mine workers digitally prior to mining operations, at the time of operation of mine and post mining operations.

**B. Recommendation of CSIR-NEERI Report on “Carrying Capacity Study for Environmentally Sustainable Iron and Manganese Ore Mining Activity in Keonjhar, Sundargarh and Mayurbhanj districts of Odisha State:** The Committee has also deliberated the various specific recommendations of carrying capacity study report conducted by CSIR-NEERI w.r.t. mining proposal of Iron Ore and/or manganese in the State of Odisha. There are recommendation which needs to be implemented by the State Govt. of Odisha and Project Proponent. Based on detailed deliberations on the recommendations of the carrying capacity study report, the Committee has also **recommended the following specific conditions viz.**

- 1) Project Proponent and Department of Steel & Mines, Govt. of Odisha shall ensure the implementation of recommendations of carrying capacity study report conducted by CSIR-NEERI w.r.t. mining proposal of Iron Ore and/or manganese in the State of Odisha.
- 2) Department of Steel & Mines, Govt. of Odisha should prepare 5 years regional plan for annual iron ore requirement from the state, which in turn shall be met from different mines/zones (e.g. Joda, Koira.) in the state. Accordingly, sustainable annual production (SAP) for each zone/mine may be followed adopting necessary environmental protection measures.
- 3) Project Proponent shall construct the cement concrete road from mine entrance and exit to the main road with proper drainage system and green belt development along the roads and also construction of road with minimum 300 m inside the mine. This should be done within one year for existing mines and new mine should have since beginning. The Department of Steel & Mines, Govt. of Odisha should ensure the compliance and should not issue the Mining Permits, if mine lease holder has not constructed proper cement concrete road as suggested. **This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.**
- 4) The Committee observed that as per the recommendations of NEERI report the PP needs to do regular vacuum cleaning of all mineral carrying roads aiming at “zero dust re-suspension” within 3 months. **This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.**
- 5) Project Proponent shall monitor the environmental quality parameters as per EC and CTE/CTO conditions, and implementation of suggested measures for control of road dust and air pollution. Odisha State Pollution Control Board has to ensure the



compliance of CTE/CTO. Regional office of the MoEF&CC, Bhubaneswar shall monitor the compliance of the EC conditions. Regional office of the Indian Bureau of Mines (IBM) shall monitor the compliance of mining plan and progressive mine closure plan. Any violation by mine lease holder may invite actions per the provisions of applicable Acts.

- 6) Project Proponent shall ensure the compliance of Suggested Ore Transport Mode (SOTM) with association of the State Government of Odisha. All existing mines should ensure adoption of SOTM within next 5 years. New mines or mines seeking expansion should incorporate provision of SOTM in the beginning itself, and should have system in place within next 5 years.
- 7) The State Govt. of Odisha shall ensure dust free roads in mining areas wherever the road transportation of mineral is involved. The road shoulders shall be paved with fence besides compliance with IRC guidelines. All the roads should have proper drainage system and apart from paving of entire carriage width the remaining right of way should have native plantation (dust capturing species). Further, regular maintenance should also be ensured by the Govt. of Odisha. Progress on development of dust free roads, implementation of SOTM, increased use of existing rail network, development of additional railway network/conveyor belt/ pipelines etc. shall be submitted periodically to Regional office of the MoEF&CC.
- 8) Project Proponent shall develop the parking plazas for trucks with proper basic amenities/ facilities inside the mine. This should be done within one year for existing mines and new mines should have since beginning. **This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.**
- 9) Department of Steel & Mines shall ensure the construction of NH 215 as minimum 4 lane road with proper drainage system and plantation and subsequent regular maintenance of the road as per IRC guidelines. Construction of other mineral carrying roads with proper width and drainage system along with road side plantation to be carried out. This shall be completed within 2 Years.
- 10) Regular vacuum cleaning of all mineral carrying roads aiming at “Zero Dust Re-suspension” shall be adopted by PWD / NHAI/ Mine Lease Holders within a time Period of 3 months for existing roads. **This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.**
- 11) In case the total requirement of iron ore exceeds the suggested limit for that year, permission for annual production by an individual mine may be decided depending



on approved EC capacity (for total actual dispatch) and actual production rate of individual mine during last year or any other criteria set by the State Govt., i.e. Dept. of Steel & Mines. Department of Steel and Mines in consultation with Indian Bureau of Mines-RO should prepare in advance mine-wise annual production scenario so that demand for iron ore can be anticipated, and actual production/dispatch does not exceed the suggested annual production.

- 12) R&D studies towards utilization of low-grade iron ore should be conducted through research/academic institutes like IMMT, Bhubaneswar, NML, Jamshedpur, and concerned metallurgical departments in IITs, NITs etc., targeting full utilization of low-grade iron ore (Fe content upto 45% by 2020 and upto 40% by 2025). In fact, life cycle assessment of whole process including environmental considerations should be done for techno-economic and environmental viability. R&D studies on utilization of mine wastewater having high concentration of Fe content for different commercial applications in industries such as cosmetics, pharmaceutical, paint industry should also be explored. Responsibility: IBM, Dept. of Steel & Mines, Individual Mine Lease Holders.
- 13) The mining activity in Joda-Koira sector is expected to continue for another 100 years, therefore, it will be desirable to develop proper rail network in the region. Rail transport shall not only be pollution free mode but also will be much economical option for iron ore transport. The rail network and/or conveyor belt system upto public railway siding needs to be created. The total length of the conveyor belt system/ rail network to be developed from mines to nearest railway sidings by 11 mines in Joda region is estimated to be about 64 km. Similarly, in Koira region, total length of rail network/ conveyor system for 8 mines (under SOTM 1 & 2) is estimated to be around 95 km. Further, it is suggested to develop a rail network connecting Banspani (Joda region) and Roxy railway sidings in Koira region. Responsibility: Dept. of Steel & Mines, Govt. of Odisha and Concerned Mines along with Indian Railways. Time Period: Maximum 7 years (by 2025). The Department of Steel & Mines, Govt. of Odisha should follow-up with the concerned Departments and railways so that proposed proper rail network is in place by 2025.
- 14) State Govt. of Odisha shall make all efforts to ensure exhausting all the iron & manganese ore resources in the existing working mines and from disturbed mining leases/zones in Joda and Koira region. The criteria suggested shall be applicable while suggesting appropriate lease area and sustainable mining rate. Responsibility: Dept. of Steel & Mines, Govt. of Odisha.
- 15) **Mining Operations/Process Related:** Project Proponent shall implement the following mitigation measures: (i) Appropriate mining process and machinery (viz. right capacity, fuel efficient) should be selected to carry out various mining



operations that generate minimal dust/air pollution, noise, wastewater and solid waste. e.g. drills should either be operated with dust extractors or equipped with water injection system. (ii) After commencement of mining operation, a study should be conducted to assess and quantify emission load generation (in terms of air pollution, noise, waste water and solid waste) from each of the mining activity (including transportation) on annual basis. Efforts should be made to further eliminate/ minimize generation of air pollution/dust, noise, wastewater, solid waste generation in successive years through use of better technology. This shall be ensured by the respective mine lease holders. (iii) Various machineries/equipment selected (viz. dumpers, excavators, crushers, screen plants etc.) and transport means should have optimum fuel/power consumption, and their fuel/power consumption should be recorded on monthly basis. Further, inspection and maintenance of all the machineries/ equipment/ transport vehicles should be followed as per manufacturer's instructions/ recommended time schedule and record should be maintained by the respective mine lease holders. (iv) Digital processing of the entire lease area using remote sensing technique should be carried out regularly once in 3 years for monitoring land use pattern and mining activity taken place. Further, the extent of pit area excavated should also be demarcated based on remote sensing analysis. This should be done by ORSAC (Odisha Space Applications Centre, Bhubaneswar) or an agency of national repute or if done by a private agency, the report shall be vetted/ authenticated by ORSAC, Bhubaneswar. Expenses towards the same shall be borne by the respective mine lease holders. Responsibility: Individual Mine Lease Holders.

- 16) **Air Environment Related:** Project Proponent shall implement the following mitigation measures: (i) Fugitive dust emissions from all the sources should be controlled regularly on daily basis. Water spraying arrangement on haul roads, loading and unloading and at other transfer points should be provided and properly maintained. Further, it will be desirable to use water fogging system to minimize water consumption. It should be ensured that the ambient air quality parameters conform to the norms prescribed by the CPCB in this regard. (ii) The core zone of mining activity should be monitored on daily basis. Minimum four ambient air quality monitoring stations should be established in the core zone for SPM, PM10, PM2.5, SO2, NOx and CO monitoring. Location of air quality monitoring stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board (based on Emission Load Assessment Study). The number of monitoring locations may be more for larger capacity mines and working in larger area. Out of four stations, one should be online monitoring station in the mines having more than 3 MTPA EC Capacity. (iii) Monitoring in buffer zone should be carried out by SPCB or through NABET accredited agency. In addition, air quality parameters (SPM, PM10, PM2.5,



SO<sub>2</sub>, NO<sub>x</sub> and CO) shall be regularly monitored at locations of nearest human habitation including schools and other public amenities located nearest to source of the dust generation as applicable. (iv) Emissions from vehicles as well as heavy machinery should be kept under control and regularly monitored. Measures should be taken for regular maintenance of vehicles used in mining operations and in transportation of mineral. (v) The vehicles shall be covered with a tarpaulin and should not be overloaded. Further, possibility of closed container trucks should be explored for direct to destination movement of iron ore. Air quality monitoring at one location should also be carried out along the transport route within the mine (periodically, near truck entry and exit gate), Responsibility: Individual Mine Lease Holders and SPCB.

17) **Noise and Vibration Related:** Project Proponent shall implement the following mitigation measures: (i) Blasting operation should be carried out only during daytime. Controlled blasting such as Nonel, should be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs. (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone. Further, date, time and distance of measurement should also be indicated with the noise levels in the report. The data should be used to map the noise generation from different activities and efforts should be made to maintain the noise levels with the acceptable limits of CPCB (CPCB, 2000) (iv) Similarly, vibration at various sensitive locations should be monitored atleast once in month, and mapped for any significant changes due to successive mining operations. Responsibility: Individual Mine Lease Holders.

18) **Water/Wastewater Related:** Project Proponent shall implement the following mitigation measures: (i) In general, the mining operations should be restricted to above ground water table and it should not intersect groundwater table. However, if enough resources are estimated below the ground water table, the same may be explored after conducting detailed geological studies by GSI and hydro- geological studies by CGWB or NIH or institute of national repute, and ensuring that no damage to the land stability/ water aquifer system shall happen. The details/ outcome of such study may be reflected/incorporated in the EIA/EMP report of the mine appropriately. (ii) Natural watercourse and/or water resources should not be obstructed due to any mining operations. Regular monitoring of the flow rate of the springs and perennial nallas should be carried out and records should be maintained. Further, regular monitoring of water quality of nallas and river passing thorough the mine lease area (upstream and downstream locations) should be carried out on monthly basis. (iii) Regular monitoring of ground water level and its



quality should be carried out within the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out on monthly basis. (iv) In order to optimize water requirement, suitable conservation measures to augment ground water resources in the area should be undertaken in consultation with Central Ground Water Board (CGWB). (v) Suitable rainwater harvesting measures on long term basis should be planned and implemented in consultation with CGWB, to recharge the ground water source. Further, CGWB can prepare a comprehensive plan for the whole region. (vi) Appropriate mitigation measures (viz. ETP, STP, garland drains, retaining walls, collection of runoff etc.) should be taken to prevent pollution of nearby river/other water bodies. Water quality monitoring study should be conducted by State Pollution Control Board to ensure quality of surface and ground water sources on regular basis. The study can be conducted through NABL/ NABET approved water testing laboratory. However, the report should be vetted by SPCB. (vii) Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated in ETP so as to conform to the discharge standards applicable. (viii) Oil and grease trap should be installed before discharge of workshop effluents. Further, sewage treatment plant should be installed for the employees/colony, wherever applicable. (ix) Mine lease holder should ensure that no silt originating due to mining activity is transported in the surface water course or any other water body. Appropriate measures for prevention and control of soil erosion and management of silt should be undertaken. Quantity of silt/soil generated should be measured on regular basis for its better utilization. (x) Erosion from dumps site should be protected by providing geo-textile matting or other suitable material, and thick plantation of native trees and shrubs should be carried out at the dump slopes. Further, dumps should be protected by retaining walls. (xi) Trenches / garland drain should be constructed at the foot of dumps to arrest silt from being carried to water bodies. Adequate number of check dams should be constructed across seasonal/perennial nallas (if any) flowing through the mine lease areas and silt be arrested. De-silting at regular intervals should be carried out and quantity should be recorded for its better utilization, after proper soil quality analysis. (xii) The water so collected in the reservoir within the mine should be utilized for the sprinkling on hauls roads, green belt development etc. (xiii) There should be zero waste water discharge from the mine. Based on actual water withdrawal and consumption/ utilization in different activities, water balance diagram should be prepared on monthly basis, and efforts should be made to optimize consumption of water per ton of ore production in successive years. Responsibility: Individual Mine Lease Holders, SPCB and CGWB.

- 19) **Land/ Soil/ Overburden Related:** Project Proponent shall implement the following mitigation measures: (i) The top soil should temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long (not more than 3 years or as



per provisions mentioned in the mine plan/ scheme). The topsoil should be used for land reclamation and plantation appropriately. (ii) Fodder plots should be developed in the non-mineralized area in lieu of use of grazing land, if any. (iii) Over burden/ low grade ore should be stacked at earmarked dump site (s) only and should not be kept active for long period. The dump height should be decided on case to case basis, depending on the size of mine and quantity of waste material generated. However, slope stability study should be conducted for larger heights, as per IBM approved mine plan and DGMS guidelines. The OB dump should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles should be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Proper records should be maintained regarding species, their growth, area coverage etc. (iv) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine operation, soil, OB and mineral dumps. The water so collected can be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de-silted, particularly after monsoon and should be maintained properly. Appropriate documents should be maintained. Garland drain of appropriate size, gradient and length should be constructed for mine pit, soil, OB and mineral dumps and sump capacity should be designed with appropriate safety margin based on long term rainfall data. Sump capacity should be provided for adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and de-silted at regular intervals. (v) Backfilling should be done as per approved mining plan/scheme. There should be no OB dumps outside the mine lease area. The backfilled area should be afforested, aiming to restore the normal ground level. Monitoring and management of rehabilitated areas should continue till the vegetation is established and becomes self-generating. (vi) Hazardous waste such as, waste oil, lubricants, resin, and coal tar etc. should be disposed off as per provisions of Hazardous Waste Management Rules, 2016, as amended from time to time. Responsibility: Individual Mine Lease Holders.

- 20) **Ecology/Biodiversity (Flora-Fauna) Related:** Project Proponent shall implement the following mitigation measures: (i) All precautionary measures should be taken during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. Action plan for conservation of flora and fauna should be prepared and implemented in consultation with the State Forest and Wildlife Department within the mine lease area, whereas outside the mine lease area, the same should be maintained by State Forest Department. (ii) Afforestation is to be done by using local and mixed species saplings within and outside the mining lease area. The reclamation and afforestation is to be done in such a manner like exploring the growth of fruit bearing trees which



will attract the fauna and thus maintaining the biodiversity of the area. As afforestation done so far is very less, forest department needs to identify adequate land and do afforestation by involving local people in a time bound manner. (iii) Green belt development carried out by mines should be monitored regularly in every season and parameters like area under vegetation/plantation, type of plantation, type of tree species /grass species/scrubs etc., distance between the plants and survival rate should be recorded. (iv) Greenbelt is an important sink of air pollutants including noise. Development of green cover in mining area will not only help reducing air and noise pollution but also will improve the ecological conditions and prevent soil erosion to a greater extent. Further, selection of tree species for green belt should constitute dust removal/dust capturing plants since plants can act as efficient biological filters removing significant amounts of particulate pollution. Thus, the identified native trees in the mine area may be encouraged for plantation. Tree species having small leaf area, dense hair on leaf surface (rough surface), deep channels on leaves should be included for plantation. (v) Vetiver plantation on inactive dumps may be encouraged as the grass species has high strength of anchoring besides medicinal value. (vi) Details of compensatory afforestation done should be recorded and documented by respective forest divisions, and State Forest Department should present mine-wise annual status, along with expenditure details. Responsibility: Individual Mine Lease Holders and State Forest & Wildlife Department.

- 21) **Socio-Economic Related:** Project Proponent shall implement the following mitigation measures: (i) Public interaction should be done on regular basis and social welfare activities should be done to meet the requirements of the local communities. Further, basic amenities and infrastructure facilities like education, medical, roads, safe drinking water, sanitation, employment, skill development, training institute etc. should be developed to alleviate the quality of life of the people of the region. (ii) Land outtees and land losers/affected people, if any, should be compensated and rehabilitated as per the national/state policy on Resettlement and Rehabilitation. (iii) The socio-economic development in the region should be focused and aligned with the guidelines/initiatives of Govt. of India/ NITI Aayog around prosperity, equality, justice, cleanliness, transparency, employment, respect to women, hope etc. This can be achieved by providing adequate and quality facilities for education, medical and developing skills in the people of the region. District administration in association with mine lease holders should plan for "Samagra Vikas" of these blocks well as other blocks of the district. While planning for different schemes in the region, the activities should be prioritized as per Pradhan Mantri Khanij Kshetra Kalyan Yojna (PMKKKY), notified by Ministry of Mines, Govt. of India, vide letter no. 16/7/2017-M.VI (Part), dated September 16, 2015. Responsibility: District Administration and Individual Mine Lease Holders.



22) **Road Transport Related:** Project Proponent shall implement the following mitigation measures: (i) All the mine lease holders should follow the suggested ore transport mode (SOTM), based on its EC capacity within next 5 years. (ii) The mine lease holders should ensure construction of cement road of appropriate width from and to the entry and exit gate of the mine. Further, maintenance of all the roads should be carried out as per the requirement to ensure dust free road transport. (iii) Transportation of ore should be done by covering the trucks with tarpaulin or other suitable mechanism so that no spillage of ore/dust takes place. Further, air quality in terms of dust, PM10 should be monitored near the roads towards entry & exit gate on regular basis, and be maintained within the acceptable limits. Responsibility: Individual Mine Lease Holders and Dept. of Steel & Mines.

23) **Occupational Health Related:** Project Proponent shall implement the following mitigation measures: (i) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects periodically. (ii) Occupational health surveillance program for all the employees/workers (including casual workers) should be undertaken periodically (on annual basis) to observe any changes due to exposure to dust, and corrective measures should be taken immediately, if needed. (iii) Occupational health and safety measures related awareness programs including identification of work related health hazard, training on malaria eradication, HIV and health effects on exposure to mineral dust etc., should be carried out for all the workers on regular basis. A full time qualified doctor should be engaged for the purpose. Periodic monitoring (on 6 monthly basis) for exposure to respirable minerals dust on the workers should be conducted, and record should be maintained including health record of all the workers. Review of impact of various health measures undertaken (at an interval of 3 years or less) should be conducted followed by follow-up of actions, wherever required. Occupational health centre should be established near mine site itself. Responsibility: Individual Mine Lease Holders and District Administration (District Medical Officer).

### C. Standard conditions

#### I. Statutory compliance

- (1) This Environmental Clearance (EC) is subject to orders/ judgment of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.
- (2) The Project proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors before commencing the mining operations.



- (3) The State Government concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of Judgment of Hon'ble Supreme Court dated 2<sup>nd</sup> August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors.
- (4) The Project Proponent shall follow the mitigation measures provided in MoEFCC's Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014, titled "Impact of mining activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".
- (5) A copy of EC letter will be marked to concerned Panchayat / local NGO etc. if any, from whom suggestion / representation has been received while processing the proposal.
- (6) State Pollution Control Board/Committee shall be responsible for display of this EC letter at its Regional office, District Industries Centre and Collector's office/ Tehsildar's Office for 30 days.
- (7) The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the State Pollution Control Board/Committee and web site of the Ministry of Environment, Forest and Climate Change ([www.parivesh.nic.in](http://www.parivesh.nic.in)). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional Office for compliance and record.
- (8) The Project Proponent shall inform the MoEF&CC for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred. PP needs to apply for transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.

## II. Air quality monitoring and preservation

- (9) The Project Proponent shall install a minimum of 3 (three) online Ambient Air Quality Monitoring Stations with 1 (one) in upwind and 2 (two) in downwind direction based on long term climatological data about wind direction such that an angle of 120° is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM10, PM2.5, NO2, CO and SO2 etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCI/I, dated



18.11.2009 covering the aspects of transportation and use of heavy machinery in the impact zone. The ambient air quality shall also be monitored at prominent places like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main Gate of the mine site.

- (10) Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metalled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM10 and PM2.5 are evident such as haul road, loading and unloading point and transfer points. The Fugitive dust emissions from all sources shall be regularly controlled by installation of required equipments/ machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It shall be ensured that air pollution level conform to the standards prescribed by the MoEFCC/ Central Pollution Control Board.

### III. Water quality monitoring and preservation

- (11) In case, immediate mining scheme envisages intersection of ground water table, then Environmental Clearance shall become operational only after receiving formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall ensure that prior approval from CGWA and MoEFCC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydro-geological study of the area.
- (12) Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department / State Pollution Control Board.
- (13) The Project Proponent shall undertake regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease including upstream and downstream. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. The parameters to be monitored shall include their water quality vis-à-vis suitability for usage as per CPCB criteria and flow rate. It shall be ensured that no obstruction and/ or alteration be made to water bodies during mining operations without justification and prior approval of MoEFCC. The monitoring of water courses/ bodies existing in



lease area shall be carried out four times in a year viz. pre- monsoon (April May), monsoon (August), post-monsoon (November) and winter (January) and the record of monitored data may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on six-monthly basis.

- (14) Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TDS), Dissolved Oxygen (DO), pH and Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed at the project site in public domain, on a display board, at a suitable location near the main gate of the Company. The circular No. J- 20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.
- (15) Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually.
- (16) Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be treated after its initial passage through Oil and grease trap.
- (17) The water balance/water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEF&CC and State Pollution Control Board/Committee.

#### **IV. Noise and vibration monitoring and prevention**

- (18) The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.
- (19) The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may



affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day /night hours.

- (20) The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The workers engaged in operations of HEMM, etc. should be provided with ear plugs /muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/ personals/ laborers are working without personal protective equipment.

#### **V. Mining plan**

- (21) The Project Proponent shall adhere to approved mining plan, inter alia, including, total excavation (quantum of mineral, waste, over burden, inter burden and top soil etc.); mining technology; lease area; scope of working ( method of mining, overburden & dump management, O.B& dump mining, mineral transportation mode, ultimate depth of mining, concurrent reclamation and reclamation at mine closure; land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life; etc.).
- (22) The land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life shall be governed as per the approved Mining Plan. The excavation vis-à-vis backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area shall be governed as per approved mining plan. PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance status shall be submitted half-yearly to the MoEFCC and its concerned Regional Office.

#### **VI. Land reclamation**

- (23) The Overburden (O.B.), waste and topsoil generated during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB / waste dumps / topsoil dump like height, width and angle of slope shall be governed as per the approved Mining Plan and the guidelines/circulars issued by D.G.M.S. The topsoil shall be used for land reclamation and plantation.
- (24) The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The



selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozer/ compactors thereby ensuring proper filling/ leveling of dump mass. In critical areas, use of geo textiles/ geo-membranes / clay liners / Bentonite etc. shall be undertaken for stabilization of the dump.

- (25) Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and Top Soil/OB/Waste dumps to prevent run off of water and flow of sediments directly into the water bodies (Nallah/ River/ Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/ sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly.
- (26) Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time period thereby allowing proper settling of sediments/ silt material. The sedimentation pits/ sumps shall be constructed at the corners of the garland drains.

## VII. Transportation

- (27) No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a 'bypass' road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers. [If applicable in case of road transport].
- (28) The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other



areas of dust generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.

### **VIII. Green Belt**

- (29) The Project Proponent shall develop greenbelt in 7.5m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole Green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the Ministry irrespective of the stipulation made in approved mine plan.
- (30) The Project Proponent shall carryout plantation/ afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by planting the native species in consultation with the State Forest Department/ Agriculture Department/ Rural development department/ Tribal Welfare Department/ Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this respect shall also be adhered. The density of the trees should be around 2500 saplings per Hectare. Adequate budgetary provision shall be made for protection and care of trees.
- (31) The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Government. In this regard, Project Proponent should essentially implement the directions of the Hon'ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/ protected against felling and plantation of such trees should be promoted.

### **IX. Public hearing and human health issues**

- (32) Project Proponent shall make provision for the housing for workers/labors or shall construct labor camps within/outside (company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the



project related infrastructure. The domestic waste water should be treated with STP in order to avoid contamination of underground water.

#### **X. Corporate Environment Responsibility (CER)**

- (33) The Project Proponent shall submit the time-bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the activities committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEF&CC Office Memorandum No.22-65/2017-IA.III dated 30 September, 2020. The action plan shall be implemented within three years of commencement of the project.

#### **XI. Miscellaneous**

- (34) The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEF&CC.
- (35) The Project Authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
- (36) The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MOEFCC & its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board.
- (37) A separate 'Environmental Management Cell' with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEF&CC.
- (38) The concerned Regional Office of the MoEF&CC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEF&CC officer(s) by furnishing the requisite data / information / monitoring reports.
- (39) In pursuant to Ministry's O.M No 22-34/2018-IA.III dated 16.01.2020 to comply with the direction made by Hon'ble Supreme Court on 8.01.2020 in W.P. (Civil) No 114/2014 in the matter Common Cause vs Union of India, the mining lease holder shall after ceasing mining operations, undertake regrassing the mining area and any



other area which may have been disturbed due to other mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.

- (40) The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.
- (41) Concealing factual data failure to comply with any or submission of false/ fabricated data and of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

#### **D. Standard EC Conditions for Mineral Beneficiation Plants:**

##### **I. Statutory compliance:**

- 1) The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
- 2) The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
- 3) The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case of the presence of schedule-I species in the study area).
- 4) The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee.
- 5) The project proponent shall obtain the necessary permission from the Central Ground Water Authority, in case of drawl of ground water / from the competent authority concerned in case of drawl of surface water required for the project.
- 6) The project proponent shall obtain authorization under the Hazardous and other Waste Management Rules, 2016 as amended from time to time.

##### **II. Air quality monitoring and preservation**



- 7) The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emission with respect to standards prescribed in Environment (Protection) Rules 1986 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 recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories. Monitor fugitive emissions in the plant premises.
- 8) The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through labs recognised under Environment (Protection) Act, 1986. 9) The project proponent shall install system to carryout Continuous Ambient Air Quality monitoring for common/criterion parameters relevant to the main pollutants released (e.g., PM10 and PM2.5 in reference to PM emission, and SO2 and NOx in reference to S02 and NOx emissions) within and outside the plant area at least at four locations (one within and three outside the plant area at an angle of 120'each). covering upwind and downwind directions.
- 9) The project proponent shall install system to carryout Continuous Ambient Air Quality monitoring for common/criterion parameters relevant to the main pollutants released (e.g., PM10 and PM2.5 in reference to PM emission, and SO2 and NOx in reference to S02 and NOx emissions) within and outside the plant area at least at four locations (one within and three outside the plant area at an angle of 120'each). covering upwind and downwind directions.
- 10) The project proponent shall submit monthly summary report of continuous stack emission and air quality monitoring and results of manual stack monitoring and manual monitoring of air quality /fugitive emissions to Regional Office of MoEF&CC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.
- 11) 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.
- 12) The project proponent use leak proof trucks/dumpers carrying ore and other raw materials and cover them with tarpaulin.
- 13) Wind shelter fence and chemical spraying shall be provided on the raw material stock piles.

*Munna Singh*



- 14) Design the ventilation system for adequate air changes as per ACGIH document for all tunnels, motor houses, Oil Cellars.

### III. Water quality monitoring and preservation

- 15) The project proponent shall install 24x7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules 1986 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 recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.
- 16) 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 recognised under Environment (Protection) Act, 1986 and NABL accredited laboratories.
- 17) The project proponent shall submit monthly summary report of continuous effluent monitoring and results of manual effluent testing and manual monitoring of ground water quality to Regional Office of MoEF&CC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.
- 18) The project proponent shall provide the slime disposal facility with impervious lining and collection wells for seepage. The water collected from the slime pond shall be treated and recycled.
- 19) Adhere to 'Zero Liquid Discharge'
- 20) Sewage Treatment Plant shall be provided for treatment of domestic wastewater to meet the prescribed standards.
- 21) 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.
- 22) The project proponent shall practice rainwater harvesting to maximum possible extent.
- 23) The project proponent shall make efforts to minimise water consumption in the steel plant complex by segregation of used water, practicing cascade use and by recycling treated water.



#### **IV. Noise monitoring and prevention**

- 24) Noise level survey shall be carried as per the prescribed guidelines and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report.
- 25) The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.

#### **V. Energy Conservation measures**

- 26) 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;
- 27) Provide LED lights in their offices and residential areas.

#### **VI. Waste management**

- 28) The waste oil, grease and other hazardous waste shall be disposed of as per the Hazardous & Other waste (Management & Transboundary Movement) Rules, 2016.
- 29) Kitchen waste shall be composted or converted to biogas for further use.(to be decided on case to case basis depending on type and size of plant)

#### **VII. Green Belt and EMP**

- 30) Green belt shall be developed in an area equal to 33% of the plant area with a native tree species in accordance with CPCB guidelines. The greenbelt shall inter alia cover the entire periphery of the plant
- 31) The project proponent shall prepare GHG emissions inventory for the plant and shall submit the programme for reduction of the same including carbon sequestration including plantation.

#### **VIII. Public hearing and Human health issues**

- 32) Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.

*Alim Shah*



- 33) 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.
- 34) 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, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
- 35) Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

### **IX. Corporate Environment Responsibility**

- 36) The Project Proponent shall submit the time-bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the activities committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEF&CC Office Memorandum No.22-65/2017-IA.III dated 30 September, 2020. The action plan shall be implemented within three years of commencement of the project.
- 37) The company shall have a well laid down environmental policy duly approved 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.
- 38) 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 report to the head of the organization.
- 39) Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.



- 40) Self-environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.
- 41) All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Mineral Beneficiation plants shall be implemented.

## **X. Miscellaneous**

- 42) 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.
- 43) 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.
- 44) 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.
- 45) The project proponent shall monitor the criteria pollutants level namely; PM10, SO<sub>2</sub>, NO<sub>x</sub> (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.
- 46) 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.
- 47) 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.
- 48) 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.



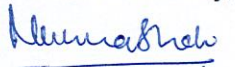


- 49) The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
- 50) The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
- 51) 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).

25. The above conditions will 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 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/High Court and any other Court of Law relating to the subject matter.

26. Any appeal against this environmental clearance 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.

27. This issues with the approval of Competent Authority.

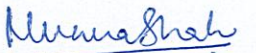
Yours faithfully,  
  
(Munna Kumar Shah)  
Scientist E

**Copy to:**

- i. **The Secretary**, Ministry of Mines, Government of India Shastri Bhawan, New Delhi.
- ii. **The Chief Secretary**, Government of Odisha, Secretariat, Bhubaneswar.
- iii. **The Secretary**, Department of Environment, Government of Odisha, Secretariat, Bhubaneswar.
- iv. **The Secretary**, Department of Mines and Geology, Government of Odisha, Secretariat, Bhubaneswar.
- v. **The Secretary**, Department of Forests, Government of Odisha, Secretariat, Bhubaneswar.
- vi. **The Secretary**, Department of Steel and Mines, Government of Odisha, Secretariat, Bhubaneswar.
- vii. **The Member Secretary**, Odisha Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012.



- viii. **The Deputy Director General of Forests (C)**, Ministry of Environment, Forest and Climate Change, Integrated Regional Office, A/3, Chandersekharpur, Bhubaneswar – 751023.
- ix. **The Chief Wildlife Warden**, Prakurti Bhawan, 5<sup>th</sup> floor, BDA Apartment, Nilakanthanagar, Nayapalli, Bhubaneswar-751012, Odisha.
- x. **The Chairman**, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
- xi. **The Controller General**, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440001.
- xii. **The Member Secretary**, Central Ground Water Board, Ministry of Jal Shakti, 12/1 Jam Nagar House, Shahjahan road, New Delhi 110011.
- xiii. **The District Collector**, Keonjhar District, Govt. of Odisha.
- xiv. **Guard File.**
- xv. **PARIVESH Portal.**

  
(Munna Kumar Shah)  
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