**F.No. IA-J-11015/63/2018-IA-II (M)**
Government of India
Ministry of Environment, Forest and Climate Change
Impact Assessment Division
***

2nd Floor, Prithvi Wing,
Indira Paryavaran Bhavan,
Jor Bagh Road, Aliganj,
New Delhi-110 003

Dated: 05th August, 2021

To,

**M/s Tata Steel Limited,**
Khondbond Iron & Mn. Mines,
P.O./P.S.-Joda, Distt.-Keonjhar,
Odisha – 833217.

**Subject: - Proposal of M/s Tata Steel Limited for expansion in production of iron ore from 8.0 MTPA to 13.5 MTPA (Total Excavation: 15 MTPA) along with mineral beneficiation plant of 4.0 MTPA in the mine lease area of 403.3238 ha at Deojhar Village & Thakurani RF, Keonjhar District, Odisha State - Environmental Clearance (EC) regarding.**

Sir,

This has reference to proposal no. IA/OR/MIN/210667/2019 of M/s Tata Steel Limited is for grant of Environmental Clearance (EC) for expansion in production of iron ore from 8.0 MTPA to 13.5 MTPA (Total Excavation: 15 MTPA) along with mineral beneficiation plant of 4.0 MTPA in the mine lease area of 403.3238 ha at Deojhar Village & Thakurani RF, Keonjhar District, Odisha. The mine lease area located between Latitude 22° 05' N to 22° 10' N and Longitude 85° 25' E to 85° 35' E. The mine lease area falls under the Survey of India Toposheet No 73 F/8 & 73 F/12 and falls in Seismic Zone-II. The PP presented the KML file during the presentation to indicate the location of mine lease on Google Earth/ DSS.

2. M/s Tata Steel Limited has made an online application vide proposal no: IA/OR/MIN/210667/2019 dated 04.06.2021 and submitted the Form-2 and EIA report under the provisions of the EIA Notification, 2006 for the project mentioned above. 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. The proposal also attracts the general conditions as the mining lease area is located adjacent to Interstate boundary of Jharkhand- Odisha.

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

| Date of application | Proposal No | Consideration | Details | Date of accord |
|---|---|---|---|---|
| 14.06.2010 | IA/OR/MIN/9352/2008 | - | 2.0 Million TPA to 8.0 | 26.11.2010 |

| | | | | |
|---|---|---|---|---|
| | | | Million TPA | |
| 30.08.2017 | IA/OR/MIN/9352/2008 | September 18-19, 2017, October 23-24, 2017 & June 21-22, 2018 | Amendment in EC for Change in ROM | 18.01.2019 |
| 28.11.2019 | IA/OR/MIN/123688 | December 19-20, 2019 | Expansion in production of iron ore from 8.0 MTPA to 13.5 MTPA (Total Excavation: 15 MTPA) along with mineral beneficiation plant of 4.0 MTPA in the mine lease area of 403.3238 ha along with CSIR-NEERI on carrying capacity study | 15.04.2020 |

4. Lease Detail

| | | |
|---|---|---|
| Initial Lease Grant | Area | 3152.018 Ha |
| | Grant date | 17.01.1933 |
| | Name of the blocks | Katamati, Joda west and Khondbond blocks |
| | Validity | 30 years |
| 1st Renewal | Date | 10.01.1978 |
| | Period | 17.01.1963 to 16.01.1983 |
| 2nd Renewal | Area | 403.3238 |
| | Date | 27.10.1984 |
| | Period | 17.01.1983 to 16.01.2003 |
| | Name of the blocks | Katamati (Independent lease) |
| 3rd renewal (validity extension) | Letter No. | III(A)SM-02/2004/3308/SM, Bhubaneswar |
| | Date | 18.04.2015 |
| | Granted by | Dept. of Steel and Mines, Govt. of Odisha |
| | Validity | 31.03.2030 |
| Execution of Supplementary lease deed | Date | 27.11.2016 |
| Registration | No. | 11031600471, Barbil |
| | Date | 28.11.2016 |

5. Land use details

| S No | Particulars | Details |
|---|---|---|
| 1 | Total land | 403.3238 Ha |
| 2 | Involvement of Forest land if any | 360.01 Ha |
| 3 | Private land | 0.0769 Ha |
| 4 | Government land | 43.2369 Ha |
| 5 | Land acquisition details as per MoEF&CC O.M. dated 7/10/2014 | NA |
| 6 | Existence of habitation & involvement of R&R, if any | NA |
| 7 | Elevation of the project site | 534-732 m aMSL |
| 8 | Water body exists within the project site as well as study area | i. Betlara Nallah, 0.2 km, NW<br>ii. Mahadev allah, 0.4 km, SW<br>iii. Balijhore Nallah, 3.9 km, N<br>iv. Sona river / Kundra, 6.3 km, S<br>v. Baitarini River, 8.1 km, SE |
| 9 | Existence of ESZ/ESA / national park / wildlife Sanctuary / biosphere Reserve / tiger reserve / elephant reserve etc. if any within the study area | Nil |

6. Mining Plan

| S. no | Mining Plan along with the Conceptual Plan Approved By | Letter no. | Dated of Approval | For a period | | Details |
|---|---|---|---|---|---|---|
| | | | | From | To | |
| 1 | Approval of Modification of Review of Mining Plan along with PMCP by Indian Bureau of Mines | MRMP/A/06-ORI/BHU/2020-21 | 13.07.2020 | 2021-22 | 2022-23 | Iron Ore over an area of 403.3238 Ha. |

7. The Project Proponent submitted that the mining operation will be fully mechanized open cast mining method with Drilling and Blasting by Shovel Dumper combination. PP reported that the Total geological reserve is 114.43 Million Tonnes and Mineable Reserve is 83.84 Million Tonnes. The life of the mine will be 7 years. The proposed bench height will be 12m and width is 25 m (at present) - 12 m (at conceptual Stage). Overall pit slope will be 45°. Blasting is done by drilling 165 mm dia holes with 10% subgrade drilling, for a bench height of 12 m. Mode of transport inside mine is by dumpers of 100 T. Out of the 4.0 MTPA ore at Katamati, around 2.0 MTPA material will be dispatched by rail through the captive railway siding at Noamundi after processing at Noamundi plant. The mine proposes to transport 2 MTPA (maximum) of material, after processing at Katamati plant, by road to the end-users as a stop-gap arrangement till infrastructure is in place for transporting the entire material by rail only. PP submitted that there will be 2 circuits of 2 MTPA each (total 4 MTPA). Each circuit will have one primary jaw crusher, two cone crushers as secondary and tertiary crushers in combination with vibratory screens and feeders.

8. The Project Proponent submitted that Over-burden (waste dump no. 2): Existing stock is 3.06 MT and Generation during plan period will be 6.52 MT or 2.61 Mcum (part to be backfilled). Generation after plan period till life of mine will be 31.2 MT or 12.48 Mcum.

Mineral Reject (sub-grade dump no. 3): Existing stock is 7.89 MT and Generation during plan period will be 4.2 MT or 1.4 Mcum. Slime stock: Existing stock is 8.06 MT. Re-handling during plan period will be 2.5 MT (to be separately stacked). (No slime to be dumped in Katamati lease area & all slime that will be generated in Noamundi will remain within Noamundi lease area).

9. Details of Depth of mining and ground water table.

| | |
|---|---|
| Depth of mining | Highest working RL (Western Pit): 636 m RL<br>Highest working RL (Eastern Pit): 720 m RL<br>Pit Bottom (Western Pit) : 612 m RL<br>Pit Bottom (Eastern Pit) : 564 m RL |
| Water Table | 519 m RL |
| Ground water intersection | No |

10. Water requirement

| | | | |
|---|---|---|---|
| Total water requirement | 4800 KLD | Fresh water | 4800 KLD |
| | | Treated water | 0 |
| Source | Noamundi mine | | |
| Permission | Quantity | 460 KLD | |
| | Lr No. | CGWA/NOC/MIN/ORIG/2018/4244 (Ground Water drawl) | |
| | Date of Grant | 15.11.2018 | |
| | Validity | 10.10.2018 to 09.10.2020 | |
| | Renewal of NOC is under process | | |
| | Remaining | An application for withdrawal of 29,000 KL water from Baitarani river has been submitted to Water Resource Department, Jharkhand | |
| Additional information (if any) | Proposed water requirement (from 3rd year onwards) is 4800 KLD. | | |

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

| Particulars | Distance | Direction |
|---|---|---|
| Noamundi village | Within 5.0 km | NW |
| State Highway - SH-4 | 3.1 km | N |
| National Highway NH-215 | 5.5 km | S |
| Noamundi Railway station | 4.5 km | NE |
| Betlara Nallah | 0.2 km | NW |
| Mahadev Nallah | 0.4 km | SW |
| Balijhore Nallah | 3.9 km | N |
| Sona river / Kundra | 6.3 km | S |
| Baitarini River | 8.1 km | SE |

12. The Project Proponent submitted that the proposed area for green belt and plantation is 356.8112 ha. Around 42720 saplings have been planted in the last 12 years on the dump slopes, gap-filling and safety zone. It is proposed to plant over an area of 292.85 ha of backfilled area and 58.65 ha of OB dump till FY 2029-30. PP earmarked budget of Rs.5.27 Crores for green plant & plantation till the end of life of mine.

13. The Project Proponent submitted that out of total lease area 403.3238 ha, 360.010 ha is forest land and 43.3138 ha is non-forest land. About 114.1911 ha is the broken-up forest area prior to 1980 which includes some portion of Pit I, II & III. Present mining operation at Katamati is being carried out in non-forest land only. Mining operation in forest area have been discontinued in accordance with the judgment dated 12.12.1996 of Hon'ble Supreme Court regarding stoppage of ongoing non-forest activities in forest areas and subsequent order from divisional forest officer of Keonjhar. As iron ore at Katamati has wide occurrence in forest area, it necessitates for acquiring fresh forest land for continuance of mining operation in future. The steel company had submitted a de-reservation proposal over 199.1720 ha forest land on 17.04.2007, which includes 31.1791 ha broken up forest area prior to 1980. As per the MoEF&CC, Govt. of India Circular dated 10.03.2015, 160.383 ha non-forest area has been identified as forest as on 25.10.1980 (as per Sabik records) and accordingly Forest Diversion Proposal has been applied on 16.06.2016. In principle approval granted for the diversion of forest land of 360.01 ha which includes 160.838 ha (Sabik Kisam forest land) + 199.1720 ha forest land (RF & KF) by MoEF&CC vide letter No F.No. 8-01/2018-FC dated 13.03.2019. PP submitted the Stage-II approval granted for the diversion of forest land of 360.01 ha by MoEF&CC vide letter No F.No. 8-1/2018-FC dated 09.06.2021. PP further submitted that there is no National Park, Biosphere Reserve, Wildlife Corridors, and Tiger/Elephant Reserves/ Critically Polluted area/Aravali within the study area of 10 km radius. PP submitted that the total NPV of Rs. 33.81 crores and compensatory afforestation (CA) of Rs. 15.08 crores for the entire forest land of 360.010 ha has been paid till date as per demand raised by forest officials. Project proponent vide email dated 6.07.2021 informed that till now the mine working have been confined to non-forest area and prior broken forest area (non-forest land classified as forest). The working in prior broken forest area has been continued on the basis of order of Hon'ble High Court of Odisha.

14. Availability of Schedule-I species in study area.

| Schedule-1 species | Yes/No | Details of Certificate/letter/Remarks |
|---|---|---|
| Schedule-I species | Yes | Grey Wolf, Elephant, Sloth Bear, Leopard, Peacock, Python, Common Indian Monitor. |
| Wildlife Conservation Plan | Yes | Conservation plan for Schedule-I Species approved by Chief Wildlife Warden vide Lr.no.5842/1WL(C) SSP-306/2011 dated 29.08.2011. The total approved cost for implementation of SSWLCP is Rs.2.05 crores. |

15. The primary baseline data for specific micro-meteorology data, ambient air quality, waste quality, noise level, soil and flora & fauna has been collected during Post-monsoon and partly winter. The Monitoring results of ambient air, surface water, soil, ambient noise and ground water for the month of October to December, 2019 have been reported and no major divergence was observed with respect to concentration values of various parameters of collected samples.

| Period | | | | | | |
|---|---|---|---|---|---|---|
| AAQ parameters at 16 locations | Pollutant | Min, $\mu g/m^3$ | Max, $\mu g/m^3$ | 98 %le , $\mu g/m^3$ | Standard, $\mu g/m^3$ | |

| | | | | | |
|---|---|---|---|---|---|
| | PM2.5 | 17.4 | 40.3 | 39.3 | 60 |
| | PM10 | 32.1 | 58.6 | 58.4 | 100 |
| | SO2 | 11.2 | 16.8 | 16.7 | 80 |
| | NOx | 21.5 | 32.7 | 32.5 | 80 |

| | | | | | |
|---|---|---|---|---|---|
| AAQ modelling (Incremental GLC) | Pollutant | Baseline Concentration, $\mu g/m^3$ | Incremental Concentration, $\mu g/m^3$ | Total GLC, $\mu g/m^3$ | Standard |
| | PM2.5 | 40.3 | 4.8 | 45.1 | 60 |
| | PM10 | 58.6 | 9.5 | 68.1 | 100 |
| | SO2 | 16.8 | 0.1 | 17 | 80 |
| | NOx | 32.7 | 0.8 | 33.5 | 80 |

| | |
|---|---|
| Noise level at 17 locations | Day Time: 37.9 to 67.6 Leq dB (A)<br>Night Time: 41.1 to 71.9 Leq dB (A) |
| Ground water quality at 13 locations | pH ranged from 6.46 - 7.32, EC ranged from 196 - 687 µS/cm, TDS ranged from ranged from 98 - 384 mg/l, TH ranged from 58.7 - 234.9 mg/l. All other metal concentrations are observed to be below detectable limits. All the parameters in ground water fairly meet the desirable standard limits of IS: 10500. |
| Surface water quality at 8 locations | pH ranged from 6.24 - 7.32, BOD ranges between 3.0 mg/l, COD ranges between 5.0 mg/l, DO ranges between 5.2-5.9 mg/l, |
| Soil quality at 7 locations | pH ranges between 6.2 to 7.1 indicating soils are slightly acidic to neutral, The EC of forteen soil samples is between 167 to 318 µs/cm and are below the limits to be called as saline and hence the soils are normal for crop growth, As per crop requirements the soils are very low to low in organic matter content, |
| Traffic assessment study findings | The existing road network will be adequate to accommodate the additional traffic load and complied with IRC guidelines. There will be an additional impact on the air quality along the transportation route but will be well within the NAAQS standards and will be insignificant impact on habitation on either side of the road. The 4.0 MTPA material will be sent to the Govt Railway Siding by covered trucks from the stockpile for onward dispatch by rail. There will not be any road transportation beyond these railway sidings. Therefore, entire product to the tune of 24.0 MTPA from Noamundi will be transported to the various consumer ends only through rail. |

16. Public Hearing (PH) Details

| | |
|---|---|
| Advertisement for PH with date | Published in the State daily of Odisha Sambad and in Times of India on 28.11.2020 |
| Date of PH | 30.12.2020 |
| Venue | Khata No.172, Plot.No.12 in Deojhar village in Keonjhar District, Odisha |
| Chaired by | Additional District Magistrate, Keonjhar |
| Main issues raised during PH | Major issues raised were provision of employment to local people, education, medical facilities, infrastructural development and welfare activities, road maintenance, tree plantation, etc. |
| Budget proposed for addressing issues raised during PH | Rs.7.36 Crores |

17. Public hearing action plan as per MoEF&CC O.M. dated 30/09/2020

| Sl. no | Activities | Description | Location | Unit Rate in Rs | Total quantity | Yr1 | Yr2 | Yr3 | Total (Rs. In Lakh) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Education | Construction of additional classrooms & boundary wall at Belaipada High School | Birkela GP | Lumpsum | 1 no | 35 | 35 | 0 | 70 |
| | | Provision of computer equipment at Saraswati Sishu Mandir School | Kotarposi GP | 20000/ unit | 5 no | 1 | 0 | 0 | 1 |
| 2 | Livelihood | Construction of Goatery sheds | Deojhar GP Ansaikela GP | 25000/ shed | 100 nos | 5 | 10 | 10 | 25 |
| | | Support for Entrepreneurship development | Surrounding villages | Lumpsum | Lot | 25 | 0 | 0 | 25 |
| 3 | Swachh Bharat | Providing toilets to individual households | Deojhar GP Ansaikela GP | 25000/ toilet | 200 nos | 10 | 20 | 20 | 50 |
| | | Providing toilet facility with water arrangements in two schools | Deojhar GP Ansaikela GP | 25 lakh/ unit | 2 units | 0 | 25 | 25 | 50 |
| 4 | Agriculture | Construction of vermi-compost pit | Deojhar GP Ansaikela GP | 15000/ pit | 100 nos | 5 | 5 | 5 | 15 |
| 5 | Infrastructue development | Construction of Kalyan Mandap | Ansaikela GP | Lumpsum | 1 no | 50 | 100 | 0 | 150 |
| | | Revamping of Temples (Murga Mahadev & Budha Temple) | Deojhar GP | Lumpsum | Lot | 35 | 353 | 0 | 70 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Construction of boundary wall, stage, platform, shed at playground | Chamakpur | Lumpsum | Lot | 20 | 10 | 0 | 30 |
| 6 | Health care | Setting up of Dispensaries | Deojhar GP Ansaikela GP | 105 lakhs / unit | 2 no | 210 | 0 | 0 | 210 |
| | | Provision of Ambulance | Deojhar GP Ansaikela GP | 20 lakh/ unit | 2 no | 40 | 0 | 0 | 40 |

18. The Project Proponent submitted that the Rehabilitation & Resettlement (R&R) Plan is not applicable for this project.

19. The Project Proponent submitted the EC compliance report certified by MoEF&CC Regional Office, Bhubaneswar vide letter no.101-482/EPE dated 18.03.2021. PP submitted the Consent to Operate issued by the Odisha State Pollution Control Board vide No 4768/IND-I-CON-185 dated 23.03.2021 for a production of 8.0 MTPA Iron Ore for the period ending up to 31.03.2026.

20. The Project Proponent reported that the mine is in operation since 1934 and PP obtained the EC vide Letter no J-110115/63/2008-IA.II(M) dated 26.11.2020 for the enhancement of production capacity from 2.0 million tonnes per annum (million TPA) to 8.0 (million TPA). Further, PP obtained the EC amendment w.r.t. ROM on 18.01.2019. PP also submitted the Past production details duly Certified by Mining Department, Govt. of Odisha vide Memo no. 3140/Mines dated 12.07.2018, Memo no. 2803/Mines dated 22.10.2019 and Memo no. 4365/Mines dated 22.10.2020 from 1993-94 to 2019-20 as per the production details PP did not exceeded the production beyond the EC capacity. PP also submitted that presently the mine is in operation with due compliance of the Hon'ble Supreme Court Order dated 02.08.2017 in W.P (C) No-114/2014. The details are as follows:

| S. No | Issues | PP's Submission |
|---|---|---|
| 1 | Compliance of Order dated 02.08.2017 in CWP no. 114/2014 of Hon'ble Supreme Court | In compliance to the order of the Hon'ble Supreme Court on dated 02.08.2017 in WPC No. 114/2014, the project proponent has paid the compensation amount of Rs 82, 70, 48, 782.00/- (Rupees Eighty Two crores seventy lakhs forty eight thousand seven hundred eighty two only) on dated 22.12.2017 being the price thereof as compensation under Section 21(5) of MMDR Act, 1957 for allege production without/in excess of the Environment Clearance as rationalized by the CEC as per the demand notice no 4140/Mines dated 02.09.2017 issued by the Deputy Director of Mines, Joda Circle, Dist-Keonjhar |

| | | |
|---|---|---|
| 2 | Details of demand if any raised by Dept. of Mining and Geology, Govt. of Odisha | Demand was raised by the Deputy Director of Mines, Joda Circle, Dist-Keonjhar vide Letter no 4140/Mines dated 02.09.2017 amounting of Rs 82, 70, 48, 782.00/- (Rupees Eighty Two crores seventy lakhs forty eight thousand seven hundred eighty two only) on or before 31.12.2017 in pursuance to the para 225 of the order dated 02.08.2017 of Hon'ble Supreme Court in WPC No. 114/2014 |
| 3 | Details of demand if any made to Dept. of Mining and Geology, Govt. of Odisha | Payment has been done by the project proponent with an amount of Rs 82, 70, 48, 782.00/- (Rupees Eighty Two crores seventy lakhs forty eight thousand seven hundred eighty two only) on dated 22.12.2017 through net banking vide transaction reference number 425515962 paid through HDFC Bank |
| 4 | Validity of mine lease | Lease period has been extended up to 31.03.2030 vide Letter no. III (A) SM-02/ 2004/3303/S&M, Bhubhaneswar dated 18.04.2015 issued by Department of Steel & Mines, Govt of Odisha in compliance with MMDR Amendment Act, 2015 |
| 5 | Status of mine whether working or not | This is a working mine |
| 6 | Details of the past production of mine since its inception, duly authenticated by Dept. of Mines and Geology, Govt. of Odisha | The year wise production figures from 1993-94 submitted by PP |

21. The Project Proponent informed that Credible action initiated against PP u/s 15 of EP Act in the court of J.M.F.C Barbil (vide case no 125 of 2013) for production of iron-ore in excess of EC permitted quantity during 2002-03 to 2004-05. PP submitted the affidavit Certificate no 06AA 488093 dated 14.10.2019 by way of the undertaking in compliance to the Ministry's O.M No 3- 50/2017 -IA. II(M) dated 30.05.2018 to comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.

22. The Project Proponent submitted the Affidavit in a non-judicial stamp paper of Rs 10 bearing 50AA 945830 dated 20.01.2021 that M/s Tata Steel Limited undertake to comply with the standard EC conditions as prescribed by the Ministry vide O.M No 22-23/2018.IA.III dated 08.01.2019 and specific conditions if prescribed by the EAC/MoEF&CC. PP also submitted an undertaking that the information and data provided in the EIA report and submitted to the Ministry are factually correct and Project Proponent is fully accountable for the same. The Consultant also given undertaking that Terms of Reference issued by the Ministry vide Lr J-11015/63/2018-IA-II(M) dated 15.04.2020 have been compiled.

23. Details of project cost and employment:

| Particulars | Budget (Rs. In Crore) |
|---|---|

| | |
|---|---|
| Capital Cost for Environment Protection | 24.1 |
| Budget for addressing the Public Hearing issues | 7.36 |
| Total Cost for EMP | 31.46 (24.1 + 7.36) |
| Recurring Cost for EMP | 3.025 |
| Project Cost | 150 |
| Employment | After expansion total 420 persons (including 88 additional persons) |

24. The proposal for Environmental Clearance was considered in the 32nd EAC meeting held during 28th June, 2021 to 1st July 2021. Based on the documents submitted and presentation made by the Project Proponent and the Consultant, the Committee **recommended** the proposal for grant of Environmental Clearance of M/s Tata Steel Limited for expansion in production of iron ore from 8.0 MTPA to 13.5 MTPA (Total Excavation: 15 MTPA) along with mineral beneficiation plant of 4.0 MTPA in the mine lease area of 403.3238 ha at Deojhar Village & Thakurani RF, Keonjhar District, Odisha with the following specific conditions along with the recommendation of CSIR-NEERI Report on Carrying Capacity Study for Environmentally Sustainable Iron and Manganese Ore Mining on carrying capacity study in addition to the standard conditions applicable for non- coal mining projects.

25. The matter was examined in the Ministry 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 & Climate Change after accepting the recommendation of EAC during its 32nd EAC meeting held during 28th June, 2021 to 1st July, 2021, hereby accords the Environmental Clearance under the provisions thereof to the above mentioned proposal of **M/s Tata Steel Limited for expansion in production of iron ore from 8.0 MTPA to 13.5 MTPA (Total Excavation: 15 MTPA) along with mineral beneficiation plant of 4.0 MTPA in the mine lease area of 403.3238 ha at Deojhar Village & Thakurani RF, Keonjhar District, Odisha** subject to compliance of the terms & conditions and the environmental safeguards mentioned below:-

## A. SPECIFIC CONDITIONS

i. Environmental Clearance (EC) shall be valid up to the lease period only i.e. up to 31.03.2030.

ii. The budget of Rs. 7.36 Crores 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.

iii. The Project Proponent shall undertake the adequate plantation in peripheral zone as well as gap plantation with the seedling of 6-8 ft height with at least 90% survival rate to control the dust at source and should be completed within 2 years from the date of commencement of mining operations. Causalities of the previous year should be replaced other than the saplings proposed to be planted every year.

iv. The Project Proponent shall make efforts for Sal plantation for restoring the mine lease area. PP shall provide tree guard to maintain the early stages of plant growth.

v. Geomats to be used as erosion control blanket which should be biodegradable and accordingly validated through testing from a recognized institution/ laboratory.

vi. The conservation plan in consultation with the Forest Department shall be implemented and compliance of the same shall be submitted to IRO of MoEF&CC before 1st July of every year.

vii. Project proponent shall furnish a certificate from DFO regarding satisfactory compliance of site specific wildlife conservation plan.

viii. The Project Proponent shall obtain the Renewal of NOC from CGWA for withdrawal of ground water before undertaking mining operations.

ix. The Project Proponent should undertake the soil conservation/ restoration activity in a way that the habitats can be restored.

**B. <u>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</u>:**

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, $SO_2$, $NO_x$ 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, SO2, NOx 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-mineralised 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) Green belt 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 outees 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 2nd 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). 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 need 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, MoEFCC.

38) The concerned Regional Office of the MoEFCC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEFCC 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.

26. 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.

27. 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.

28. The issues with the approval of the Competent Authority.

Yours faithfully,

Pankaj Verma

(Pankaj Verma)
Scientist 'E'

**Copy to:**

1). **The Secretary,** Ministry of Mines, Government of India Shastri Bhawan, New Delhi.
2). **The Chief Secretary,** Government of Odisha, Secretariat, Bhubaneswar.
3). **The Secretary,** Department of Environment, Government of Odisha, Secretariat, Bhubaneswar.
4). **The Secretary,** Department of Mines and Geology, Government of Odisha, Secretariat, Bhubaneswar.
5). **The Secretary,** Department of Forests, Government of Odisha, Secretariat, Bhubaneswar.
6). **The Secretary,** Department of Steel and Mines, Government of Odisha, Secretariat, Bhubaneswar.
7). **The Member Secretary,** Odisha Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012.
8). **Regional Officer,** Ministry of Environment, Forest and Climate Change, Integrated Regional Office, A/3, Chandersekharpur, Bhubaneswar – 751023
9). **The Chief Wildlife Warden**, Prakurti Bhawan, 5th floor, BDA Apartment, Nilakanthanagar, Nayapalli, Bhubaneswar-751012, Odisha.
10). **The Chairman,** Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi–110032.
11). **The Controller General,** Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440001
12). **The Member Secretary,** Central Ground Water Authority, 18/11, Jam Nagar House, Man Singh Road, New Delhi-110011.

13). **The District Collector,** Keonjhar District, Govt. of Odisha.
14). **Guard File.**
15). **PARIVESH Portal.**

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