J-11015/121/2011-IA.II (M)
Government of India
Ministry of Environment, Forest and Climate Change
(Impact Assessment Division)
***

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

Date: 29th July, 2022

To

M/s Prabodh Mohanty,
Weigh-Bridge Road, Post Box No: 21,
P.O: Barbil – 758 035,
Keonjhar, Odisha

Sub: Proposal for Environmental Clearance of M/s Prabodh Mohanty for KJST Iron Ore & Bauxite Mine with expansion in Iron Ore production Capacity from 2.0169 to 2.80 MTPA ROM (2.41 MTPA Iron Ore + 0.39 MTPA mineral Reject), Iron Ore waste 1.50 MTPA, Top Soil 0.008 MTPA and Bauxite Production Capacity 0.13 MTPA (ROM), Bauxite waste 0.10 MTPA (Total Excavation: 4.538 MTPA) along with 3 crushing unit (2 existing & 1 proposed) and 5 screening units (3 existing & 2 proposed in the mine lease area of 188.268 ha, located at Villages Kalmanga, Jaldihi, Sidimba and Tantigram, Tehsil: Koira, District Sundergarh, Odisha- For Environment Clearance - regarding.

Sir,

This has reference to the online proposal no. IA/OR/MIN/7291/2011 of M/s Prabodh Mohanty for grant of Environmental Clearance for KJST Iron Ore & Bauxite Mine with expansion in Iron Ore production capacity from 2.0169 to 2.80 MTPA ROM (2.41 MTPA Iron Ore + 0.39 MTPA mineral Reject), Iron Ore waste 1.50 MTPA, Top Soil 0.008 MTPA and Bauxite Production Capacity 0.13 MTPA (ROM), Bauxite waste 0.10 MTPA (Total Excavation: 4.538 MTPA) along with 3 crushing unit (2 existing & 1 proposed) and 5 screening units (3 existing & 2 proposed within the mine lease area of 188.268 ha, located at Villages Kalmanga, Jaldihi, Sidimba and Tantigram, Tehsil: Koira, District: Sundargarh, Odisha. The mine lease area is located between Latitude 21°51'03.36" N to 21°51'58.28" N & Longitude 85°14'00.58" E to 85°15'08.91" E. The mine lease area falls within the Survey of India Topo-sheet No. F45N1 & F45N5 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. The Project Proponent has made an online application vide proposal no. IA/OR/MIN/7291/2011 dated 08.12.2021 and submitted Form-2 & 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 falls under Category "A" as the mining lease area is greater than 100ha and appraised at the Central level.

3. The proposal was earlier considered in the 44th EAC (Non-Coal Mining) meeting held during 28th – 29th December, 2021. After detailed deliberations made by the Project Proponent and the Consultant, the Committee noted that the mine is in operation since 1987 and the PP carried out the mining operation without Environmental clearance till 28.01.2008 and Forest clearance till 31.07.2009 since from the inception of the mine and the instant case attracts the Judgment of Hon'ble Supreme Court dated 02.08.2017 in W.P. (C) No.114 of 2014 in the matter of common cause vs Union of India and Others. The Committee on viewing the KML noted that the PP has carried out the mining operation outside the mine lease area. The Committee observed that the PP obtained the extension of validity period of mining lease over an area of 188.523 ha vide letter No. 5630/III(B) SM-21/2007/SM, Bhubaneswar dated 05.07.2016 whereas PP obtained Approval of Review of Mining Plan including Progressive Mine Closure Plan by IBM over an area of 188.268 ha on 20.10.2020 and also obtained ToR on 05.02.2021 over an area of 188.268 ha; but as per the mine lease area granted by the State Government the mine lease area is 188.523ha. Thus, the Committee was of the view that there is ambiguity in the submission made by the PP w.r.t. mine lease area. The Committee also not convinced with the reason for enhancement of production capacity along with the proposed crushing and screening units. The Committee was of the view that the PP should explore the viability of increasing the working shift to match the 38% of additional proposed production. Therefore, the Committee deferred the proposal for want of following requisite information. The Project Proponent vide Lr Ref: PM/BBL/MOEF&CC/215/2022 dated 18.03.2022 submitted the information in PARIVESH portal on 24.03.2022 and accordingly the proposal was reconsidered in the 49th EAC (Non Coal Mining) held during 19th -21st April, 2022.

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

Date of application	Proposal/ File No	Consideration	Details	Date of accord
08.06.2007	IA/OR/MIN/ 11500/2006 F.No.J-11015/417/2006-IA.II(M)	18th - 20th June, 2007	Environmental Clearance granted for an annual production capacity of 7,00,000 tonnes (0.7 million tonnes) of iron ore and 50,000 tonnes (0.05 million tonnes) of bauxite by opencast semi-mechanized method involving mine lease area of 188.523 ha,	28.01.2008
30.03.2015	J-11015/	29th – 30th,	Amendment in EC dated	24.06.2015

	121/2011. IA-II (M)	April 2015	28.01.2008 w.r.t "deletion of specific condition (ii) Environmental Clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority.	
11.04.2011	J-11015/ 121/2011. IA-II (M)	27-28 January, 2014 & 20-21 March, 2014	Expansion of production of iron ore from 0.7 MTPA to 2.0169 MTPA, Bauxite Ore from 50,000 TPA to 1,30,000 TPA in the mine lease area of 188.523 ha excluding 11.006 ha of forest land for which FC is not available	24.06.2015

5. The details of the Terms of References (TOR) are furnished as below:

Date of application	Proposal No	Consideration	Details	Date of accord
28.12.2020	IA/OR/MIN/ 190213/2020	11th – 13th Jan, 2021	Expansion in Iron Ore Production Capacity from 2.0169 to 2.80 million TPA ROM (2.41 Million TPA Iron Ore + 0.39 million TPA Mineral Reject), Iron ore waste 1.50 million TPA, Top Soil 0.008 million TPA and Bauxite Production capacity 0.13 million TPA (ROM), Bauxite waste 0.10 million TPA (Total Excavation: 4.538 Million TPA) along with 3 crushing unit (2 existing and 1 proposed) and 5 screening units (3 existing and 2 proposed) at Villages Kalamanga, Jaldihi and Tantigram, Tehsil: Koira, District:	05.02.2021

			Sundergarh, Odisha for undertaking detailed EIA/EMP study. In addition to the Standard Term of Reference for Non-Coal mining, standard ToR as per the recommendation made by NEERI in its carrying capacity study for Odisha.	

6. The Project Proponent submitted that originally, Mining Lease for Iron & Manganese Ore over an area of 333.063 ha was granted by Govt of Odisha, Mining & Geology Department vide letter no 13775/MG. Bhubaneswar on 27.11.1986 in favor of Sri. S.N. Mohanty. Lease deed was executed on 20.01.1987 for a period of 20 years from 20.01.1987 to 19.01.2007. Subsequently on 07.02.1987, Lessee applied for inclusion of bauxite in the principal lease deed executed on 20.01.1987 for iron & manganese ore and same was included vide State Govt letter No 9870 /MG. Bhuvneshwar dated 13.10.1989. An additional lease deed was executed on 11.12.1989 co-terminus with the principal lease deed. Lease was inherited by Shri Probodh Mohanty vide Government of Odisha order dated 11.03.1999 subsequent to the demise of original lessee S.N Mohanty. First Lease Period was expired on 19.01.2007. Out of 333.063 ha, first renewal of mining lease over an area of 188.523 ha was applied on 06.12.2005 for 20 years (From 20.01.2007 to 19.01.2027) by Sri Prabodh Mohanty. Final mine closure plan for the area (144.54 ha) approved by IBM vide their letter No. FMCP/OTF.MECH/09-ORI/BHU/2010-11 dated 12.01.2011. Certificate was obtained from IBM regarding surrendered area under Rule 29A of MCR, 1960 vide their letter no T/FMCP/C/1/BHU-2011 dated 11.01.2012. Surrendered proposal over 144.54 ha had been accepted by the Department of Steel & Mines, Govt. of Odisha, Bhubaneswar vide their letter No. 271/SM/Bhubaneswar Dt: 13.01.2016. The Govt. of Odisha in Department of Steel & Mines letter No. 5630/III(B) SM-21/2007/SM, Bhubaneswar dated 05.07.2016 issued orders extending the lease period of KJST Iron, Manganese & Bauxite Mines up to 19.01.2037 over an area of 188.523ha as per Section 8 (A) of MMDR Act-2015. After DGPS verification undertaken by Odisha Space Application Centre (ORSAC), Dept. of Science & Technology, Govt. of Odisha, the extended area was determined to be 188.268 ha and the surrendered area comes to 144.788 ha. The supplementary lease deed of ML area over 188.268 ha has been executed on 14.07.2016 for 50 years in all total w.e.f. 20.01.1987 to 19.01.2037 as per section 8A of the Mines and Minerals (Development & Regulation) amendment Act 2015 in favor of Shri Prabodh Mohanty, Son of Late S.N. Mohanty (Original Lessee).

7. The Project Proponent submitted that the earlier the lessee applied for renewal of 188.523 ha out of 333.063 ha & as per Rule 24 (6) of MCR 1960. The lease was deemed to be extended over a renewal applied area of 188.523ha. The PP obtained forest clearance over the renewal area of 188.523ha accordingly. However, the lease was further

extended up to 19.01.2037 as per Section 8A of the MMDR (Amendment) Act, 2015 & subsequent to DGPS verification undertaken by Odisha Space Application Centre (ORSAC), Dept. of Science & Technology, Govt of Odisha, the extended area was determined to be 188.268 ha as per Director of Mines letter dated 01.02.2016. Hence there is a difference of 0.255 ha, however there is no change in the physical area. The difference is only because of a calculation correction. Subsequent to this calculation correction the extension lease deed is executed over the area of 188.268ha. PP submitted the letter from the Directorate of Mines, Odisha vide Lr No MIV-(B)-125/2005 1083 DM dated 01.02.2016 stating that the Govt. in Department of Steel & Mines have accepted the proposal for surrender over 144.54 hects. out of the executed mining lease area over 333.06 hects. in respect of mining lease of Sri Prabodh Mohanty, legal heir of Late S.N. Mohanty for Iron, Manganese and Bauxite Ore in village Kalmong, Jaldihi, Sidimba and Tantigrama of Sundergarh District vide their letter No. 271/SM dt.13.01.2016. However, after verification, the applied RML area comes to 188.268 hects, and the surrender area comes to 144.788 hects. instead of 188.523 hects. & 144.54 hects, respectively. PP also submitted the land schedule over an area of 144.878 ha and 188.268 ha certified from Sr. Surveyor O/o Deputy Director Mines, Koira. Since the difference is due to digital calculation & there is no change in physical area the PP did not apply for amendment of EC. PP submitted the letter from the Office of the Deputy Director of Mines, Koira circle, vide Lr No 446/Mines, dated 11.02.2022 stating that a mining squad comprising Sri K.R. Seth, Mining Officer, Sri B.K. Sahoo, J.M.O. and Sri P.K. Sahani, J.M.O. was directed to verify the lease boundary and details of report on the working outside the lease area and illegal mining carried out by the lessee if any, since inception of mining operation. The Squad visited the mines on 02.02.2022 and checked the lease boundary and observed that the boundary pillars are intact. They verified all the statutory clearances and found to be in order and no mining operation has been carried out outside the lease area as well as no illegal mining came to their notice within the lease area. At present, the mining operation is being carried out within the granted Surface right area.

8. Land Use/Land Cover of the Mine lease area:

Private land	-
Forest land	188.268 ha
Total Mining lease area (MLA)	188.268 ha
Private land for crusher, workshop & other infrastructure outside the MLA	Nil

9. The Project Proponent submitted that the originally, Mining lease for Iron & Manganese Ore was granted over an area of 333.063 ha on 27.11.1986. PP applied for surrender of 144.54 ha area which was found to be economically not viable due to very low quality of mineral reserve and those are not saleable. Thus, as per sub-rule 2 of Rule 23 C of Mineral Conservation & Development Rules, 1988, final mine closure plan has been approved by IBM vide letter dated 12.01.2011 for the surrendered area (144.54 ha). Final Mine Closure Plan was for surrendered area i.e., 144.788 ha not for the mining lease area.

Review of Mining Plan including Progressive Mine Closure Plan approved by Indian Bureau of Mines vide Lr No: RMP/A/17-ORI/ BHU/2020-21/ 1957 dated 20.10.2020 over an area of 188.268 ha for the period 2021-22 to 2025-26.

10. The Project Proponent submitted that it is proposed to continue the mining operations by opencast fully mechanized method. PP reported that the estimated, iron ore resource is 36.868 Million Tonnes and reserve is 32.754 Million Tonnes and Bauxite resource is 1.345 Million Tonnes and reserve is 1.023 Million Tonnes. Life of the mine will be 12 years. Total normative production of Iron ore and Bauxite will be 9576 TPD which will be 11491 TPD considered at 15% maximum as compared to daily capacity in case of shut down/break down/major maintenance in crusher production of mine may be suspended temporally. However, the annual excavation will remain same i.e., 4.538 million TPA (14832 TPD). PP reported that the bench height of 8m and bench width of 14m will be maintained. Overall pit slope will be 33°. DTH drill of 100mm – 115mm dia will be used for deep/blast hole drilling. Blasted iron ore will be transported to the screening & crushing sites and manual processing site and similarly, bauxite will be transported to the manual processing site. Dumpers of 25t to 35t capacity will be deployed for transportation of ROM ore to the stacking and waste dumping site. PP reported that a total of 37,051 tonnes of top soil has been generated from the inception of mine and during plan period about 15,114 m^3 of top soil will be generated which will be stacked initially in the existing topsoil stack and spread subsequently over the waste dump as well as bauxite mined out area con-currently for plantation along the dump slopes. PP also reported that about 35,39,747 tonne of Iron ore waste have been produced since inception of mine. Dump-1 is active but stable and not rehabilitated till date. Total 3,48,025 tonnes of Bauxite waste have been produced since inception of mine. Bauxite mined out area was 0.423 ha which has been reclaimed partly by way of plantation. Overburden/waste generated in iron ore quarries will be dumped permanently at the north-eastern part of the lease area. Overburden/waste generated in bauxite quarry will be utilized for back-filling of the mined-out area con-currently. During the plan period, dry crushing & screening process will be adopted in the lease area for production of sized ore. PP submitted that there is no requirement of installation of beneficiation plant as the recovery of sub-grade ore is less than 20% which can easily be blendable with higher grade ore. Hence, no mineral beneficiation processing is involved in the proposal. If such beneficiation plant will be required in future, PP will approach MOEF&CC for inclusion in EC. Sub-grade iron ore (+45-55%Fe) of plan period will be stacked initially and dispatched subsequently after blending with upper grade ores or as such depending upon the market demand. Oversized lumps (40-200mm) obtained from the ore plot as well as screens will be fed in to the three mobile crushing units of 250tph (1 no.) and 200tph (2 nos.) to produce the lumps of 5-18mm and fines of -5mm. Saleable ore obtained from the crusher/screen will be dispatched to the steel plants, sponge iron plants etc. through contractual trucks/train. PP submitted that have already made the road width of 8 m of RCC road, which is sufficient for movement of to & fro of trucks as each truck required 3 m width for movement. All the turning points of the road is maintained about 10 m width for easy negotiation of curve by the trucks. Further widening of road is not possible as it involves forest land. PP submitted that at present scenario, there is big gap in demand and supply of iron ore in India. We have our two micro integrated steel plant and sponge

plant at Bonai District, Sundergarh. Simultaneously, there are many sponge ore plant those are dependent on iron ore produced from our mine. Also, demand of Iron ore in market always been high. Therefore, expansion in Iron ore production Capacity from 2.0169 to 2.80 MTPA is proposed. Location of the mine is in a higher altitude having surrounded by reserve forest. Mineral extraction during night involves risk of safety of work persons and may disturb the night life of fauna. Therefore, only day light mining operation from 6 AM to 6 PM only will be happen. To cope with the additional quantity of 8 lacs tonne ROM, PP proposed for additional mining machineries. The material of 40 mm to 200 mm which generates from screening units is being fed into the crushing unit for making different sizes as per the buyer's requirement.

11. Details of Depth of Mining and Ground water level:

S. No	Particulars	Details	
		Iron ore	Bauxite
1	Present working depth	828 m AMSL (65 m bgl)	886 m AMSL (7 m bgl)
2	Ultimate Working Depth	778 m AMSL (115 m bgl)	882 m AMSL (11 m bgl)
3	Water Table	Pre-Monsoon: 630 m AMSL (263 m bgl) Post-Monsoon: 625 m AMSL (268 m bgl)	
4	Groundwater intersection	No	

12. **Nearest village/town/ highway/railway station/water bodies:**

Particulars	Details	Distance & Direction
Nearest Village	Habitation of Village Tinto	~500 m in ESE direction
Nearest Town/ City	Koira	~ 4.6 km in North direction
Nearest Highway	NH-215	~4.5 km in North direction
Nearest Railway Station	Barsuan Railway Station	~12 km in NW direction
Water Bodies	Jokanal Nala	~1.8 km in SE Direction
	Boream Nala	~2.0 km in East direction
	Khuntachira Nala	~2.3 km in East Direction
	Teherei Nala	~2.8 km in NE direction
	Kundra Nala	~2.8 km in SSE Direction
	Raura Nala	~3.0 km in SE Direction
	Khajurdihi Nala	~4.0 km in East direction
	Juruli Nala	~4.5 km in SE Direction
	Porhadihi Nala	~5.0 km in East Direction
	Karo Nala	~5.5 km in NNW Direction
	Sakarnada Nadi	~5.5 km in SW direction
	Badamgarh Nala	~6.0 km in SE Direction
	Champajhar Nala	~6.0 km in SSE Direction
	Archanda Nala	~6.5 km in East Direction
	Barapokhari Nala	~6.5 km in SW Direction
	Suna Nala	~7.8 km in ESE direction
	Gahirajala Nala	~7.8 km in ENE Direction

	Raikirnala Munibi Nala	~8.0 km in SSW Direction
	Sarsni Nala	~8.5 km in SSE direction
	Garhgi Nalah	~9.0 km in SSW Direction
	Phulamanali Nala	~9.5 km in SW Direction
	Ananka Nala	~9.5 km in South Direction

13. Water requirement:

Total water requirement (KLD)	86.0 KLD	Fresh water	81.0 KLD
		Treated water	5.0 KLD
Source	Surface Water (Teherai Nala ~2.8 km in NE direction from mine site)		
Permission	PP obtained the permission issued from the O/o of the Executive Engineer, Sundargarh Division vide Lr no 10109 dated 14.08.2018 for allocation of 100 cu/day (0.041 Cusec) of surface water. PP also submitted the Agreement for supply of water made on 20.11.2018.		
Additional information (if any)	For drinking purpose there will be requirement of 2.0 KLD. 2.0 KLD (RO) of water will be outsourced.		

14. The Project Proponent reported that the entire mine lease area of 188.268 ha is forest land. PP obtained Stage-II Forest Clearance for 188.523 ha (PRF-64.347ha+DLC-110.401ha+KF-13.775ha). Temporary working permission (TWP) over already broken upon forest area of 18.814 ha obtained vide letter no F.No.8-45/2007-Fc dated.12.06.2008 for a period of one year. Stage-I Forest Clearance was obtained from MoEF (FC Division) for 177.517 ha area vide letter No 8-45/2007-FC(Pt) on 06.11.2008. Final Clearance for the diversion of 177.517 ha (101.658 ha + 75.859 ha) of forest land excluding safety zone & area for public use over 11.006 ha vide letter no 8-45/2007-FC (PT) on 31.07.2009. Stage-I forest clearance over 11.006 ha consisting of 9.778 ha safety zone and 1.228 ha area for public purpose from MoEF&CC vide letter no 8-45/2007- FC (Vol) on 29.06.2017. Final clearance over 11.006 ha consisting of 9.778 ha safety zone and 1.228 ha area for public purpose from MoEF&CC vide letter no 8- 45/2007-FC (Vol) on 26.08.2019. PP already paid Rs 137621790/- towards the cost of NPV as demanded by forest Dept @ Rs. 73000/- per hectares over 188.523 ha. The compensatory afforestation work done by the State Forest Dept with funds contributed by PP over an area of 178.737 ha (59.437 ha. in village Madhupur, 16.422 ha. in village Nuadihi, 101.658 ha in villages Hinjadali, Nuapada and Olaberi under Satkosia Wildlife Division, Angul, 1.22 ha in village Babu-Nuagaon. Details of Financial value of mineral extracted/to be extracted as per mineable reserves is about Rs. 10065 Crores. Details of revenue generation to the Govt in the form of Royalty etc., is approx Rs 1509 Crore. PP reported that the following Reserve Forest such as Sarakanda RF (~0.2 km, W), Khajurdihi RF (~1.8 km, SE), Reserve Forest (~2.0 km, N), Kathamala RF (~4.8 km, N), Mendhamaruni RF (~6.5 km, NNE), Torha RF (8.0 km, West), Karo RF (~9.0 km, NNW) are exists within the 10km radius. PP also reported that there are No National Park Sanctuaries, Biosphere Reserves, Ramsar Site, Tiger/Elephant Reserves (existing as well as proposed), Wildlife Corridors, falls within the 10km radius. In support of

this, PP also submitted the letter obtained from the O/o PCCF(Wildlife) & Chief Wildlife Warden vide Lr no 9962/1 WL (C) SSP - 123/2011 dated 18.12.2013 and from the O/o PCCF(Wildlife) & Chief Wildlife Warden Lr no 8891/CWLW-FDWC-FD-0078-2021 dated 13.09.2021 along with the authenticated map.

15. The Project Proponent reported that there is no Schedule-I species found in the core and buffer zone. PP also submitted the authenticated list of Flora and Fauna obtained from the O/o of PCCF (Wildlife) & Chief Wildlife Warden vide letter no 9962/1 WL (C) SSP - 123/2011 dated 18.12.2013 and from the O/o Divisional Forest Officer, Bonai Division vide letter no 5360/6F-(Mg) dated 07.07.2021. Further, PP submitted the Certificate obtained from the DFO, Bonai Division that the 10kms around buffer zone does not form a part of any National Park, Biosphere Reserve, Sanctuary, Wildlife Corridor, Tiger/Elephant Reserves (existing/proposed). Clearance as per wildlife act 1972 is not applicable for this project. However, the user agency is participating in the Regional Wildlife Management Plan. PP submitted the Approval of Wildlife Conservation Plan approved by the PCCF (WL) & Chief Wildlife Warden, Orissa for Rs 70.0 Lakhs.

16. The Project Proponent reported that the total area proposed under greenbelt/plantation will be 151.709 ha, in which area under greenbelt is 6.412 ha and area under plantation is 145.299 ha (25.124 ha on backfilled area, 72.031 ha on bench slope, 19.515 ha on waste dump, 2.580 ha on Safety zone of 10 m width along the public road, 0.371 ha under Orchard and 24.890 ha area under infrastructure, processing plant & magazine demolished area as well as top soil and mineral stack removal area. As on date, 10.813 ha area has been covered under greenbelt and plantation. PP also reported at present there are 24,250 no. of plants have been planted over an area of 9.861 ha. An amount of Rs. 20.25 lakhs (Capital Cost) have been spent under greenbelt on 7.5 m lease periphery and 10 m safety zone along road. PP earmarked a budget of Rs. 350.0 lakhs towards greenbelt & plantation till the end of life of mine. PP also submitted an Affidavit cum undertaking in a non-judicial stamp paper of Rs 100 bearing M 107305 dated 19.11.2021 that we have planted all gap plantations within the safety zone with more than 800 no.s of saplings within last 6 months and more plantations within safety zone and within lease area under progress. Saplings are grown above 6 ft height and the survival rate is satisfactory and is above 90%. PP initiated the plantation within the periphery of the mine lease area in consultation with the local Forest Department. PP also submitted that the remaining plantation will be completed within 6 months from the date of issue of EC. PP submitted that the compensatory afforestation work done by the State Forest Deptt. with funds contributed by lessee over an area of 178.737 ha (59.437 ha. in village Madhupur, 16.422 ha. in village Nuadihi, 101.658 ha in villages Hinjadali, Nuapada and Olaberi under Satkosia Wildlife Division, Angul, 1.22 ha in village Babu-Nuagaon. The concern divisional forest office has already executed the plantation work within the identified area @ 1500 to 2000 seedling per hectares. Further, Permission has been granted by Divisional Forest Officer, Bonai Division vide memo no 9171/3F dated 02.11.2021 for 18580 no of tree felling over an area of 33.404 ha. An amount of Rs. 1,15,81,700 (~1.16 Crore) has been deposited for 18,580 no of tree felling over an area of 33.404 ha and also intimated to Divisional Manager, Rourkela Division vide letter dated 14.10.2021.

17. Baseline Details:

The primary baseline data for specific micro-meteorology data, ambient air quality, waste quality, noise level, soil and flora & fauna has been collected during Winter Season i.e., December, 2020 to February, 2021. The Monitoring results of ambient air, surface water, soil, ambient noise and ground water for the month of December, 2020 to February, 2021 have been reported and no major divergence was observed with respect to concentration values of various parameters of collected samples.

<table>
<tr><td>Period</td><td colspan="5">December, 2020 to February, 2021</td></tr>
<tr><td rowspan="5">AAQ parameters at 8 locations</td><td>Pollutant</td><td>Min, µg/m^3</td><td>Max, µg/m^3</td><td>98 %le, µg/m^3</td><td>Standard, µg/m^3</td></tr>
<tr><td>PM2.5</td><td>25.6</td><td>53.6</td><td>53.0</td><td>60</td></tr>
<tr><td>PM10</td><td>55.2</td><td>90.4</td><td>89.6</td><td>100</td></tr>
<tr><td>SO2</td><td>5.2</td><td>13.1</td><td>12.9</td><td>80</td></tr>
<tr><td>NOx</td><td>9.1</td><td>26.2</td><td>25.9</td><td>80</td></tr>
<tr><td rowspan="5">AAQ modelling (Incremental GLC)</td><td>Pollutant</td><td>Baseline Concentration, µg/m^3</td><td>Incremental Concentration, µg/m^3</td><td>Total GLC, µg/m^3</td><td>Standard</td></tr>
<tr><td>PM2.5</td><td>53.6</td><td>0.8</td><td>54.4</td><td>60</td></tr>
<tr><td>PM10</td><td>90.4</td><td>2.0</td><td>92.4</td><td>100</td></tr>
<tr><td>SO2</td><td>13.1</td><td>1.2</td><td>14.4</td><td>80</td></tr>
<tr><td>NOx</td><td>26.2</td><td>2.4</td><td>28.7</td><td>80</td></tr>
<tr><td>Noise level at 8 locations</td><td colspan="5">Day Time: 48.7 to 61.4 Leq dB (A)
Night Time: 40.8 to 46.2 Leq dB (A)</td></tr>
<tr><td>Ground water quality at 8 locations</td><td colspan="5">PP submitted that pH varied from 6.45 to 7.21. Total hardness varied from 32 mg/l to 100 mg/l. Total Dissolved Solids varied from 63 mg/l to 175 mg/l. The water samples contain, chloride from 4.21 to 27.49 mg/l, Fluoride from 0.08 to 0.66 mg/l, SO4 varies from BDL (DL 1.0 mg/l) to 38.55 mg/l, Ca from 10.02 to 26.45 mg/l, Mg varies from 1.70 to 10.69 mg/l. The analysis revealed that ground water found potable. All the groundwater samples showed more or less similar and good quality of water.</td></tr>
<tr><td>Surface water quality at 8 locations</td><td colspan="5">PP submitted that pH varied from 6.66 to 7.02 indicating slightly acidic. The colour and turbidity found to be in the permissible limit and odour found agreeable at all the locations. BOD varied from 1.20 to 6.60 mg/l & COD varied from 4.0 to 20.0 mg/l indicating that water is clear.</td></tr>
<tr><td>Soil quality at 9 locations</td><td colspan="5">PP submitted that the soil samples exhibit brown and blackish which indicates good fertility and presence of organic matter in the soil samples. The organic matter (0.63% to 1.05%) and organic carbon (0.37% to 0.61%) present in the soil observed to be appropriate for the plant growth. The texture of the soil samples were loam, sandy loam and sandy clay loam. pH of the soil found to be slightly acidic ranging from 5.21 to 6.85. The analysis indicated that the soil quality within the study area is of a good quality and contains sufficient macronutrients which are vital for</td></tr>
</table>

	healthy plant life.
Ground vibration	PP submitted that the report submitted by a group of experts from IIT Kharagpur shows that the ground vibration generated during blasting operation is well within the prescribed value as per DGMS guideline. Moreover, maximum precaution is taken in case of designing blast pattern and distribution of explosive charge. All the blast holes are fired with hole-to-hole delay pattern. PP also submitted that followings were some of the recommendations and conclusions of study as follows (i) The maximum value of blast induced ground vibration (PPV) monitored at 50-150 m from the blast site is 3.27 mm/s and there is no value recorded at the nearby locations, not belonging to the owner, (ii). The maximum projectile range of fly rock was observed as 10-15 m from the blast site and the air blast levels recorded were within the safe limits and (iii). It may be stated here that the vibration levels for the analysed blast vibrations for the study were within the stipulated limits and the damage to the nearby locations/structures and populace is minimum.
Slope stability	PP submitted that regarding stability of slope the following precautions have been taken (i): At the bottom of the dump a high RCC wall has been constructed to arrest the solid waste passing outside the ML area, (ii). The height of each terrace are kept within the safety parameter as per IBM & DGMS Guideline, (iii). At the bottom of each terraces a channel is constructed which is attached with settling pond. The surface water of terraces is not flowing to another terrace during monsoon, (iv) Regular compacting after the end of mining operation is being done for better stability and (v) Coir matting as required area done.
Scenario of Pollution to be generated at the railway siding	PP submitted that about 10 Lakhs tonnes of material being transported through number of railway siding in which maximum 1.34 lakh tonnes of iron ore is being transported through Joroli railway siding. However, PP will maximize the dispatch subject to availability of rakes. PP also submitted the scenario of air pollution at sensitive receptors wherein the maximum resultant value was observed at mine site such as PM10: 91.618 µg/m3, NO2: 27.06 µg/m3 and SO2: 13.32 µg/m3 and at Town Kora PM2.5 found to be 53.61 µg/m3, Scenario of Noise level pollution at sensitive receptors wherein the maximum resultant value without EMP at mine site ranged between 47-74 dB (A). Further, PP submitted that Peak Particle Velocity Considering Charge per Hole 50 kg and 42 kg at sensitive receptors assuming that the blasting will be done at least 300 from the adjacent villages. Estimated PPV found to be 2.12 mm/s and 1.84 mm/s respectively which is well within the DGMS standards.

Baseline Test reports	PP submitted the analysis/testing reports of water sample collected on 11.01.2021, air quality monitored during the period Dec, 2020-Feb, 2021, soil sample collected on 11.01.2021 and noise level monitored during the period 04.01.2021 to 07.01.2021 accredited by the NABL approved laboratory "JM EnviroLab Pvt. Ltd." (Certificate no TC-6821).

18. Public Hearing (PH) Details:

Advertisement for PH with date	27.08.2021 The New Indian Express and Dharitri
Date of PH	29.09.2021 at 11:00 AM
Venue	Sidimba Community Center near Anganwadi Centre at Sidimba Village of Dengula G.P under Koira Block of Sundargarh District.
Chaired by	i. Chairperson: Shri Biswajit Mohapatra, Additional District Magistrate, Sundargarh, odisha. ii. Officers: Shri Vijay Kumar Bhoi, Asst. Env Engineer, State Pollution Control Board, Rourkela, Odisha
Main issues raised during PH	Educational facility, Medical/Health facility, Infrastructure development, skill development, livelihood opportunities etc.
Budget proposed for addressing issues raised during PH	Rs. 1.38 Crore
Additional information (if any)	PP submitted that Sarpanch of Dengula Village Panchayat requested the PP for construction of a hall of 500 sq.ft. to be used by the tribal dwellers for Gram Devi worshiping which was also submitted to Block Development Officer, Panchayat Samiti Office, Koira. Block Development Officer, Panchayat Samiti Office, Koira asked following information to submit vide their letter No – 953, dated 02.03.2022 (i) land schedule sketch map with NOC from Tehsildar, Koira and (ii) Plan and estimate of hall to be duly approved by the undersigned. The work for establishment of such hall is awaited for approval from Tahashildar, Koira. The process was delayed due to Panchayat & Zilla Parishad Election in Odisha. PP vide Lr No Ref: PM/BBL/BO/MoEF&CC /80/2022 dated 21.04.2022 informed that the construction of hall for community purpose will be increased from 500 sq.ft to 800 sq.ft (20 x 40).

19. The Project Proponent submitted the EC Compliance report certified by Integrated Regional Office, Bhubaneshwar vide F.No. 101-844/EPE/595 dated 25.03.2021 and final closure report for the action taken by the PP vide F.No. 101-844/EPE/559 dated 17.05.2021. PP also submitted the certification of NEERI Compliance report issued by the Integrated Regional Office vide letter no 101- 691/EPE dated 25.02.2022. Further, PP submitted the Consent to Operate issued by the State Pollution Control Board, Odisha vide Order No. 3608/IND-I-CON-4691 dated 09.03.2021 for production of Iron Ore 2.0169

MTPA and Bauxite 0.13 MTPA and operation of crushing plant 2 x 200 TPH and operation of screening plant 3 x 200 TPH for the period up to 31.03.2026. PP has submitted the Compliance of the NEERI recommendation of carrying capacity for Odisha to the Regional Officer, Sate Pollution Control Board, Rourkela vide Letter Reference: PM/BBL/20-21/305 dated 16.10.2020.

20. The Project Proponent submitted that the mine is in operation since 1987. PP has submitted the past production data duly authenticated from the O/o of the Dy. Director of Mines, Koira vide Memo no 5130 dated 10.12.2020 for Iron ore and Bauxite from 1987 to 2020-2021 (upto November 2020) and it also mentioned that the production of Manganese ore is Nil since the inception of the mine. PP submitted that the Demand notice has been received from the O/o the Deputy Director of Mines, Koira Circle vide letter no 5134/Mines dated 02.09.2017 to pay the compensation of Rs. 79,19,97,665.73 (Rupees Seventy nine crore Nineteen lakh Ninety seven thousand Six hundred sixty five & Seventy three paise) for production without/in excess of the environmental clearance during 2000-01 to 2006-2007 in pursuance to the Judgment dated 02.08.2017 of Hon'ble Supreme Court in W.P.(C) No.114 of 2014 in the matter of common cause vs Union of India and Others. PP has paid the entire compensation in the designated account and intimated the same to Deputy Director of Mines vide letter no PM/BBL/BO/DDM/1052/2017 dated 29.12.2017.

21. The Project Proponent submitted that the total mining lease area is 188.268ha of forest land. PP submitted that the surface right obtained from the office of the District Collector, Sundargarh vide Lr Ordre no: 155/(Mining) dated 08.02.2010 for the earlier retained area of 188.523 ha. No houses exist within the mine lease area and hence R&R is not applicable for this project.

22. The Project Proponent submitted that Hon'ble High Court Odisha vide- WP (CRL) No 1617 of 2013 has "STAYED" the hearing of Case No: 2 (C) CC No.32 of 2013 SDJM, Bonai, District -Sundargarh, Odisha.

23. Affidavit/Undertaking details

Affidavit in a Non-Judicial stamp paper of Rs 100 bearing L 191220 dated 03.12.2020 as per Ministry's OM dated 30.05.2018	I hereby undertake by affidavit that I have complied with all the statutory requirement & judgment of Hon'ble Supreme Court dated 2nd August 2017 in writ Petition (civil) No. 114 of 2014 in the matter of common cause versus Union of India & Ors.
Project Proponent submitted an Undertaking vide Letter Reference: PM/BBL/BO/UG/ 249/2021 dated 29.11.2021	Jyoti Ranjan Rout, Vice President Authorized Signatory of Shri Prabodh Mohanty, give this undertaking to the effect that the conditions laid down in Terms of Reference prescribed by MoEF&CC, New Delhi vide letter no. J-11015/78/2020-IA.II(M) dated 05.02.2021 have been complied with, and the data submitted and the information presented in this report are factually correct.
Consultant submitted an	The Consultant submitted an undertaking to the effect

Undertaking dated 29.11.2021	that the conditions laid down in Terms of Reference prescribed by MoEF&CC, New Delhi vide letter no. J J-11015/78/2020-IA.II(M) dated 05.02.2021 have been complied as per data/details provided by Project Proponent & as per Review of Mining Plan approved by IBM, Bhubaneswar and the data submitted are factually correct.
Plagiarism Certificate checked on 29.11.2021	The Head of the Accredited Consultant Organization/ Authorized person certified that this EIA Report has been evaluated by using online software viz. Plagiarism Checker X. The report produced has been analyzed by the system and based on it, I certify that the EIA Report produce in accordance with good scientific practice.

24. Details of the EMP:

Sl. No.	Activities	Existing Cost		Proposed Cost		Total Cost	
		Capital	Recurring	Capital	Recurring	Capital	Recurring
1.	Mitigative Measures	692.87	59.85	538.00	32.25	1230.87	92.10
2.	Monitoring	78.55	14.00	-	14.00	78.55	28.00
3.	Others - Digital mapping of the entire lease area once in five years	10.00	-	-	-	10.00	-
4.	EMP Budget for public hearing	-	-	138.00	29.00	138.00	29.00
	Total	**781.42**	**73.85**	**676.00**	**75.25**	**1457.42**	**149.10**

25. Details of project cost and employment:

Particulars	Budget (Rs. In Lakh)
Capital Cost for Environment Protection	Rs. 1320
Budget for addressing the Public Hearing issues	Rs. 138
Total Cost for EMP	Rs. 1458
Recurring Cost for EMP	Rs. 150
Project Cost	Rs. 7500
Employment	451 Persons

26. Observation and Recommendation of the Committee:

The proposal for Environmental Clearance was considered in the 49th EAC (Non Coal Mining) meeting held during 19th- 21st 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 Shri Prabodh Mohanty for KJST Iron Ore & Bauxite Mine with expansion in Iron Ore production capacity from 2.0169 to 2.80 MTPA

ROM (2.41 MTPA Iron Ore + 0.39 MTPA mineral Reject), Iron Ore waste 1.50 MTPA, Top Soil 0.008 MTPA and Bauxite Production Capacity 0.13 MTPA (ROM), Bauxite waste 0.10 MTPA (Total Excavation: 4.538 MTPA) along with 3 crushing unit (2 existing & 1 proposed) and 5 screening units (3 existing & 2 proposed within the mine lease area of 188.268 ha, located at Villages Kalmanga, Jaldihi, Sidimba and Tantigram, Tehsil: Koira, District: Sundargarh, Odisha subject to the specific conditions in addition to the standard EC conditions applicable for non-coal mining projects.

27. The Ministry 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 49th EAC (Non Coal Mining) meeting held during 19th- 21st April, 2022, hereby accords the above mentioned proposal for grant of Environmental Clearance for M/s Shri Prabodh Mohanty for KJST Iron Ore & Bauxite Mine with expansion in Iron Ore production capacity from 2.0169 to 2.80 MTPA ROM (2.41 MTPA Iron Ore + 0.39 MTPA mineral Reject), Iron Ore waste 1.50 MTPA, Top Soil 0.008 MTPA and Bauxite Production Capacity 0.13 MTPA (ROM), Bauxite waste 0.10 MTPA (Total Excavation: 4.538 MTPA) along with 3 crushing unit (2 existing & 1 proposed) and 5 screening units (3 existing & 2 proposed within the mine lease area of 188.268 ha, located at Villages Kalmanga, Jaldihi, Sidimba and Tantigram, Tehsil: Koira, District: Sundargarh, 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 19.01.2037 only.

ii. The mining activity will be restricted to over an area of 188.268 ha for which Stage-II FC available.

iii. The Project Proponent shall ensure that at the time of felling of trees in the mine lease area due to expansion of production, marking list by the Forest Department should be countersigned by the PP. PP shall also the maintain the records of marking list.

iv. The Project Proponent shall submit the action taken report to the Ministry's Integrated Regional Office on implementation of Scientific study carried out by Indian Institute of Technology, Kharagpur for slope stability and ground vibration annually or after the implementation which is earlier.

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 ensure that the afforestation should be only of native species namely Sal.

vii. The budget of Rs 138.0 Lakhs 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.

ix. The Project Proponent shall construct the community hall with the minimum size of 800 sq.ft of carpet size with the approval of Grama Sabha.

x. 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.

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. 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 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.

C. **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, 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, SO_2, NO_x 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 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).

28. 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.

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