

**PROCEEDINGS OF THE MEETING OF STATE LEVEL EXPERT APPRAISAL
COMMITTEE, ODISHA HELD ON 16TH AUGUST, 2022**

The SEAC met on 16th August, 2022 at 10:30 AM in the Conference Hall of Odisha State Pollution Control Board, Bhubaneswar under the Chairmanship of Sri B. P. Singh. The following members were present in the meeting.

1. Sri B. P. Singh	-	Chairman
2. Dr. K. Murugesan	-	Secretary
3. Dr. D. Swain	-	Member
4. Prof. (Dr.) H.B. Sahu	-	Member
5. Sri J. K. Mahapatra	-	Member
6. Sri K. R. Acharya	-	Member
7. Prof. (Dr.) B.K. Satpathy	-	Member
8. Prof. (Dr.) P.K. Mohanty	-	Member
9. Dr. Sailabala Padhi	-	Member

Draft proceeding of the meeting was finalized by the members through e-mail and also final proceeding of the meeting was confirmed by the members through e-mail. The agenda-wise proceedings and recommendations of the committee are detailed below.

ITEM NO. 01

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR NETRABANDHA PAHAR IRON ORE BLOCK WITH TOTAL EXCAVATION OF 2.680 MTPA [2.0 MTPA (ROM), OB- 0.680 MTPA] ALONG WITH 2X100 TPH MOBILE CRUSHER IN THE MINE LEASE AREA OF 139.223 HA, LOCATED AT VILLAGE BALADIHI, TEHSIL KOIRA, DISTRICT SUNDARGARH OF M/S. BHUSHAN POWER AND STEEL LIMITED OF SRI RAKESH KUMAR KHANDELWAL – EC.

1. Netrabandha Pahar iron ore block mining lease was granted in favour of M/s Bhushan Power & Steel Limited (BPSL) for period of 50 years through e-auction process for winning iron-ore for non-captive purpose of steel manufacturing.
2. The e-auction process was conducted in accordance with the tender document and the mineral auction rule, 2015 for the said mineral block and M/s Bhushan Power & Steel Limited was declared as the preferred bidder under Rule 9(4)(b)(iii) of Mineral (Auction) Rules 2015. Government of Odisha has issued the Letter of Intent (LoI) for grant of mining lease for Netrabandha Pahar Block for Iron Ore over an area of 139.00 Ha vide its letter no.5283/SM.IV(Misc)SM- 52/2017/SM, dt. 24.06.2017. The corrigendum was issued for 139.223 Ha vide letter no. IV(Misc)SM-52/2017/6285/SM, dt. 27.07.2017 and further, it was extended for a period of 6 months vide letter no.4493/ SM-MC1-MISC-0051-2021 Dt. 11.05.2022.
3. BPSL was sub-judice at National Company Law Tribunal (NCLT) since July 2017 and it was managed by Resolution Professional appointed by the Committee of Creditors (COC) till 25th March, 2021. M/s JSW Steel Limited, India's largest steel producer, was the successful Resolution Applicant approved by COC and has taken over possession and management control of BPSL on 26th March 2021, after approval of NCLT. The unit continues to operate with the same name "Bhushan Power & Steel Limited". The project shall continue to undertake statutory clearances and operate in future under the name of "Bhushan Power & Steel Limited" even though the management possession and management control is with M/s JSW Steel Limited.
4. As per LS [Hal-Sabik] certified by Tahasildar, Barbil & Director of Mines, Odisha and subsequently vetted by M/s ORSAC, total lease area includes Forest: 112.621 ha and Non-Forest:26.602 ha. Forest Clearance under FC Act,1980 for diversion of 112.621 ha of

forest land has also been applied vide Proposal No. FP/OR/MIN/26965/2017 dated 05.07.2017. on 2nd August 2022 FC meeting was conducted and minutes of meeting are awaited.

5. Netrabandha Pahar Iron Ore Block proposes to produce total excavation of 2.680 MTPA (2.0 MTPA (ROM)+ OB 0.680) along with 2x100 TPH Mobile Crusher in mine lease area of 139.223 ha located at Baladihi village, Koira Tehsil, Sundargarh District, Odisha. Total mineable reserves are 64.577 million tonnes (Mt) as per approved mining plan in the name of M/s BPSL Steel Limited vide letter no. MP/FM/13-ORI/BHU/2017-18 dated 18.10.2017.
6. The key geo-physical aspects related to the project environmental settings are highlighted below:
 - The encompassing geographical coordinate of the project area comprise of the iron ore mine within 139.223 ha lie within Latitude: 21052'05.242" N - 21052'54.542" N, Longitude: 85017'10.449" E - 85017'56.810" E;
 - Land use of ML area includes Forest: 112.621 ha and non-Forest: 26.602 ha;
 - Two seasonal nalas are passing in ML area Khajurdihi seasonal nala is passing through the southern side and other one at Norther side of ML area. Porhadihi Nala (0.3 km, SSE) are the nearest water bodies;
 - Baladihi and Biradihi villages are adjacent to the ML area in NE and E direction;
 - The NH-215 passes at 4.7 km NW of the project site;
 - Nearest major railway stations is Nayagarh RS 14.2 km, E;
 - There are 11 PFs/RFs identified within the study area of the project site;
 - There are no National parks/Wildlife sanctuaries within the 10 km radius of the project site; and
 - Karo - Karampada elephant corridor is located at about 13.31 km from the mine lease area in NNW direction;
7. The mining is proposed to be carried out by fully mechanized method by deployment of earth moving machineries like crawler mounted drill rig, air compressor, backhoe shovels, rock breaker, 25 tonner dumpers etc., will be adopted. During the ensuing plan period, it has been envisaged to make the production of 8 MTPA ROM. Both lateral and depth ward development has been proposed to be undertaken to achieve the targeted production.
8. The benches will be developed systematically following the terrain condition of the area to attain the production of iron ore of 2 million tonnes per annum at the end of 3rd year. The height and width of the benches will be kept at 6m and 10 m respectively for easy vehicular movement. The individual bench faces will be kept at 800 whereas the overall quarry slope angle is proposed to be kept at around 450 with the horizontal. Massive hard iron ore beds/ boulders will be loosened through drilling and blasting. Drilling will be carried out by means of 115 mm dia crawler drill with 610 HP compressor. For secondary breaking hydraulic rock breaker will be deployed. Thus, secondary drilling and blasting is eliminated. Blasting will be carried out with the help of explosives (slurry type) boosters and ANFO and class-VI explosives (TLD, electric detonators and detonating fuse). ROM with SLO, fines, BD will be fed directly to 4x150 TPH mobile screening plants and these screening plants will also be fitted with grizzly. The oversized materials will be fed to 2x100 TPH mobile crushing plant.
9. Total water requirement for the proposed project is about 167 KLD which will be met from Teherai Nala, Ground water and Rainwater. CGWA Application for withdrawal of 4 KLD is applied vide application. no. 21-4/3719/OR/MIN/2022 Dt 24/05/2022 and application for surface water withdrawal is yet to be submitted.

10. No effluent will be generated due to mining. Sewage generated from toilet blocks would be disposed through septic tank and soak pits/STP.
11. Total power requirement for the proposed project is 2.5 MW which will be sourced from WESCO. Subsequently, after getting necessary permission from concerned department, power line will be utilized and DG will be used for emergency purpose.
12. During the five year of mining plan period 1166241 m³ of waste will be generated. The alluvial soil capping the rock bed is the loosen OB that exists in some part of the block. The thickness of the OB is about 1.0 m. This will be removed separately and simultaneously used for plantation. Only temporary storage for top soil is proposed. Proposed generation of waste will be dumping in waste dump site and in the conceptual stage, which will be used for backfilled in 45.632 ha area within mined out pit.
13. Schedule-I species reported in the study area namely Bison, Four horned Antelope, elephant, Leopard cat, Indian Pangolin, Peacock, Indian retel, Flying squirrel, Mouse deer, sloth bear, Rock python. However, they were never spotted/reported in the ML area by locals.
14. To reduce fugitive dust emissions due to handling of ore, dust suppression systems will be installed at appropriate locations. Plain water type dust suppression system will be provided all around the ore stockpiles. In crushing and screening plant, all dust control measures will be adopted to control the dust emissions within prescribed limit.
15. The Netrabandha Pahar Iron Ore block project of M/S BPSL is adjacent to Baladihi village. Based on the requirement of the project BPSL will acquire 12.787 Ha of private land from the Baladihi village. 53 households of Baladihi village will be affected as either their lands or houses will be acquired for the mining. The compensation and other R&R benefits will be fixed as per the Right to Fair Compensation and Transparency in land acquisition, Rehabilitation and Resettlement Act, 2013 (RFCT LARR Act, 2013).
16. 66.785 ha greenbelt will be developed in the backfilled area, bench plantation, safety zone along both sides of the road and Khajurdihi nala. Greenbelt will be developed in non-operating areas. Shrubs and trees will be planted in encircling rows around the project site. About 3.783 ha is proposed to develop in the first 5 years plan period.
17. The total capital investment for the proposed mine facilities is about Rs. 205 Crores which includes the cost of mine development, plant & machinery, utility facilities. The proposed EMP cost is about Rs. 9.5 Crores and about Rs. 220 Lakhs under CSR are proposed for 3 years.
18. The proposed mine will boost the socio-economic profile of the region and will act as an engine of economic growth for the country and will open-up employment opportunities for the local people in the region.
19. The project falls under Category-B (≤ 250 ha in respect of major minerals other than Coal) as per MoEF&CC Notification No. S.O. 1886(E) Dated 20th April, 2022.
20. TOR for conducting EIA study was issued by MoEF&CC, Govt. of India vide letter F.No.IA-J-11015/51/2021-IA.II(M) dated 04th August 2021. Baseline Monitoring studies were conducted on Post Monsoon Season 2021. Public hearing for the proposal has been conducted on 27th April 2022.
21. Letter of Intent (LOI) was issued vide letter No.5283/SM.IV (Misc.) SM- 52/2017/SM, dated 24.06.2017 with 5 years validity and Further extension of LOI for six months till 24.12.2022.
22. Mining Plan and Progressive Mine Closure Plan was approved by IBM vide Letter No: MP/FM/13-ORI/BHU/2017-18, dated 18.10.2017.

23. FAC meeting was held on 1st August 2022 in connection with Forest Clearance. Site Specific Wild Life Conservation Plan is under approval stage.
24. Application has been made at CGWA for withdrawal of 4 KLD vide application. no. 21-4/3719/OR/MIN/2022, dated 24/05/2022.
25. Proposed Land Use Area at the End of Plan Period is as follows:

Particulars	Proposed at the end of plan period in Ha	At Ultimate stage in Ha
Area under mining	25.704	102.010
Storage of Top soil	0.500	Nil
Dump	9.607	Nil
Infrastructure (Workshop, admin building)	1.817	NIL
Mine Road	2.306	2.306
Mineral storage S, G, stack	2.154	Nil
Plantation on safety zone	1.00	3.783
Water harvesting	0.066	0.066
Ore Stack	1.835	Nil
Undisturbed area	94.234	31.058
Total	139.223	139.223

26. The proponent has undertaken to comply to the NEERI recommendations.
27. The Environment consultant **M/s Vimta Labs Limited 142, IDA, Phase-II, Cherlapally, Hyderabad-500 051, Telangana State** along with the proponent has made a presentation on the proposal before the Committee.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Vimta Labs Limited 142, IDA, Phase-II, Cherlapally, Hyderabad-500 051, Telangana State**, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent

- i) Composition of Overburden waste with Fe grade.
- ii) Production plan of different grades of Fe. Cut-off grade and it's management plan for next five years.
- iii) Protocol for Magazine management.
- iv) Magnitude of non-forest land, Kissam of land, status of conversion.
- v) Slope study for mines and dump by domain expert of national repute or reputed national Institute.
- vi) Blast and vibration study by domain expert of national repute or reputed national Institute.
- vii) Socioeconomic study by domain expert of national repute or reputed national Institute.
- viii) Traffic study need to be carried out at important intersecting points of vehicles of mines with public vehicles/ public road. Traffic study report to be submitted and vetted by repute institute.

- ix) Detailed report on Rain Water Harvesting and its capacity with contribution towards water requirement including proposed rain water harvesting pond design with capacity and re- submitting the water balance thereof.
- x) Compliance of NEERI Recommendations with 3D pictures of essential physical features complied or proposed to be complied with definite timeframe including permanent sprinkling arrangement on haulage road & inside mines and parking plaza etc.
- xi) Design of STP with its capacity and the basis of it.
- xii) Silt management details and Nala protection measures to prevent siltation with detailed plan for periodic de-siltation including Agricultural/ Crop land.
- xiii) Design, dimensions and number of Check dams to be constructed.
- xiv) Public Hearing details with redress proposed point wise.
- xv) Quantum of water to be taken from Nala.
- xvi) Air Modelling details with prediction for next 10 years after this project is operational with control and without control including the control proposed to be used.
- xvii) Site specific Wildlife management plan duly approved by PCCF(WL) to be submitted.
- xviii) Regional wildlife management plan contribution details.
- xix) Brief writeup on mitigation measures taken towards protection of 3 Nalas nearby.
- xx) Detailed plan for protection of endangered, threatened and nearly threatened species.
- xxi) Budget of Environment Management Plan.
- xxii) Submit copy of the proceedings of FAC, MoEF&CC, Government of India, New Delhi Dated 02.08.2022.
- xxiii) Submit status or copy of the stage 1 FC for 112 Hectares.
- xxiv) Submit breakup of 26 Hectares of Non-Forest land in the M.L i.e. private, pasture land or otherwise.
- xxv) Since this is a greenfield ML the PP submitted the biodiversity Conservation Act, 2003 register for the block and the proposed damage likely due to mine pit and OB dump which can be shown in the layout.
- xxvi) The pp to submit the permission letter from Collector Sundargarh with respect to Forest Rights Act,2006 along with the proceedings of Gram sabha / Palli sabha and its compliance status report.
- xxvii) PP to submit the NoC from CGWA for the quantity of water drawn from Ground water sources and subsequent application to water resource Department, Government of Odisha for allocation, agreement for the same quantity of water.
- xxviii) The PP to submit the application water allocation and agreement from water Resource Department, Government of Odisha for establishment of water intake and drawl of water from surface water sources.

- xxix) PP to submit the site-specific wildlife management plan prepared by DFO Wildlife and approved by PCCF (Wildlife) - Cum- Chief Wildlife Warden Odisha along with the proof of deposit of funds to the respective organisations.
- xxx) It may be clarified whether the proposed 12 Hectare private land acquisition is part of ML or independent of ML.
- xxxii) Accordingly submit the R & R plan with commitments of funds for R&R colony elsewhere.
- xxxiii) The status of Land Acquisition under LARA Act, 2013 and Land Acquisition for R&R colony as per R&R policy, 2013 may be submitted.
- xxxiv) Submit report on Energy Conservation Plan as per Energy Conservation Act, 2002.
- xxxv) Submit plan for provision of solar power in the ML area.
- xxxvi) Submit the numbers and make the capacity of HEMM to be deployed in the mining operation along with its vehicular pollution potential.
- xxxvii) Submit the skin of suppression of dust at the mining face, Haulage Roads, Stockpiles and crushing unit.
- xxxviii) Status of obtaining consent to establish from SPCB, Odisha under Water Act and Air act.
- xxxviiii) Compilation of data on collection and storage of hazardous waste and its disposal along with the permission from SPCB Odisha be submitted.
- xxxix) Coverage of occupational health services for the employees by their own centre or through any other arrangements may be submitted.
- xl) The copy of Disaster Management Plan duly approved by the Competent Authority under the provision of Disaster Management Act, 2005 be submitted.
- xli) On account of safety the onsite Emergency plan for the unit and the offsite Emergency plan drawn off with District Administration may be submitted.
- xlii) Planning for implementation of QMS, EMS, OHMS and SA as per ISO standards in this unit may be furnished.
- xliii) Provision of installation of Weather Monitoring Station in the unit may be furnished.
- xliv) Approval of Chief Controller of explosive Government of India, Nagpur for establishment of magazine and its operation be furnished.
- xlv) Status of permission under DG Rule, Battery Rule, SWM Rule, Hazardous Chemical Rule, BMW Rule for dispensary etc. be furnished.
- xlvi) Before starting the operation, the DGMS permission, Surface Right Permission for Forest land and consent to operate from SPCB Odisha be obtained and submitted to SEIAA Odisha.
- xlvii) The applicability of PESA Act in this Mines of Sundargarh may be verified and implemented if required.
- xlviii) Submission of the organogram for pollution control, Environment Management, Forest & Green belt Management, Wildlife Management, Safety Management and Environment health issues may be sanctioned internally and submitted to us.

ITEM NO. 02

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR PATABEDA IRON AND MANGANESE MINES OVER AN AREA 19.425 HA FOR EXPANSION OF PRODUCTION OF IRON ORE FROM 180000 TPA TO 572305 TPA ALONG WITH CRUSHING AND SCREENING PLANTS LOCATED IN VILLAGE PATABEDA UNDER KOIRA TAHASIL IN SUNDARGARH DISTRICT OF M/S. M G MOHANTY – TOR.

1. The proposal was considered by the committee to determine the “Terms of Reference (ToR)” for undertaking detailed EIA study for the purpose of obtaining environmental clearance in accordance with the provisions of the EIA Notification, 2006 and amendment thereafter.
2. The Patabeda Iron & Manganese Mines is located in the village Patabeda in Koira Tahasil of Sundargarh District of Odisha State. The area is featured in topo sheet no - F45 N/5 within latitude 21°55'45.15980" to 21°56'01.68076"N and longitude 85°22'21.57196" to 8°22'35.98813"E. The mine is accessible from Koira town (on NH-215) in Sundargarh district covering a distance of 17 km all weather road. The mine is also accessible from Joda town in Keonjhar district covering a distance of 27 km consisting of 17 km between Joda & Jaribahal and 10 Km between Jaribahal & the mine.
3. Environmental Clearance is sought for enhancement of production from 180000 ton to 572305 ton of iron ore comprising of 542625 ton of ROM iron ore and 29680 tonne/annum of iron ore from dump re-handling per annum.
4. The project falls under Category-B (≤ 250 ha in respect of major minerals other than Coal) as per MoEF&CC Notification No. S.O. 1886(E) Dated 20th April, 2022
5. Initially, Patabeda Iron & Mn mining lease was granted over 19.425 ha on 03.04.1986 to M/s M.G. Mohanty for a period of 20 years by Department of Steel & Mines, Govt of Odisha. Since the mining lease have been extended for 50 years in all total w.e.f 03.04.1986 to 02.04.2036 as per section 8A (3) of Mines and Minerals (Development and Regulation) Amendment Act, 2015. So, supplementary lease deed has been executed on 01.08.2016.
6. Environmental Clearance for production of 0.18 MTPA of iron Ore has been obtained vide no - J-11015/41/2006-IA.II (M) on dated 09.01.2007.
7. Total lease area comprises of 19.425 ha, out of which, 16.507 ha is forest land and 2.918 ha is non-forest land. Out of total forest land, 15.622 ha has been accorded forest clearance vide no: 5-ORC039/2007-BHU on dated 17.08.2009. And the rest safety zone has also obtained forest clearance.
8. Modification to the review of mining Plan has been approved by the Indian Bureau of Mines, Bhubaneswar on 16.03.2022 for a period from 2022-23 to 2025-26 by the Indian Bureau of Mines, Bhubaneswar.
9. Open cast fully-mechanized mining method will be adopted with the deployment of machines like wagon drill, Compressor, Hydraulic excavators & Tippers etc. Bench height of 10m and minimum width of 10m are proposed to achieve the enhanced production target and the bench slope will be kept nearly vertical (80°) with horizontal.

10. There is one of crushing unit of 120 TPH & one mobile screening unit of 250 TPH exist in the lease area. And one more mobile crusher of 250 TPH and 250 TPH mobile screening unit are proposed.
11. As estimated the total geological reserve is about 8341225 T, out of which 8290450 T cum have been considered as mineable reserves.
12. Total 133800 T of OB dump will be generated from ROM and 186116 T of waste from re-handling of dump will be generated during plan period. A total of 68500 t of mineral reject will be generated from the ROM. As re-handling of Dump-1 will be continued in the plan period, dumping of generated waste will be done on dump-3 and dump - 4.
13. Protective measures like retaining wall, garland drain & settling tank have already been built up around the waste dump and quarry. However, maintenance and cleaning work will be continued during this plan period. In addition, retaining wall and garland drain have been proposed for waste dump.
14. Total water requirement is 30 KLD (Dust suppression – 20KLD, Plantation – 5 KLD, Drinking and others – 5KLD). The source of water is Ground water for drinking purpose and for other purpose water will be sourced from nearby Kakrapani nala/ Ground water source as per suitability in accordance to the existing guidelines.
15. There is no national park, wild life salutory, Eco Sensitive Ores situated within periphery of lease area. Only three water bodies namely Kakrapani nala, Suna Nadi & Baitarini River & 2 forests namely Sidhamatha RF and Baitarini RF present in the 10 km radius of the area.
16. Total cost of the project will be 20.0 Crores and a budget of 1 Cr is proposed as EMP cost for the lease area. As per the norms, Lessee will spend towards CSR activities for the peripheral development towards education, Health check-up camp and maintenance of roads etc.
17. Since the base line data should not be generated during the monsoon season, So, the data for pre-monsoon season has already been generated from March to May' 2022 for preparation of EIA report.
18. There is no court case /litigation pending against the project.
19. The Environment consultant **M/s Srushti Seva Private Limited, "Bilvadal" 8 Janta Layout, Deendayal Nagar, Nagpur (Maharashtra) – 440022** along with the proponent has made a presentation on the proposal before the Committee.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Srushti Seva Private Limited, "Bilvadal" 8 Janta Layout, Deendayal Nagar, Nagpur (Maharashtra) – 440022**, the SEAC prescribed the following specific ToRs in addition to standard ToRs as per **Annexure – A** for conducting detailed EIA study.

- i) The following information to be submitted.
 - a) Compliance of mining plan, including waste and OB dump management, mine closure plan etc.
 - b) Compliance to Common cause judgment
 - c) Status of R&R
 - d) Compliance of plantation

- e) Compliance of public hearing issues
 - f) Status of complaints/ court cases/legal action
 - g) Compliance of specific conditions of earlier EC duly certified by Regional office of MoEF&CC.
 - h) Any other relevant environmental issue / parameter.
- ii) The following studies be undertaken by domain experts, viz:
- a) Blast vibration study
 - b) Socio economic study of the neighbouring habitation
 - c) Biodiversity study with audit mechanism.
- iii) The Project Proponent shall undertake the peripheral plantation and plantation in closed areas as well as gap plantation within 6 months with saplings of 4-6 ft height aiming atleast 90% survival rate. An undertaking for the same also needs to be submitted by Project Proponent.
- iv) Cost of the CER calculated shall be utilized for the concerns of the people in terms of health, education, and infrastructure and environment protection. Project Proponent also shall include the budget for the betterment of schools nearby and to facilitate the online education system by providing Wi-Fi connectivity and desktops/tablets.
- v) The project proponent should provide in the EIA Report details of all the statutory clearances, permissions, no objection certificates, consents etc. required for this project under various Acts, Rules and regulations and their status or estimated timeline after grant of EC.
- vi) The project proponent should submit the revenue plan for mining lease, revenue plan should be imposed on the satellite imaginary clearly demarcate the Govt. land, private land, agricultural land etc.
- vii) The project proponent should submit the real-time aerial footage & video of the mining lease area and of the transportation route. The project proponent should submit the detailed plan in tabular format (year-wise for life of mine) for afforestation and green belt development in and around the mining lease. The project proponent should submit the number of saplings to be planted, area to be covered under afforestation & green belt, location of plantation, target for survival rate and budget earmarked for the afforestation & green belt development. In addition to this the project proponent should show on a surface plan (5-year interval for life of mine) of suitable scale the area to be covered under afforestation & green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years. The capital and recurring expenditure to be incurred needs to be submitted. Presently in India there are many agencies which are developing forest in short interval of time. Thus, for the plantation activities details of the experts/agencies to be engaged needs to be provided with budgetary provisions.
- viii) The project proponent should submit the quantity of surface or ground water to be used for this project. The complete water balance cycle needs to be submitted. In addition to this PP should submit a detailed plan for rain water harvesting measures to be taken. PP should submit the year wise target for reduction in consumption of

the ground/surface water by developing alternative source of water through rain water harvesting measures. The capital and recurring expenditure to be incurred needs to be submitted.

- ix) The project proponent should clearly bring out the details of the manpower to be engaged for this project with their roles /responsibilities/designations. In addition to this the project proponent should mention the number and designation of person to be engaged for implementation of environmental management plan (EMP). The capital and recurring expenditure to be incurred needs to be submitted.
- x) The project proponent should submit the year-wise, activity wise and time bound budget earmarked for EMP, occupational health surveillance & Corporate Environmental Responsibility. The capital and recurring expenditure to be incurred needs to be submitted.
- xi) The project proponent should submit the measures/technology to be adopted for prevention of illegal mining and pilferage of mineral. The project proponent should submit the detailed mineralogical and chemical composition of the mineral and percentage of free silica from a NABL/MoEF&CC accredited laboratory.
- xii) The project proponent should clearly show the transport route of the mineral and protection and mitigative measure to be adopted while transportation of the mineral. The impact from the center line of the road on either side should be clearly brought out supported with the line source modelling and isopleth. Further, frequency of testing of Poly Achromatic Hydrocarbon needs to be submitted along with budget. Based on the above study the compensation to be paid in the event of damage to the crop and land on the either side of the road needs to be mentioned. The project proponent should provide the source of equations used and complete calculations for computing the emission rate from the various sources.
- xiii) The project proponent should clearly bring out that what is the specific diesel consumption and steps to be taken for reduction of the same. Year-wise target for reduction in the specific diesel consumption needs to be submitted.
- xiv) The project proponent should bring out the awareness campaign to be carried out on various environmental issues, practical training facility to be provided to the environmental engineer/diploma holders, mining engineer/diploma holders, geologists, and other trades related to mining operations. Target for the same needs to be submitted.
- xv) The budget to be earmarked for the various activities shall be decided after perusal of the Standard EC conditions. After perusal of Standard EC conditions if agreed the project proponent should also submit an undertaking by the way of affidavit for Compliance of Standard EC conditions already prescribed by the Ministry vide O.M. No and Specific condition if prescribed by the SEAC/SEIAA, Odisha.
- xvi) The project proponent should ensure that only NABET accredited consultant shall be engaged for the preparation of EIA/EMP Reports. The project proponent shall ensure that accreditation of consultant shall be valid during the collection of baseline data, preparation of EIA/EMP report and during the appraisal process. The project proponent and consultant should submit an undertaking the information and data provided in the EIA Report and submitted to the SEIAA, Odisha are factually correct

and the project proponent and consultant are fully accountable for the same.

- xvii) The project proponent should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this the project proponent should submit the original test reports and certificates of the labs which will analyze the samples.
- xviii) The percentage of iron in the final waste generated and not used as iron ore or its upgradation.
- xix) Compliance to NEERI recommendations.
- xx) Slope study for both mines and OB /wastes through domain expert to be undertaken and blasting study as well.
- xxi) Traffic density study, both inside the mines and at haulage road intersecting points of haulage road with public road be undertaken by domain expert.
- xxii) "Zero discharge" management & "Zero Dust Re-suppression" management with detailed plan to be submitted.
- xxiii) Internal roads, drain management with network of the drain, retaining walls and settling tanks with ETPs be submitted.
- xxiv) Details of air quality monitoring stations of the area and additional stations at entry and exit of mines and haulage roads, habitation to be considered.
- xxv) Construction and perennial maintenance of haulage road with details of plantation and the species thereof to be submitted.
- xxvi) Parking plaza layout with maximum no. of vehicles and types of vehicles that can be parked with basic amenities and facilities.
- xxvii) Forest Clearance details with copy of all Forest Clearance.
- xxviii) Status of complaints/ court cases/legal action regarding to lease along with a detailed write up indicating case no., purpose of the case etc.
- xxix) Copy of lease document.
- xxx) Details of waste management i.e. composition and nature of waste generated, tabulated form showing year wise waste generation, usage and storage.
- xxxi) Details of silt, waste and water Management should include the design of drainage structures.
- xxxii) Since, the perennial nala is passing nearby, detailed measures to be taken to protect the nala due to mining activity for non-contamination of ground water due to mining.
- xxxiii) Slope study report.
- xxxiv) Project Proponent shall consider developing a good nursery in nearby village for production of saplings of 4-6feet height for planting in safety zone, sides of external haulage roads and distribution among villagers for planting in their private land/ community land. The nursery may be developed by company on their own or in collaboration with forest department. A detailed proposal to this effect shall be submitted.

- xxxv) Saplings/ trees existing in mining area shall be uprooted and transplanted with ball of earth in safety zone or non-mineral zone. A detailed proposal to this effect shall be submitted.
- xxxvi) Comprehensive water management, water balance with water harvesting and its reuse both monsoon and non-monsoon period.
- xxxvii) STP- plan with design since the no. of employee is 133 plus the housing population with location in the layout map.
- xxxviii) Provision of solar power (percentage wise) with detail plan.
- xxxix) To submit the network with dimension of concrete cement roads inside the mining lease area and haulage road.
- xl) To submit parking plaza at entry and exit of the mines with basic amenities.
- xli) Detailed plan to be submitted for water sprinkling inside the mines and outside in haulage road including regular vacuum cleaning and Zero Dust Resuspension system to completely mitigate and arrest fugitive dust emission.
- xl ii) Air Modelling details with prediction for next 10 years after this project is operational.
- xl iii) Kism of non- forest land and conversion of the same to Mining use.
- xl iv) Comparative matrix previous and proposed production w.r.t overburden, green belt, water balance, haulage roads, settling ponds, ETP.
- xl v) Comparative statement of Base line studies data between last EC granted in 2007 and now and identify the deviations& mitigation measures to address the same.
- xl vi) Comparative statement with reference to Pollution load for the existing mines and proposed expansion in view of almost three times expansion.
- xl vii) Top soil management so far and proposed expansion.
- xl viii) Year- wise Production details duly certified by concerned mines Authority of the Govt that there is no violation.
- xl ix) Compliance to earlier EC conditions duly certified by regional office of MOEF&CC and compliance to conditions of CTE/ CTO duly certified by SPCB.
- l) Design and capacity of RWH pond (s) and the basis with water balance -- existing and proposed.
- li) Tailings Management and Silt Management with SOP for periodic de-siltation of any Nala/ waterbody/ Agriculture/ Crop lands.

ITEM NO. 03

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR PADAMPURI STONE QUARRY (2,3,4,6 & 7) UNDER CLUSTER APPROACH IS A STONE MINING PROJECT OVER A TOTAL AREA OF 11.33 HA / 27.997 ACRES AND IS LOCATED IN VILLAGE- PADAMPURI, TAHASIL &, DISTRICT- NUAPADA OF TAHASILDAR, NUAPADA – EC.

1. Padampuri Stone Quarry (2, 3, 4, 6 7, cluster of 5 Quarries) is located at village Padampuri, Tehsil Nuapada, District Nuapada of Odisha. The project is proposed by the Tahasildar, Nuapada, Odisha. The mining lease area was granted for 5 years vide letter.

2. The proposed project is in cluster situation as 5 leases are within 500 m radius & total lease area becomes greater than 5 ha. The total cluster area granted under QL is 11.33 ha within 500m. So, as per the EIA notification 2006 and its subsequent amendment, proposed project fall in category B1.

Area detail

Mine	Khata No.	Plot No.	Area (Ha)	LOI/ Lease	MINE PLAN	Status/EC status
Padampuri Stone Quarry 2	76	187, 227	2.023	Letter no-3141 on 31-07-2020	1808/BZ Dt: 01/09/2020	New
Padampuri Stone Quarry 3		227	1.214	Letter no-3141 on 31-07-2020	1806/BZ Dt: 01/09/2020	New
Padampuri Stone Quarry 4		187	4.856	Letter no-1844 on 10-05-2016	---	Operational/EC granted on 22-05-2017
Padampuri Stone Quarry 6		227	1.214	Letter no-3098 on 28-07-2020	1795/BZ Dt: 31/08/2020	New
Padampuri Stone Quarry 7		187	2.023	Letter no-3098 on 28-07-2020	1777/BZ Dt: 31/08/2020	New
Total			11.33			

3. The project requires prior EC before commencement of any activity at site. During presentation PP has submitted following information:

Salient features of the project:

S. No.	Particulars	Details
A.	Nature & Size of the Project	Padampuri Stone Quarry (11.33 ha) for proposed production of 13,129 cu.m/year.
B.	Location	
	Name of Village	Padampuri
	Tehsil	Nuapada
	District	Nuapada
	State	Odisha
	Coordinates	Latitude: 20° 49' 31.63" N to 20° 49' 42.7" N, Longitude: 82° 32' 53.00" E to 82° 33' 13.05" E
	Toposheet No.	64L/09

Mineable Reserve	Mine	Mineable Reserve (cum)																			
	Padampuri Stone Quarry 2	161157.1																			
	Padampuri Stone Quarry 3	93972.1																			
	Padampuri Stone Quarry 4	377772.8																			
	Padampuri Stone Quarry 6	75707.4																			
	Padampuri Stone Quarry 7	197408																			
Proposed Production	Mine	Production usable rock (cu.m.) per year	Production usable rock (cu.m.) in 5 years																		
	Padampuri Stone Quarry 2	3040	15200																		
	Padampuri Stone Quarry 3	3040	15200																		
	Padampuri Stone Quarry 4	2502	11322																		
	Padampuri Stone Quarry 6	1507	7535																		
	Padampuri Stone Quarry 7	3040	15200																		
	Total	13129	64457																		
C. Mine lease area details																					
Lease Area	11.33 ha (cluster area)																				
Topography	The lease area is sloppy hilly terrain																				
Site Elevation Range	<table border="1"> <thead> <tr> <th>Mine</th> <th>Max (m RL)</th> <th>Min (m RL)</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>368</td> <td>350</td> </tr> <tr> <td>3</td> <td>368</td> <td>356</td> </tr> <tr> <td>4</td> <td>386</td> <td>356</td> </tr> <tr> <td>6</td> <td>366</td> <td>358</td> </tr> <tr> <td>7</td> <td>368</td> <td>348</td> </tr> </tbody> </table>			Mine	Max (m RL)	Min (m RL)	2	368	350	3	368	356	4	386	356	6	366	358	7	368	348
Mine	Max (m RL)	Min (m RL)																			
2	368	350																			
3	368	356																			
4	386	356																			
6	366	358																			
7	368	348																			
D. Cost Details																					
Cost of the project	135 lakh (1.35 crore) (Quarry 2- 24 lakh, Quarry 3- 14.5 Lakh, Quarry 4- 58 lakh, Quarry 6- 14.5 Lakh, Quarry 7- 24.0 Lakh)																				

	Cost for EMP	Capital cost –44.90 Recurring cost –22.58 Lakhs/annum
	Cost of CER	2 % of proposed project cost
E.	Details of Environmental Setting	
	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve / Protected Forest etc.) within 10 km distance	There is no National Park or Biosphere Reserve within km distance from the lease area. Kantarhaira RF, approx. 2.0 km in North direction. Ghati RF, approx. 6 km in South direction. Haldi RF, approx.7 km in West direction. Aurajoba PF, approx. 5 km in East direction. PF, approx. 3 km in ENE direction. Sunabeda Wildlife sactuary, approx. 41.09 km in S direction.
	Water Bodies,	Jonk river, approx.8.0 km in NW direction Canal, approx. 0.64 km in SW direction
	Nearest Town	Nuapada, approx.2.5 km in SW direction.
	Nearest Railway Station	Nuapada Railway station, approx. 2.3 km in SE direction.
	Nearest Highway	SH 3, approx. 1.6 km in South direction. NH 353, approx. 1.8 km in West direction.
	Nearest state boundary	Chhattisgarh- Odhisa interstate boundary, approx. 12.0 km in NW direction.
	Nearest Airport	Swami Vivekanand International Airport is approx. 93 km towards NW direction.
	Seismic Zone	As per the 2002 Bureau of Indian Standards (BIS) map Odisha also falls in Zones I & II.

4. TOR has been granted from SEIAA vide letter no 2310/SEIAA dated 26.08.2021 for Padampuri Stone Quarry (2, 3, 4, 6 & 7) over an Cluster area of 11.33 ha/28.00 Acre of stone in Padampuri Tahasil – Nuapada, District – Nuapada of Odisha. Baseline study has been conducted for post monsoon season of 2020 i.e, from December, 2020 to February, 2021.
5. The public hearing was conducted on 27th Dec, 2021 at 10.00A.M in At Gram Panchayat Office, Godfula situated in plot no- 875 of khata no- 227 of Maouza Godfula, Dist- Naupada.
6. Mining will be done by Opencast semi-mechanized method with adopted of drilling & blasting. There is practically no OB at proposed site as it is already broken.

7. The excavation in ore zone will be carried out by HEMM. While planning the proposal for the ensuing proposal period, economic depth of the pit for minimum degradation of land has been considered.
8. In order to prevent haphazard excavation of pits and suitable blending of ore, the excavation has been proposed at one place. Sorting and sizing will be done manually also. The working has been proposed bench will be of height 6m and width 6m.
9. The ground water is available at the average depth of 3.25 m to 12.64 mbgl & Post monsoon water table is about 0.83 m to 5.38mbgl below the ground level. The ground water is available at the average depth of 3.25 m to 12.64 mbgl & Post monsoon water table is about 0.83 m to 5.38mbgl below the ground level. The highest altitude ranges from 386mRL to 366m RL and lowest altitude ranges from 358mRL to 348mRL There is no ground water intersection due to proposed mining activity.
10. The seasonal water course may be silted due to wash off from the mineral stack. In order to avoid it, garland drain along with settling tank and retention/ toe wall is proposed.
11. Garland drain along with settling tank will be constructed on the sloping side barrier of the QL area. The garland drain will be routed through settling tank to remove suspended solids from flowing into storm water and choking streams/ Nala.
12. No processing or beneficiation is proposed in the area. Only sizing will be done manually.
13. The Environment consultant **M/s P & M Solution, C-88, Sector 65, Noida** along with the proponent has made a presentation on the proposal before the Committee.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s P & M Solution, C-88, Sector 65, Noida**, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent

- i) Layout map showing dump, and garland drain.
- ii) Revenue map indicating cluster of mines location.
- iii) Mitigative measures for fly rock and noise due to blasting.
- iv) Details of management of storage and usage of explosives.
- v) Detailed plan for silt management done for nearby agricultural lands and water sources and separated contingency plan should be allocated for this purpose.
- vi) No village road will be used for transportation of minerals.
- vii) Internal haulage road to be maintained.
- viii) Water sprinkling should be done through pipeline.
- ix) Thick greenbelt around whole cluster should be maintained.
- x) Data on Vibration due to blasting should be measured and kept ready for submission to SEIAA should be kept.
- xi) Mitigation measures to be followed to protect canal and HT line.
- xii) Supporting documents and photographs that Padampuri quarry 1 & 5 are extinct/ closed.

ITEM NO. 04

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR BASUPALI STONE QUARRY - 2 WITH PROPOSED EXCAVATION OF 5000 CUM/YEAR OF STONE OF TAHASILDAR BOLANGIR HAVING AN AREA OF 2.023 HA. LOCATED AT KHATA NO. 14 PLOT NO.79, VILLAGE BASUPALI UNDER BALANGIR TAHASIL OF BALANGIR DISTRICT, ODISHA (UNDER CLUSTER APPROACH FOR BASUPALI CLUSTER STONE QUARRY OVER AN AREA OF 9.67 HA WITH 5 INDIVIDUAL MINES) OF TAHASILDAR, BOLANGIR – EC.

1. The proposed mining project is for Stone Quarry located in village Basupali under Bolangir Tahasil of Bolangir District, Odisha, over an area of 9.67 Ha or 23.9 Acres. The Quarry lease has been proposed to be environmental clearance by the Tahasildar, Bolangir (successful bidder) for excavation of Stone for a period of five years. The Mining Plan of the Mining Project has been approved by The Joint Directorate of Geology, Bolangir, Odisha on dated 30.03.2021. As per EIA notification 2006 and subsequent amendments, the project falls under item - 1(a)-Mining of Minerals in the Schedule of EIA Notification, 2006 & Subsequent amendments thereof. The project is coming under BI Category (5nos of Individual Cluster) as the lease area is greater than 5.0 Ha. Documents such as approved Mining Plan, Pre-feasibility Report are required for Environment Clearance in respect of the said quarry lease. The lease area is bounded by Latitude: N20°37'23.5" to N20°37'35.5" & Longitude: E83° 26'48.3" to E83° 27'03.4". It is a part of area covered in the Survey of India Toposheet No. 64P/6.
2. The lease area is located at a distance of 10 km from Tahasil Bolangir. Village Basupali is at a distance of 1.2 km from the mining area. District Bolangir is at a distance of 10 km. Bolangir is the nearest place from the lease area for all infrastructure facilities like hospital, school, bus service, market. The east coast railway line is at a distance 0.6 kms from the lease area. NH-201 is at a distance of 1.7 km and SH-42 is at a distance of 9.5 km from the lease area. There is no national park, wild life sanctuary, eco sensitive areas and industrial area situated within 10 Kms radius of the lease area. The mining of stone will be done by open cast semi-mechanized method for excavation & then loading into dumpers/ tractors/tippers for transport to the users destination. The quarry will be mined for five years. The average proposed rate of production is 112166 Cum (max) per annum and a total production of 22476 Cu.m in the plan period. A total of 50 nos. of workers are to be employed in this quarry for winning/raising of 22476Cu.m. Stone production for the plan period.
3. The total water requirement will be approximately 25 KLD for different purposes like domestic, Dust suppression, plantation purposes. Water will be withdrawn from tube wells from nearby village. No use of electric power as the operation will be done in the day time. However solar lights will be used for day to day living purposes.
4. Mining of Stone from the Basupali Cluster Stone Quarry bearing Plot no-79 & 101, Khata No- 14 will be carried out by means of open cast semi-mechanized mining method. Since the proposed project is a stone mining project, there will be very less emission of noxious gas to air during the mining operation. There will be, however, generation of a negligible amount of dust during excavation of Stone. Suitable measures for dust suppression will be carried out by spraying water at dust generating points. Emission of noxious gas from vehicles can be controlled by regular maintenance.
5. Plantation will be raised along both sides of the roads, available vacant spaces and in the haul road; It is proposed for planting 1320 nos. of saplings per annum by the lessee

on the sides and village approach roads which is to be undertaken in consultation with the concerned authority. No use of electric power as the operation will be done in day time. However solar lights will be used for day to day living purposes. Trucks and tractors will be used for transportation.

6. Proposed work will be carried out within one month after getting EC depending upon rainy season as no mining activities will be carried out during rainy season.
7. 10 KLD Ground water will be used for drinking and domestic purpose whereas surface water will be used for green belt development and dust suppression. No use of electric power as the operation will be done in day time. However solar lights will be used for day to day living purposes. Trucks/tippers and tractors will be used for transportation. So, the approximate quantity of the fuel Diesel used per day is 1000Lit/day. Due to the proposed Stone mining, there will be generation of employment for 50 persons. Out of which, 50 nos. are skilled, 10 nos. are semi-skilled, and 15 nos. are unskilled and 25 nos are mines manager/mine permit manager. Total cost of the project will be ` 2 Crores.
8. ToR was issued by SEIAA, Odisha vide letter no. 1805/SEIAA, dated 26.07.2021. Baseline data collected on Pre-Monsoon Season from 01st March 2021 to 31st May 2021. Public hearing was conducted on 04th March 2022.
9. Nearest Wild Life Sanctuary located is Karlapat Wild Life Sanctuary at a distance of- 114 Km Latitude- 19°40'19.75" N Longitude- 83°02'09.99" E.
10. The Environment consultant **M/s Green Circle. Inc, Green Empire (Anupushpam) Above Axis bank, Near Yash Complex, Gotri Main Road, Gotri, Vadodara - 390021 (Gujarat)** along with the proponent has made a presentation on the proposal before the Committee.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Green Circle. Inc, Green Empire (Anupushpam) Above Axis bank, Near Yash Complex, Gotri Main Road, Gotri, Vadodara - 390021 (Gujarat)**, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent.

- i) Layout map showing dump, and garland drain.
- ii) Revenue map indicating cluster of mines location.
- iii) Mitigative measures for fly rock and noise due to blasting.
- iv) Details of management of storage and usage of explosives.
- v) Detailed plan for silt management done for nearby agricultural lands and water sources and separated contingency plan should be allocated for this purpose.
- vi) Water sprinkling should be done through pipeline.
- vii) Thick greenbelt around whole cluster should be maintained.
- viii) Data on Vibration due to blasting should be measured and kept ready for submission to SEIAA.
- ix) Details of haulage roads to be used for transportation of material and its proper maintenance. Planting of saplings details on both side of haulage roads.

ITEM NO. 05

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF M/S SRI JAGANNATH PROMOTERS & BUILDERS FOR RESIDENTIAL APARTMENT PROJECT OF B+S1+S2+20 STORIED & G+3 CLUB HOUSE OVER AN AREA AN PLOT AREA – 11,408.16 M2 AND TOTAL BUILT UP AREA – 62,835.59 M2 LOCATED IN MOUZA-SANKARPUR & AIGINIA, DISTRICT - KHURDA, BHUBANESWAR, ODISHA OF SRI. PRADIPTA KUMAR BISWASROY (MANAGING PARTNER) – EC.

The proponent did not attend the meeting. The SEAC decided to defer the case to the next meeting.

ITEM NO. 06

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR TALAB STONE QUARRY – 1(A) OVER AN AREA OF 5.44 ACRES OR 2.20 HECTARES BEARING KHATA NO. 751, PLOT NO. 1443(P) IN TALAB VILLAGE OF SAMBALPUR TAHASIL, DISTRICT- SAMBALPUR, STATE ODISHA OF SRI NEERAJ KUMAR AGRAWAL (SUBMITTED UNDER CLUSTER APPROACH WITH TOTAL CLUSTER AREA 12.606 HECTARES WITH CONSISTING OF 5 STONE QUARRIES) – EC.

The proponent did not attend the meeting. The SEAC decided to defer the case to the next meeting.

ITEM NO. 07

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR JAIPUR & NUAPADA MAHANADI PATHA CLUSTER SAND QUARRY WITH PROPOSED EXCAVATION OF 51,000 M3/YEAR OF SAND OF TAHASILDAR RAGHUNATHPUR HAVING AN AREA OF 16.16 HA. LOCATED AT KHATA NO. 324 & 703, PLOT NO.282,2717,389,538,260 & 261, AT-JAIPUR & NUAPADA UNDER RAGHUNATHPUR TAHASIL OF JAGATSINGHPUR DISTRICT OF TAHASILDAR, RAGHUNATHPUR – EC.

1. The proposed mining project is for river Quarry sand mining (Jaipur & Nuapada Mahanadi Patha Cluster Sand Quarry) lying on Mahanadi River located in village Jaipur & Nuapada under Raghunathpur Tahasil of Jagatsinghpur District, Odisha, over an area of 16.16 Ha or 39.94 Acres. The Quarry lease has been proposed to be environmental clearance by the Tahasildar, Raghunathpur (on behalf of successful bidder) for excavation of River Sand for a period of five years. The Mining Plan of the Mining Project has been approved by Authorised Officer & Deputy Director of Geology, O/o- Directorate of Geology, Bhubaneswar, Odisha on dated 13.01.2021. As per EIA notification 2006 and subsequent amendments, the project falls under item 1(a)-Mining of Minerals in the Schedule of EIA Notification, 2006 & Subsequent amendments thereof. The project is coming under B1 Category as the lease area is greater than 5.0 Ha. Documents such as approved Mining Plan, Pre-feasibility Report are required for Environment Clearance in respect of the said quarry lease.
2. The lease area is bounded by Longitude: E86°16'01.6" to E86°16'47.0" & N20°19'49.6"to N20°20'25.7". It is a part of area covered in the Survey of India Toposheet No. 73-L/7.
3. The lease area is located at a distance of 10.0 km from Tahasil Raghunathpur. Village Jaipur and Nuapada is at a distance of 2.0 km from to the mining area. District Jagatsinghpur is at a distance of 15.0 km. Raghunathpur is the nearest place from the lease area for all infrastructure facilities like hospital, school, bus service, market. The east coast railway station (Gorekhnath Railway Station) is at a distance 3.3 kms from the lease area. NH-5A is at a distance of 22.1 km and SH-12 is at a distance of

0.6 km from the lease area. There is no national park, wild life sanctuary, eco sensitive areas and industrial area situated within 10Kms radius of the lease area. The mining of sand will be done by open cast manual method for excavation & then loading into dumpers/ tractors/tippers for transport to the user's destination. The quarry will be mined for five years. The average proposed rate of production is 51000 Cu. m (max) per annum and a total production of 2,55,000 Cu.m in the plan period. A total of 87 nos. of workers (1- Supervisory/ 86-Non-Supervisory) are to be employed in sand quarry for winning/raising of 2,55,000 Cu.M. sand production for the plan period. The total water requirement will be approximately 5 KLD for different purposes like domestic, Dust suppression, plantation purposes.

4. The sand bed is on river Mahanadi. The Jaipur & Nuapada Cluster Sand deposits represents a gently sloping to almost flat terrain with highest altitude of 10mRL in both Jaipur & Nuapada Mahanadi Patha sand Quarry. The general slope is towards northeast. Vegetation is scanty with small bushes existing in the auction hold area. There is no human settlement within area.

S.No.	Tehsil	Village	Khasra	Area	Ownership	Land use
1	Raghunathpur	Jaipur	Khata No. 703 Plot No. 282, 2717,389&538	9.47 ha	Govt. land	Non-forest
2	Raghunathpur	Nuapada	Khata No. 324 and plot No. 266	6.69 ha	Govt. land	Non-forest

5. Geological Resource Calculation for mines in cluster is as follows:

Cluster Geological Resource calculation of QL for the period of five years				
Quarry Lease	Area of potential sand zone (m ²)	Thickness of sand (m)	Geological Resource of sand (m ³)	Category
A	B	C	D=B*C	E
Jaipur Mahanadi Patha Sand Quarry	94656	1	94656	Probable
Nuapada Mahanadi Patha Sand Quarry	53297	1	53297	Probable
Jaipur and Nuapada Cluster	1,47,953		1,47,953	

6. Year wise production details for mines in cluster is as follows:

Cluster	Year	Surface Area in m ²	Thickness in m	Production (m ³)
Jaipur Mahanadi Patha Sand Quarry	1st Year	30000	1	30000
	2nd Year	30000	1	30000
	3rd Year	30000	1	30000
	4th Year	30000	1	30000
	5th Year	30000	1	30000
Total				1,50,000
Nuapada	1st Year	42000	0.5	21000

Mahanadi Patha Sand Quarry	2nd Year	42000	0.5	21000
	3rd Year	42000	0.5	21000
	4th Year	42000	0.5	21000
	5th Year	42000	0.5	21000
Total				1,05,000
Jaipur and Nuapada Cluster				2,55,000

7. Water will be withdrawn from tube wells from nearby village. No use of electric power as the operation will be done in the day time. However solar lights will be used for day to day living purposes. Mining of sand from the Jaipur & Nuapada Mahanadi Patha Cluster Sand Quarry bearing Plot no- 260,266 Khata No- 324 of Mouza-Nuapada and Plot No-282, 2717, 389, 538, Khata No. 703 of Mouza-Jaipur will be carried out by means of open cast manual mining method. Since the proposed is a sand mining project, there will be no emission of noxious gas to the air during the mining operation. There will be, however, generation of a negligible amount of dust during excavation of sand. Suitable measures for dust suppression will be carried out by spraying water at dust generating points. Emission of noxious gas from vehicles can be controlled by regular maintenance.
8. Plantation will be raised along both sides of the roads, available vacant spaces and in the river bank. It is proposed for planting 50 nos. of saplings per annum by the lessee on the sides of river banks and village approach roads which is to be undertaken in consultation with the concerned authority. No use of electric power as the operation will be done in day time. However solar lights will be used for day to day living purposes. Trucks/Hyway and tractors will be used for transportation.
9. Proposed work will be carried out within one month after getting EC depending upon rainy season as no mining activities will be carried out during rainy season.
10. 2 KLD Ground water will be used for drinking and domestic purpose whereas surface water will be used for green belt development and dust suppression. No use of electric power as the operation will be done in day time. However solar lights will be used for day to day living purposes. Trucks/tippers and tractors will be used for transportation. So the approximate quantity of the fuel/Diesel used per day is 200Lit/day. Due to the proposed sand mining, there will be generation of employment for 66 persons. Out of which, 2 nos. are skilled, 13 nos. are semi-skilled 71 nos. are unskilled and 1 supervisor. Total cost of the project will be 20 Lakhs.
11. ToR was issued by SEIAA, Odisha vide letter no. 1241/SEIAA dated 09.04.2021. Baseline data collected on Pre-Monsoon Season from 01st March 2021 to 31st May 2021. Public hearing was conducted on 20th April,2022.
12. The Environment consultant **M/s Green Circle. Inc, Green Empire (Anupushpam) Above Axis bank, Near Yash Complex, Gotri Main Road, Gotri, Vadodara - 390021 (Gujarat)** along with the proponent has made a presentation on the proposal before the Committee.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Green Circle. Inc, Green Empire (Anupushpam) Above Axis bank, Near Yash Complex, Gotri Main Road, Gotri, Vadodara - 390021 (Gujarat)** on behalf of the proponent, the SEAC approved the EIA/EMP report in cluster approach and recommended the following:

- A. The SEIAA, Odisha may consider to grant Environmental Clearance to individual lease
- Proceedings of the SEAC meeting held on 16.08.2022

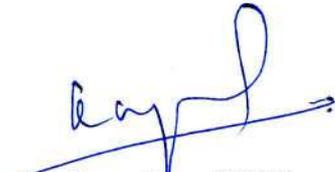
Environmental Scientist, SEAC

in cluster for the proposal valid upto lease period with stipulated conditions as per **Annexure – B** after receipt of individual applications from the lessee in cluster along with following documents.

- i) Filled in Form-I of individual lease
- ii) Prefeasibility report of individual lease
- iii) EMP of individual lease.
- iv) Approved Mining Plan of individual lease
- v) Traffic study to be undertaken and the report with mitigation measures as and if necessary for decongestion as well as avoidance of accident at SH-12/ intersecting public road.

B. Following specific conditions may be stipulated in Environmental Clearance for individual lease

- i) Revised mining plan shall be prepared based on essential physical criteria as per Enforcement and Monitoring Guidelines for Sand Mining, January 2020 of MoEF&CC, Govt. of India enclosed as **Annexure - C**.
- ii) Regular replenishment study to be conducted and report to be submitted.
- iii) Provision of Bio-toilet shall be made at the site.
- iv) Avenue plantation and plantation on both sides of the haulage road in consultation with/ on the advice of concerned Forest Department, Government of Odisha & W.R. Department Government of Odisha as well.
- v) Stone patching with plantation in between along the stretch of the bank associated with sand mining and necessary ramp construction shall be made.
- vi) All the individual quarry lessee to create a common forum and contribute funds to it for grading, compaction and maintenance of common haulage road, Provision of piped water with semi-circle Sprinkler system for suppression of dust on the common haulage road.
- vii) Proposed measures to avoid accident and periodic maintenance of village roads (if any) used with due consultation and permission of concerned BDO as raised during public hearing.


Secretary, SEAC

TERMS OF REFERENCE (ToR) FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT FOR PATABEDA IRON AND MANGANESE MINES OVER AN AREA 19.425 HA FOR EXPANSION OF PRODUCTION OF IRON ORE FROM 180000 TPA TO 572305 TPA ALONG WITH CRUSHING AND SCREENING PLANTS LOCATED IN VILLAGE PATABEDA UNDER KOIRA TAHASIL IN SUNDARGARH DISTRICT OF M/S. M G MOHANTY – TOR.

A. STANDARD TOR FOR MINING PROJECT

1. The Environmental Clearance will not be operational till such time the Project Proponent complies 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..
2. Department of Mining & Geology, State Government shall ensure that mining operation shall not commence till the entire compensation levied, 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 the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.
3. Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
4. A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
5. All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
6. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
7. Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
8. Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
9. It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental

issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the proposed safeguard measures in each case should also be provided.

10. The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
11. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
12. Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
13. A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
14. Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
15. Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
16. The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
17. A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
18. Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
19. A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be

prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

20. Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.
21. Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects failing under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
22. R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs/STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine (lease area) will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
23. One season (non-monsoon) [i.e. March - May (Summer Season); October - December (post monsoon season) ; December - February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM₁₀, particularly for free silica, should be given.
24. Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
25. The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
26. Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.

27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided,
28. Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
29. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater, Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter- alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
30. Details of any stream, seasonal or otherwise, passing through the tease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be.
31. Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.
32. A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
33. Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
34. Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
35. Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures

should be detailed along with budgetary allocations.

38. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
39. Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
40. Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
41. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
42. The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
43. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
44. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
45. The activities and budget earmarked for Corporate Environmental Responsibility (CER) shall be as per MoEF&CC, Govt. of India O.M No 22-65/2017-IA. II (M) dated 01.05.2018 and the action plan on the activities proposed under CER shall be submitted at the time of appraisal of the project included in the EIA/EMP Report.
46. The Action Plan on the compliance of the recommendations of the CAG as per MoEF&CC, Govt. of India Circular No. J-11013/71/2016-IA.I (M), dated 25,10.2017 needs to be submitted at the time of appraisal of the project and included in the EIA/EMP Report.
47. Compliance of the MoEF&CC, Govt. of India Office Memorandum No. F: 3-50/2017-IA.III (Pt.), dated 30.05.2018 on the judgement 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 needs to be submitted and included in the EIA/EMP Report.

B. Specific TOR: 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"

1. 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.
2. The expansion or opening of new manganese ore mines may be considered only when the actual production of about 80% is achieved. Further, the mines that have not produced Mn ore for last two years and have no commitment in the current year as well: EC capacity in such cases may be reviewed. The Department of Steel & Mines, Govt, of Odisha shall submit the Annual Report on this issue to the MoEF&CC for further necessary action.

3. Analysis of baseline environmental quality data for the year 2014 and 2016 indicates that existing mining activities appear to have little / no potential impact on environmental quality, except on air environment, which was mainly due to re-suspension of road dust. Therefore, all the working mines can continue to operate with strict compliance to monitoring of environmental quality parameters as per EC and CTE/CTO conditions of the respective mine, 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.
4. Considering the existing environmental quality, EC capacity, production rate, iron ore resources availability and transport infrastructure availability, the share of Joda and Koira sector works out to be 70% and 30% respectively for the existing scenario for the year 2015-16. However, for additional EC capacity, it can be 50:50 subject to commensurate infrastructure improvement (viz. SOTM. pollution free road transport, enhancement of rail network etc.) in the respective regions.
5. Continuous monitoring of different environmental quality parameters as per EC and CTE/CTO conditions with respect to air, noise, water (surface and ground water) and soil quality in each region shall be done. The environmental quality parameters should not indicate any adverse impact on the environment. Monitoring within the mines should be done by individual mine lease holders, whereas outside the mine lease area, monitoring should be done by the Govt, of Odisha through various concerned departments/ authorized agencies. Various monitoring/ studies should be conducted through national reputed institutes, NABET/ MoEF&CC accredited laboratories/organizations. The reports submitted by individual mine lease holders and study reports prepared by other concerned departments/agency for each of the regions should be evaluated and examined by SPCB/ MoEF&CC.
6. Construction of 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 minimum 300 m inside the mine should be done. This should be done within one year for existing mines and new mine should have since beginning. The concerned departments should extend full support; wherever the land does not belong to the respective mine lease holders. 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 above.
7. In view of high dust pollution and noise generation due to road transport, it is proposed to regulate/guide the movement of iron and manganese ore material based on the EC capacity of the mines. Accordingly, ore transport mode has been suggested, as given below in Table.

Table : EC Capacity based Suggested Ore Transport Mode (SOTM)

Code	EC	Suggested Ore Transport Mode
SOTM 1	> 5 MTPA	100% by private railway siding or conveyor belt up to public railway siding or pipeline for captive mines and 70% for non-captive mines

Code	EC	Suggested Ore Transport Mode
SOTM 2	Between 3 and <5 MTPA	Minimum 70% by public railway siding, through conveyor belt and maximum 30% by road - direct to destination or other public railway siding or above option
SOTM 3	Between 1 and < 3 MTPA	Minimum 70% by public railway siding and maximum 30% by road - direct to destination or by other public railway siding or above options
SOTM 4	<1 MTPA	100 % by 10/17 Ton Trucks or above options

It is mentioned by State Govt, of Odisha that currently about 45% of the iron ore is despatched using rail network and progressively it will be increased to about 60% by rail/slurry over a period of 5 years, taking into account time required to set up more railway sidings.

In view of present ore transport practices and practical limitations, all the 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. However, 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.

Transportation of iron & manganese ore through river (jetty) to nearest Sea port (Sea cargo option) may be explored or connecting Sea ports with Railway network from the mines to be improved further so that burden on existing road and rail network and also pollution thereof can be minimized.

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 MoEF&CC and SEIAA, Odisha. Responsibility: Department of Steel & Mines, Govt. of Odisha; Time Period: 5 Years for developing railway/ conveyor belt facilities

8. Development of parking plazas for trucks with proper basic amenities/ facilities should be done inside mine. This should be done within one year for existing mines and new mines should have since beginning. Small capacity mines (in terms of lease area or production) not having enough space within the mine lease areas should develop parking plaza at a common place within the region with requisite facilities. Responsibility: Individual Mine Lease Holders; Time Period: 1 Year
9. 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. Responsibility: Department of Steel & Mines with PWD / NHAI Time Period: 2 Years.
10. Regular vacuum cleaning of all mineral carrying roads aiming at "Zero Dust Resuspension" may be considered. Responsibility: PWD / NHAI/ Mine Lease Holders; Time Period: 3 months for existing roads.

11. Expansion of existing mines and new mines should be considered after conducting recent EIA Study as per the provisions of EIA Notification 2006, as amended time to time) with proper justification on demand scenario for iron ore requirement and availability of pollution free transport network in the region. Responsibility: IBM, Department of Steel & Mines and MoEF&CC, New Delhi.
12. **Mine-wise Allocation of Annual Production:** 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 as suggested in Table, so that demand for iron ore can be anticipated, and actual production/dispatch does not exceed the suggested annual production.

**Table: Allocation of Production to Different Mines for 5 Years
(as per approved Mining Plan)**

Mine Lease	EC Capacity (MTPA)	Suggested Annual Production (MT)				
		2016-17	2017- 18	2018-19	2019-20	2020-21
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Mine 1	X1					
Mine 2	X2					
Mine 3	X3					
Mine n	Xn					
Total	160 +	105	129	153	177	201
Next year allocation = Average of EC Capacity and Last year production						

13. Expansion of Existing Mines having Validity up to 2020: In view of implementation of MMDR Act 2015, wherein many non-captive mines are expected to be closed by March 2020, total iron ore production scenario has been. It is expected that the non-captive mines having validity till 2020 shall try to maximize their production (limited to EC capacity) in the remaining period. Further, depending upon availability of iron ore resources, these mines may also seek expansion of EC capacity. It may be noted here that total EC capacity of existing 25 working mines having validity upto 2020 is about 85 MTPA, whereas actual production from these mines has been only 44.677 MT (52.6%) during 2015-16 and 57.07 MT (67.1%) during 2016-17. Also, it is expected that these mines would not even be able to achieve ore production as per existing EC capacity till March 2020. Therefore, these existing mines should go for production to the fullest extent to meet the requisite demand from the State. However, where EC limit is exhausted, application for expansion may be considered. Further, the EC process (i.e. Grant of TOR, Baseline data collection, Mining plan/ scheme approval, Public hearing, preparation of EIA/EMP Report. Appraisal by the EAC and grant of EC) takes about one year time. Under such circumstances, it is suggested that further applications for grant of TOR or grant of EC for expansion of production capacity of the mine should be considered for those existing mines, which have exhausted their capacity subject to consideration of all environmental aspects. Responsibility: Department of Steel & Mines and MoEF&CC, New Delhi.

14. **Sustained Iron Ore Production beyond 2020:** Considering the implementation of MMDR Act 2015, total production of iron ore in Odisha State is anticipated to be about 111 MT during 2016-17 (actual production was - 102.663 MT), 136 MT during 2017-18, 146 MT during 2018-19 and 146 MT during 2019-20. Then there will be substantial drop in total production (to the tune of 73 MT during 2020-21 onwards) due to closure of mines, which are valid up to 2020. Therefore, in order to maintain operation/sustained growth of downstream industries, iron ore mining in the region needs to be continued at a sustainable rate. The State Govt. through Department of Steel and Mines should initiate appropriate action to ensure continued availability of iron ore from the region, as per suggested sustainable annual production
15. **Reserves Estimation**-Mining Plan and Exploration; Appropriate actions (geo- technical investigation for qualitative and quantitative resource estimation & other preparations for auction of mines), may be initiated taken into account the existing working mines, and the mines which were operational at some point of time (but closed presently due to various reasons). The total iron ore reserves/ resources available within the total lease area of each mine should be estimated by State Govt./NMET/ GSI (or any other approved agency) with respect to: (i) Total lease area of mine (surface), (ii) Maximum depth to which resources could be available, (iii) Resources below the ground water table (if intersected), (iv) Reserves are to be estimated as per UNFC code with respect to quantity and quality (% Fe content), (v) Maximum mining rate and area for auction (after 2020) will be calculated based on total resources available and proposed life of mine leading to closure of mine in a stipulated time period. Responsibility: Department of Steel & Mines, IBM and GSI; Time frame: 1 year for the mines to be auctioned for next 2 years. The above mentioned organizations shall ensure the compliance with respect to timelines for implementations.
16. Depending upon availability of extractable iron ore resources within a mine, mining below the ground water table may be permitted after conducting necessary geological and hydro-geological study by GSI and requisite approval from the CGWB/CGWA (Central Ground Water Board/Authority). This can be explored at least in few mines on trial/pilot basis. Further, within a mine, it will be desirable to operate one pit at a time, and next pit should be opened after extracting maximum possible resources from the first pit, so that the exhausted pit can be used for back filling/ storing of low grade iron ore. However, depending upon the quantity and/or quality of iron/ manganese ore, other mine pits in the same mine lease may also be opened for sustainable scientific mining, as per approved mining plan/scheme of mining by IBM. The Department of Steel & Mines, Govt. of Odisha should initiate the pilot project so that minerals are fully utilized.
17. **Commercial Utilization of Low Grade Ore:** 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.

18. 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.
19. 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.
20. Large and medium mine leases contribute to better implementation of reclamation and rehabilitation plans to sustain the ecology for scientific and sustainable mining. The small leases do not possess scientific capability of environmentally sustainable mining. Therefore, new mine leases having more than 50 ha area should be encouraged, as far as possible. This will ensure inter-generational resource availability to some extent. Responsibility: Dept, of Steel & Mines, Govt, of Odisha.
21. **Mining Operations/Process Related:** (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 wasted 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.

22. **Air Environment Related:** (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 GPCB in this regard, (ii) The core zone of mining activity should be monitored on daily basis. Minimum four ambient air quality monitoring stations should be established in the core zone for SPM, PM10, PM2.5, SO₂, 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, PM_{2.5}, SO₂, 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. Further, 11 continuous air quality monitoring systems may be installed in Joida and Koira regions and one in Baripada/ Rairangpur region, (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 using 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.
23. **Noise and Vibration Related:** (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 (detailed in Section 5.4) 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.
24. **Water/Wastewater Related :** (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 geotextile 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.

25. **Land/ Soil/ Overburden Related** : (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.

26. **Ecology/Biodiversity (Flora-Fauna) Related:** (i) As per the Red List of IUCN (International Union for Conservation of Nature), six floral species and 21 faunal species have been reported to be under threatened, vulnerable & endangered category. Protection of these floral and faunal species should be taken by the State Forest & Wildlife Department on priority, particularly in the mining zones, if any, (ii) The mines falling within 5-10 km of the Karo- Karampada Elephant corridor buffer need to take precautionary measures during mining activities. The forest and existing elephant corridor routes are to be protected and conserved. Improvement of habitat by providing food, water and space for the elephants is required to be ensured to avoid Man- Elephant conflicts. Though as per the records of State Forest Department, movement of elephants in the Karo-Karampada elephant corridor within 10 km distance from the mines in Joda and Koira is not observed, the Forest Department shall further record and ensure that elephant's movement is not affected due to mining activities, (iii) 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, (iv) 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, (v) 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, (vi) 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, (vii) Vetiver plantation on inactive dumps may be encouraged as the grass species has high strength of anchoring besides medicinal value, (viii) 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, (ix) Similarly, Wildlife Department is also required to record and document annual status of wildlife in the region and should identify the need for wildlife management on regional level, (x) Maintenance of the ecology of the region is prime responsibility of the State Forest and Wildlife Department. They need to periodically review the status and identify the need for further improvement in the region. The required expenditure may be met from the funds already collected in the form of compensatory afforestation and wildlife management. Further, additional fund, if required can be sought from DMF. Responsibility: Individual Mine Lease Holders and State Forest & Wildlife Department.

27. **Socio-Economic Related:** (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 socioeconomic development in the region should be focused and aligned with the guidelines/initiatives of Govt, of India/ NITI Aayog / Hon'ble Prime Minister's Vision centring 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.
28. **Road Transport Related:** (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 miner as suggested in Chapter 10. 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, PMin 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.

29. **Occupational Health Related:** (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),
30. **Reporting of Environmental Sustainability Achievement:** All the mines should prepare annual environmental sustainability report (ESR), highlighting the efforts made towards environmental protection with respect to different environmental components vis-a-vis production performance of the mine on monthly basis. The data collected as per EC and CTE/CTO conditions should be utilized to prepare the annual sustainability report. The mines performing high with effective environmental safeguards may be suitably recognized/rewarded. "Star Rating Format" formulated by the Ministry of Mines along with environmental sustainability report may be used,
31. **Environmental Monitoring Requirements at Regional Level:** Apart from strict compliance and monitoring by individual mine lease holder, there is a need for simultaneous monitoring in each of the regions by competent expert agencies under the guidance/ supervision of concerned regulatory agency. Details of the studies required to be done on regular basis (continuously for 5 years) through responsible agency (organization of national/state repute) and time frame are suggested in Table.

Table: Suggested Environmental Monitoring Requirements and Action Plans at

Sl. No.	Study component / Action Plan	Responsibility	Monitoring and Reporting Time Frame (Approx.)
1.	Environmental Quality Monitoring with respect to Air, Water, Noise and Soil	SPCB	Continuous Annually

Sl. No.	Study component / Action Plan	Responsibility	Monitoring and Reporting Time Frame (Approx.)
	<p>Quality in each region (Joda, Koira and Baripada/Rairangpur) as per specified frequency shall be done by a third party (preferably Govt.) and/or laboratory approved/ recognized by NABET/ CPCB/ SPCB/ MoEF&CC.</p> <p>All the water bodies (rivers, nalias, ponds etc.) shall be monitored. National/State level research/ academic institutes may be involved initially for couple of years to streamline the activity. The report shall be brought out annually by June each year. The study shall be conducted in consultation with MoEF&CC-RO.</p>		
	Installation of online ambient air quality monitor for PM10, PMP.S, SOx and NOx within the mine havina more than 3 MTPA EC Caoacitv	Respective Mine Lease Holders	Continuous Annually
	Installation of online ambient air quality monitor for PM ₁₀ , PM _{2.5} , SOx and NOx in the Joda and Koira Region (total 11 locations).	SPCB	Continuous Annually
2.	Status of flora and fauna in each of the regions shall be assessed on annual basis. Changes, if any, taking place in the region shall be brought out clearly. The study shall be conducted in consultation with State Forest and Wildlife Department.	State Forest & Wildlife Dept.	Annually in mining zone and once in 3 years in the region
3.	Socio-economic study incorporating developments taking place in each of the region, CSR initiatives made by the mining companies shall be conducted on annual basis. Further, micro level developmental needs shall be clearly brought out in the report for each region. The study shall be conducted in consultation with district administration.	Respective District Administration	Annually
4.	A detailed hydro-geological study in each of the regions shall be	SPCB	Once in 2 years

Sl. No.	Study component / Action Plan	Responsibility	Monitoring and Reporting Time Frame (Approx.)
	conducted in an integrated manner in consultation with Regional Director, Central Ground Water Board. Accordingly, all project proponents shall implement suitable conservation measures to augment ground water resources in the area.		
5.	The State Govt. shall ensure construction and maintenance of dust free common roads/ appropriate rail network for transport of ore from mines to the consumer end.	Dept. of Steel & Mines	12 months for road network and 5-7 years for rail network
6.	Construction and maintenance of dust free roads from respective mine to the main road	Respective Mine Lease Holders	Continuous 6 months
7.	Traffic/road inspection study addressing the condition of traffic/roads leading to different mines and connecting to different railway sidings shall be undertaken on annual basis. Further, detailed traffic study shall be undertaken on every 5 yearly basis to ensure adequacy of road/rail infrastructure in each of the regions. The study can be undertaken through national/ state level research/ academic institute (such as CSIR-CRRI, New Delhi).	Dept. of Steel & Mines	Continuous 6 months
8.	Assessment of land use/ land cover changes in each of the regions, with particular focus on mining areas, afforestation activities, variation in flow path of various water bodies etc. using remote sensing data	ORSAC	Annually
9.	R&D Studies for utilization of low-grade iron ore	Dept. of Steel & Mines through R&D / Academic Institutes	Upto 45% by 2020 and upto 40% by 2025

The data so generated for the region should be made available on the website of Department of Steel & Mines and also at MoEF&CC website, so that it can be effectively utilized by Individual Mine Lease Holders for preparing EIA/ EMP reports. This will meet the requirement for separate one season baseline environmental quality data collection by the individual proponents, if the mine proposed is in the same study region. Further, MoEF&CC through EAC1 can also utilize the data base available in evaluating the proposals for

expansion of existing mines or new mines while granting ToR or EC to the mine, taking an holistic view of the region. State Govt, of Odisha should bring out an integrated environmental sustainability report for each of the regions (mainly for Joda and Koia region) incorporating ESR of individual mines and data collected in the region through various agencies, once in 5 years, to plan level of scientific and sustainable mining for the next 5 years.

32. Institutional Mechanism for Implementation of Environmentally Sustainable Mining: The present study is not a one-time study, but a process to ensure environmentally sustainable mining activities in the region on long term basis. Looking into the large-scale mining activities and long term perspective for mining vis-a-vis environmentally sustainable mining and upliftment of people of the region, there is a need to create an agency, who will integrate all the aspects relating to sustainable mining in the region on long term basis. It could be a SPV of Govt, of Odisha or a cell within the overall control and supervision of Dept, of Steel & Mines, with members from

IBM, GSI, OSPCB, MoEF&CC-RO and other concerned Departments and Mine Owners (EZMA), District Administration. It is found that the strong database available for the region needs to be taken into account to map and establish environmental quality of the region on daily, monthly, seasonal and annual basis. Further, the efforts and initiatives of the mines towards environmental protection as well as upliftment of the people of the region are required to be integrated, and a systematic plan at the block/regional level needs to be framed for the overall benefit of the local society, region, district, state and the country as a whole. It will be desirable to have proper environmental quality data management and analysis by NEERI or any other agency for next 5 years (six monthly compliance reports followed by field verification) ensuring sustainable mining practices in the region leading to an overall development of the region. District Mineral Funds should be utilized appropriately for various developmental activities/needs of the region. Further, an environmental sustainability report incorporating environmental status of region coupled with social upliftment may be brought out by SPCB or any other authorized agency on annual basis. This report can be used for supporting the regional EIA study, and also need for environmental quality monitoring by individual mine seeking environmental clearance for new mine/ expansion of mine, including public hearing. Since, outcome of the above study reports shall be in the overall interest of all the stakeholders (including local population) of the region, further planning for the region shall warrant cooperation and assistance of all the stakeholders (mine operators, industries, transporters, State & Central Government Offices, MoEF&CC, CPCB, SPCB, Dept, of Steel & Mines, IBM, IMD, NGOs and local people) in sharing the relevant data/information/ reports/documents etc. to continuously improve upon the environmentally sustainable development plan for economic growth in mining sector as well as for improvement in quality of life of the people of the region.

- C.** Besides the above, the below mentioned general points are also to be followed:-
- a) All documents to be properly referenced with index and continuous page numbering.
 - b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original

analysis/testing reports should be available during appraisal of the Project.

- d) Where the documents provided are in a language other than English, an English translation should be provided.
- e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
- f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006- IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
- g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- h) As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) Sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

D. The prescribed TOR would be valid for a period of four years for submission of the EIA/EMP report.

STANDARD ENVIRONMENTAL CLEARANCE CONDITIONS TO BE STIPULATED IN ENVIRONMENTAL CLEARANCE FOR SAND MINING

Stipulated Conditions:

1. The project proponent should carry out River bed sand mining manually by engaging local laborers in force to check over exploitation of sand at the source.
2. Any change in the plan or quantity to be produced shall require prior approval of SEIAA.
3. There shall be a 'no working zone' to protect the embankment on both sides, road or rail bridge in the vicinity, if any, dam, weir, water intake structure of irrigation or drinking water project, or any cross drainage structure. 10 % of the width of river shall be left intact along the embankments on both sides as 'no mining zone'. Further, no mining shall be allowed within 200 m of any existing structures dam, weir, water intake structure of irrigation or drinking water project, or any cross drainage structure. In case of River Bridge, this no mining zone shall extend upto a minimum stretch of 200 meters from the bridge and it may extend upto 500 meters in sensitive locations. The lease area shall be accordingly curtailed to carve out the actual sand mining area within the leasehold. Exact map of the lease area, and the 'no mining zone' shall be drawn to scale, showing the DGPS coordinates of all corner points, and the location of the bridge, embankment, extraction route & other structures; and such map has to be submitted to SEIAA by the project proponent through the Tahasildar within three months of the date of issue of the EC. The quantum of sand allowed to be extracted will be worked out on the basis of the actual working area.
4. The lease area and the actual working area shall be demarcated on the ground by erecting durable masonry /concrete pillars by the project proponent.
5. The project proponent shall take prior statutory and regulatory clearance as required from the concerned authorities in respect of the project, before carrying out any operation.
6. Mining is not permissible within the water channel or stream flow area. No stream shall be diverted for the purpose of mining and no natural water course shall be obstructed. The mining or any ancillary activity shall not in any way disturb the flow pattern of the river water during the non monsoon period. There shall be no sand mining in the river during the rainy season or when there is flow of water in the river.
7. Sand mining operations shall not affect the existing sources for irrigation / drinking water / industrial purpose.
8. The natural sand dunes, if any, near or surrounding the lease area shall not be disturbed.
9. No transportation of the minerals shall ordinarily be allowed on any road passing through villages/habitations/forest land without prior explicit permission. Transportation

of minerals through existing rural roads can be allowed only by the concerned Govt. Department/BDO and only after required strengthening, such that the carrying capacity of road is increased to handle the sand truck traffic. The project proponent shall bear the cost towards the widening and strengthening of existing public roads in case the same is proposed to be used for the project. No movement on any road is allowed on existing village road network without appropriately increasing the carrying capacity of such roads. Project proponent shall ensure that the road may not be damaged due to transportation of the mineral and transport of minerals will be as per IRC Guidelines with respect to complying with traffic congestion and traffic density. Plying of sand extraction trucks may be allowed on roads / path ways passing close to schools, temples, hospitals and such other public places only with prior written permission of competent authority.

10. Vehicles hired for transportation of sand from the site should be in good condition and should have pollution check certificate and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.
11. The vehicles shall not be overloaded and shall be covered with Tarpaulin. The Tahasildar may collect an appropriate road maintenance levy from the lessee as part of the lease conditions on the basis of quantum of sand transported, and utilize the proceeds of the levy for proper maintenance of the extraction paths and roads to prevent their degradation on account of plying of sand trucks.
12. The project proponent shall take all precautionary measures against causing damage to flora and fauna of the locality. The PP shall plant and nurse to full establishment a minimum of 50 number of saplings of native tree species along the approach roads, river banks and in community areas in consultation with the Gram Panchayat.
13. Water spray should be made on the road/extraction paths to control dust emission during transportation of sand.
14. The Project Proponent shall undertake phased restoration, reclamation and rehabilitation of land affected by mining and completes this work before abandonment of mine.
15. Environmental Management Plan (EMP) shall be implemented by PP to ensure compliance with the environmental conditions specified above. The year wise funds earmarked for environmental protection measures shall be kept in separate account and shall be spent according to the plan proposed. Year wise progress of implementation of EMP shall be reported to the SEIAA, Odisha and OSPCB along with the compliance report.
16. The proponent shall take necessary measures to ensure that there is no adverse impact of the mining operations on the human habitation if any, existing nearby.
17. It shall be mandatory for the project management to submit quarterly compliance reports on the status of implementation of the above stipulated environmental safeguards to the SEIAA, Odisha / SPCB, Odisha/ Regional Office of the MoEF&CC, Bhubaneswar, in hard and soft copies on 1st day of January, April, July, October of each calendar year, failing which EC is liable to be revoked.

18. River Bank stabilization shall be made through stone patching. Plantation of adequate number native species on river banks and both sides of haulage roads shall be made.
19. Since NH200, Kuccha Road and temple are only at a distance of 800 mtr, 570 mtr and 500 mtr respectively, all traffic safety measures shall be taken to avoid any kind of accidents.
20. Bio - toilet provision shall be made.
21. As raised during public Hearing and committed by PP, Loknathpur Sasan village road shall not be used for transportation of sand.
22. Stone patching on river bank with plantation in-between and the ramp construction shall be done in consultation with and advice of concerned W.R.Deptt, Government of Odisha.
23. Necessary sprinkling on Haulage Road and Avenue plantation shall be done.
24. At the end of mine closure, the proponent shall immediately remove all the sheds put up in the quarry and all the equipment in the area before closure of the quarry.
25. The conditions stipulated in the environmental clearance will be closely monitored on the ground by the lease granting authority, i.e. the Tahasildar, who shall ensure compliance of the stipulated conditions and take corrective measures promptly in case of any non- compliance and also ensure that the project proponent submits quarterly compliance reports.
26. The concerned Regional Office of the MoEF&CC/ SPCB, Odisha shall periodically monitor compliance of the stipulated conditions as applicable for this project. The project authorities should extend full cooperation to the MoEF&CC officer(s)/SPCB officer(s) by furnishing the requisite data / information / monitoring reports.
27. A copy of the clearance letter shall be sent by the proponent to concerned Gram Panchayat /Panchayat Samiti /Zilla Parisad /Municipal Corporation / Urban Local Body as the case may be.
28. Project proponent shall obtain Consent to Operate from the OSPCB and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish / Consent to Operate from the State Pollution Control Board.
29. The SEIAA, Odisha may revoke or suspend this EC, if implementation of any of the above conditions is not satisfactory. The SEIAA, Odisha reserves the right to alter /modify the above conditions or stipulate any further condition in the interest of environment protection.
30. The Project Proponent (lease holder) shall inform the SEIAA of any change in ownership of the mining lease. In case, there is any change in ownership or mining lease is transferred, then mining operation can be carried out only after transfer of EC as per provisions of the para 11 of EIA Notification, 2006, as amended from time to time.

31. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this environment clearance besides attracting penal provisions in the Environment (Protection) Act, 1986.
32. 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.
33. 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.
34. 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.

Annexure - C

ESSENTIAL PHYSICAL CRITERIA AS PER ENFORCEMENT AND MONITORING GUIDELINES FOR SAND MINING, JANUARY 2020 OF MOEF&CC, GOVT. OF INDIA

Sl. No.	Essential Criteria	Reference
1.	"No Mining Zone": 1/4th the part of the river width (excluding 3/4th the central part of the river width) on both sides of the river towards the river bank	4.1.1 (Para - e) Page - 16
2.	a) Distance between two clusters : ≥ 2.5 km b) Area of mining lease area in a cluster: ≤ 10 ha.	4.1.1 (Para - k) Page - 19
3.	Concave River Bank : No extraction of sand	
4.	No mining if a) Upstream: Lease is 1 km from major Bridge and high ways or $5(x)$ of the Bridge / public civil structure / water intakes point subject to lease is located at a minimum 250 meter distance. Where x = Span of the bridge. b) Downstream side: Lease is 1 km from the major bridge and Highways Or $10x$ of the bridge / public civil structure / water intake point Subject to lease is located at a minimum distance of 500 meter where x = span of the bridge	4.3 (Para - h) Page - 23
5.	Mining depth : ≤ 3 meter (maximum 3 meter)	4.3 (Para - m) Page - 24
6.	Mining distance from river bank: $1/4^{\text{th}}$ of the river width, But subject to not less than 7.5 meter	4.31 (Para - m) Page - 24
7.	Area for removal of minerals : $\leq 60\%$ of mine lease area	4.3 (Para - s) Page - 25
8.	Minable sand per ha. Available for actual mining : $\leq 60,000$ MT/Annum	
9.	Regular replenishment study and replenishment rate	