

**PROCEEDINGS OF THE MEETING OF STATE LEVEL EXPERT APPRAISAL
COMMITTEE, ODISHA HELD ON 11th NOVEMBER, 2020**

The SEAC met on 11th November, 2020 at 11:00 AM through video conferencing in Google Meet under the Chairmanship of Sri. B. P Singh. The following members were present in the meeting.

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

The agenda-wise proceedings and recommendations of the committee are detailed below.

ITEM NO. 01

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF SPRINGVILLE GREENS PVT.LTD. FOR EXPANSION OF RESIDENTIAL BUILDING COMPLEX “SPRING VILLE GREENS” AT MOUZA- BIJIPUR, BHUBANESWAR OF SRI. SURESH KUMAR SUREKA – AMENDEMENT OF EC

1. This is a proposal for Amendment of Environmental Clearance of M/s Springville Greens Pvt. Ltd for expansion of Residential Building Complex “Springville Greens” At Mouza-Bijipur, Bhubaneswar of Sri. Suresh Kumar Sureka.
2. The project falls under Category “B”, Project or Activity 8(a) – Building Construction; Category B2 under Expansion project as per schedule of EIA Notification dated 14th Sep, 2006, as amended from time to time.
3. M/S. Spring Ville Greens LLP have Proposed Expansion of Residential Building Complex “Springville Greens” At Mouza-Bijipur, Bhubaneswar, Odisha. [for construction of 13 blocks of S+14 multistoried (MIG) Residential buildings, 16 blocks of G+4 storey (EWS) Residential buildings, one G+1 storey Society cum club building, One G+3 storey Commercial building and one Basement Parking].
4. The site is coming under developmental Plan of Bhubaneswar Municipal Corporation. The building plan has approved by Bhubaneswar Development Authority vide letter no. 29331, Dt.31st October 2016. EC obtained for 3 Block- of (S+12,S+13 & S+14) Storied , Seven Blocks of S+14 multistoried and One Block of G+4 Storied (for EWS), One Block of S+2 Storied Club-cum-Society Building with built-up area of 104545.10 sq.mt. Vide SEIAA letter No SEIAA/No-7077/SEIAA dated 30.07.2019.
5. The Revised building plan approved by BDA Vide letter No. –30092/BDA, Bhubaneswar, Dt. 12.12.2019. In revised building plan, total built-up area will increase from 104545.10 m² to 108149.210 m². Ground Coverage will decrease from 12580.90 m² (29.4% of Plot Area) to 10919.931 m² (25.350% of Plot Area), Max building height will increase from 44.85 mt. to 44.95 mt. and Dwelling units will increase from earlier proposed 1036 units to 1048 units.

6. **Connectivity:** M/s Spring Ville Greens LLP. has proposed to construct Residential Building with club. Project is located at nearer to Tamando Police station, surrounding area is developed area. The proposed site comes under BDA (Bhubaneswar Development Authority) and land use zone of the proposed site is residential Use Zone as per land use plan of BDA land use plan. Site is located in Mouza - Bijipur adjacent to AH-45 (CHENNAI - KOLKATA).The nearest airport is Biju pattanaik Airport which is 6.7 km away from the project site towards W direction. Retang Railway junction is 3.82 km away from the project site towards West direction. Bhubaneswar Railway station is 10.45 km away from the project site towards N-E direction.
7. **Power Requirement:** The daily power requirement for the proposed project is assessed as 5218 KW (6139 KVA at 0.85 P.F).The power will be entirely supplied through CESU. There is provision of Power backup for the residential project will be through DG sets of total capacity 1870 KVA (3 X 600 KVA + 1 X 70 KVA) silent DG Set (Radiator Cooled) for residential area. Separate generator yard will be constructed for housing DG sets.
8. **Water Requirement:** During construction stage daily requirement of water will avg. 60 KLD which will be sourced from surface water through water tankers. During operation stage total water requirement will be about 726.4 KLD out of which 453.5 KLD (daily fresh water requirement will be sourced from PHED/Ground water.) Approximately, 645 KLD of wastewater will be generated during the operational phase from domestic uses and other uses. The wastewater will be treated in a Proposed STP (MBBR) Capacity = 645 KLD - Considering 5% buffer - 680 KLD. (Separate for Phase-1, 2 & EWS) 3 nos. of STP having capacity of 680 KL (310 KLD, 240 KLD & 120 KLD) provided within the complex generating 580 KLD of recoverable treated waste water from STP. Out of which 390.4KLD (will be re-used for flushing 272.4 KLD, Gardening-60 KLD & 20 KLD for cooling water make-up & 8 KLD for car washing etc.) within the project. During dry season there will be 190 KLD treated waste water discharged into municipal sewer and 250 KLD will become surplus in monsoon season.
9. **Solid Waste Generation and Management:** The solid waste generated from the project shall be mainly domestic waste and estimated quantity of the waste shall be approx.3123 kg per day @ 0.500 kg per capita per day for residential population(@ 0.20 kg per capita per day for visitors, Staff & club area. Landscape wastes @ 0.2 kg/acre/day will be disposed in project premises).
10. **Green Belt:** The green area will be developed approx. 20 % of the plot area (8616.128 sqm). The biodiversity in the area will increase due to the proposed green areas.
11. **Parking:** Proposed total area of car parking (including commercial & EWS parking) - 22500.876 M²
12. The project cost is INR ` 184 Cr [180 Cr (Existing /EC Granted) + ` 4 Cr (Expansion)].
13. The Environment consultant **M/s Visiontek Consultancy Services Pvt. Ltd., Bhubaneswar** along with the proponent made a presentation on the proposal before the Committee.

Considering the information / documents furnished by the proponent and presentation made by the consultant, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent.

- (i) Detailed EC compliance report duly certified by MoEF&CC, Regional Office, Bhubaneswar.
- (ii) A comparative statement for existing and proposed expansion in tabulated form w.r.t change in floors, greenbelt, design, drainage plan, renewable energy details, parking, water consumption, waste water generation and its management, solid waste generation etc. Show the reduced the green coverage area in the plan/map and indicate the use of it. Indicate constructional features with details constructed as per revised building plan including the construction made w.r.t environmental features. Quantification of the same as per EC granted and the basis thereof as well as per proposed/revised EC sought with quantification, basis of the same including parking in terms of ECS.
- (iii) Details of construction status (percentage wise) of existing project as per Environmental Clearance granted and proposed project.
- (iv) Copy of approval letter of BDA along with building plan for expansion project.
- (v) Copy of approval for safety and structural stability from appropriate authority of building for expansion.
- (vi) Details and plant layout showing location of drainage changed due to expansion. Also capacity of drain for disposal of proposed discharge from BMC.
- (vii) Details and plant layout showing location of greenbelt changed due to expansion
- (viii) Details and plant Layout showing location of rain harvesting recharging pits and quantity to be harvested taking into consideration the erratic rainfall pattern in the area.
- (ix) Fire-fighting measures.
- (x) Certificate from DFO concerned that the site is not situated in eco-sensitive zone of Chandaka- Dampara wildlife sanctuary.
- (xi) NOC from Airport Authority of India for increase the height of the towers.
- (xii) Adequacy of parking in view of increased dwelling unit.
- (xiii) To indicate the quantity of water to be drawn from PHED and ground water and the letter for PHED/ BMC their inability to supply the full requirement of water.
- (xiv) Status of NOC/permission letter from CGWAWR Deptt, Govt. of Odisha respectively for drawl of ground water.
- (xv) Permission from BMC to take additional load of waste water due to the proposed expansion.
- (xvi) Justification why it will be not considered as a "violation".

ITEM NO. 02

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR PAKIDI SAND BED OVER AN AREA OF 28.720 ACRES OR 11.623 HECTARES IN VILLAGE PAKIDI, TAHASIL - SHERAGADA DISTRICT- GANJAM OF SRI SUDHANIDHI CHOUDHURY – 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. As per EIA Notification dated 14.09.06 and its subsequent amendments S.O.141 (E) on dated 15.1.2016, the project falls under, Category "B1".
3. The proposed Pakidi Sand Bed mining project is for river bed Rushikulya located at

village Pakidi, Tahasil- Sheragada, Dist-Ganjam, Odisha, over an area of 11.623 hectares or 28.720Acres.

4. The Quarry lease has been proposed to be granted by the Tahasildar, Sheragada to the applicant Sri Sudhanidhi Choudhury for minor mineral (River Sand). As per the direction of the Director of Geology, Odisha, Bhubaneswar, mining plan has been approved by the Directorate of Geology, Odisha vide letter no.5487 on dated 04.08.2020.
5. The lease area is bounded by Lattitude-19°33'08.55"N to 19°33'31.43"N and Longitude-84°42'09.61"E to 84°42'25.91"E with Toposheet no. E44A10 (74A/10) and is in Khata no. 507 Plot no.01, Kسام: Nadi. The quarry is well connected to District head quarter of Ganjam District. The nearest Railway Station is Berhampur at a distance of 30 Km. The nearest airport is Bhubaneswar at a distance of 170 Km. All types of infrastructure facilities such as water, electricity, medical, education etc. are available at Pitla within a distance of 3 Km.
6. The Geological Reserve is 303960 Cum and Mineable Reserve is 276450 Cum. Total production within plan period is 90000 Cu.m and 18000cum per annum. Opencast manual method will be adopted for sand mining. Excavation & loading of sand into the trucks/tractors will be done by manual means.
7. Water Requirement – Water requirement for the project will be 1 KLD. For drinking & domestic purpose water requirement will be 0.5 KLD, water requirement for Green belt development and dust suppression will be 0.5 KLD. Ground water will be used for drinking and domestic purpose whereas surface water will be used for green belt development and dust suppression.
8. Power Requirement - 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.
9. Employment Potential: Total number of employee will be around 33 which includes skilled, semi-skilled & unskilled category in the mine.
10. The project cost is ` 20 lakhs.
11. The Environment consultant **M/s P&M Solution, Noida -201301 – U.P** along with the proponent 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, Noida -201301 – U.P**, the SEAC prescribed the following specific ToRs in addition to standard ToRs for mining project for conducting detailed EIA study.

- i) Certificate from the concerned Tahasildar about the geo coordinates and other mines located within 500 meter from the periphery of the lease boundary.
- ii) Distance of all nearby mines in Topomap with geo coordinates i.e latitudes and longitudes of mines.
- iii) Area of the safety zone with dimensions and geo-co-ordinates w.r.t lease boundary.
- iv) Any approach road existing or will be constructed inside the safety zone?
- v) Mitigation measures to be taken to ensure not to disturb free flow of river.
- vi) Distance of the river bank / embankment form the lease boundary. It is a river bank or embankment?
- vii) Any ramp existing or will be constructed on the river bank / embankment for movement of vehicles to reach the nearest road.

- viii) Distance of the village road / city road / district road / public road for the river bank / embankment. Is this road single road / double road ?
- ix) No. of village (s) and name of village (s) or the city (s) or urban place (s) or semi urban place (s) through which the sand carrying vehicles will ply and the distance of it from the river bank or embankment.
- x) Whether schools / colleges / hospitals / health centers / bus stops / religious places existing nearby and if so, the distances of it from the bank or the road through which the vehicle will ply or existing alongside the road?
- xi) Any plantation done in the safety zone or embankment in case of an existing mines and if so, the area of plantation, number of species.? If not, the plan for it to arrest bank erosion.
- xii) Any stone packing in the river bank / embankment existing in case of existing mines and if not, the plan for it.
- xiii) Whether, any alternative mine exists or explored or can be explored if this mine is otherwise found unsuitable? Please furnish details.
- xiv) (a) Whether permission taken or will be taken from Water Resource Authority or the concerned Authority of the roads to be used for plying of vehicles loaded with sand or empty vehicles for the same after the river bank.
(b) Responsibility of perennial perpetual maintenance of these roads and the mechanism for the same.
- xv) No and type of vehicles to be used daily and the frequency for the purpose of transportation and the time and duration of such transportation. Whether permission taken or will be taken for the appropriate authority for the purpose.
- xvi) Intersection point of the haulage roads with the main SH / NH / public road and the traffic density study at appropriate locations by domain expert with remedial measures for decongestion and road safety.
- xvii) (a) Any bridge (road / rail) existing and the distance of it from the lease boundary.
(b) Any culvert or small bridge will be used by the plying vehicles carrying the sand minerals.
- xviii) Any High Transmission Electric line existing and if yes, the distance of the same from the boundary of the lease.

ITEM NO. 03

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR KHAIRABATHI STONE QUARRY OVER AN AREA OF 18.594 OR 7.525 HECTARES IN VILLAGE KHAIRABATHI, TAHASIL SHERAGADA UNDER GANJAM DISTRICT OF SRI MANTU KUMAR PATTNAIK – 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. As per EIA Notification dated 14.09.06 and its subsequent amendments S.O.141 (E) on dated 15.1.2016, the project falls under, Category “B1”.
3. The proposed mining project Khairabathi Stone Quarry is for stone mining at village

Khairabathi, Tahasil Sheragada, Dist-Ganjam, Odisha, over an area of 7.525 hectares or 18.594 Acres.

4. The Quarry lease has been proposed to be granted by the Tahasildar, Sheragada to the applicant Sri Mantu Kumar Pattnaik for minor mineral (stone). As per the direction of the Director of Geology, Odisha, Bhubaneswar, mining plan has been approved by the Directorate of Geology, Odisha vide letter no.5486 on dated 04.08.2020
5. The lease area is located in survey of India toposheet no. E44A11 (74A/11) and bounded between the latitudes of 19° 26' 46.63"N to 19° 26'57.09" N Longitude - 84° 41' 25.02" E to 84° 41' 36.71"E in Khata No.- 218(AAA), Plot No. 1574,1575,1576 & 1683, Kisam - Parbat. The quarry is well connected to District headquarters of Ganjam District. The nearest Railway Station is Berhampur at a distance of 20 Km. The nearest airport is Bhubaneswar at a distance of 160 Km. All types of infrastructure facilities such as water, electricity, medical, education etc. are available at Kankorada within a distance of 4 Km.
6. The Geological Reserve is 1118952 Cum and Mineable Reserve is 951654 Cum. Total production within plan period is 100035 Cu.m and 20007cum per annum. Opencast semi-mechanised method will be adopted for stone mining. Excavation & loading of stone into the trucks/tractors will be done by excavators. The excavated Stone will be directly sent to the nearest stone crusher for crushing.
7. Out of 7.525 hectares only 1.060 hectares will be use for mining of stone during plan period. The quarry floor level at the end of plan period 60 mRL. During plan period 11115cu.m of waste will be generated. Considering swell factor as 1.2 the total broken volume will be 13338cu.m. For dumping these waste materials a proposed dump has been suggested in the Eastern part of quarry area covering an area of 0.036 Ha. A retaining wall around the dump will be constructed to prevent the wash off of dumps. Around the retaining wall a garland drain and settling tank will be provided to prevent the possible transportation of mine dust or fines
8. Water Requirement – Water requirement for the project will be 4 KLD. For drinking & domestic purpose water requirement will be 2 KLD, water requirement for Green belt development and dust suppression will be 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.
9. Power Requirement - 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.
10. Employment Potential: Total number of employee will be around 40 which includes skilled, semi-skilled & unskilled category in the mine.
11. The project cost is 25 lakhs.
12. The Environment consultant **M/s P&M Solution, Noida -201301 – U.P** 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, Noida -201301 – U.P**, the SEAC prescribed the following specific ToRs in addition to standard ToRs for mining project for conducting detailed EIA study.

- (i) Certificate from the concerned Tahasildar about the geo coordinates and other mines located within 500 meter from the periphery of the lease boundary.

- (ii) (a) Waste / Dump Management: Generation, its typical composition use for construction and maintenance of haulage road and maximum inventory at any point of time including dump area, height and slope etc.
(b) Detail engineering estimate of use of waste in construction and maintenance of the haulage road.
- (iii) Distance of the nearest habitation / village (s) etc. from the lease boundary duly certified by the concerned Tahasildar.
- (iv) Will the village road be used for transportation of the mineral? If not and haulage road will be used, the width and distance of it till it intersects with SH / NH /District Road any public road and the later distance from the village road.
- (v) In case village / any habitation is very nearby, plan to ensure safety of human life and livestock from accidents be submitted.
- (vi) Number and type of vehicles to be engaged per day and their frequency of plying.
- (vii) (a) Zero Liquid Discharge (ZLD) Management w.r.t garland drain details, settling tank details during monsoon. If ZLD is not possible, the SOP with details of discharge of water beyond lease boundary be submitted.
(b) Whether the waste / contaminated water will be discharged to barren land / agricultural land / nala / river? Mechanism to ensure discharge of contamination free water and the periodic test / analysis thereof before discharge.
- (viii) Any High Transmission electric line passing nearby and if yes, the distance of the same from the leaser boundary.
- (ix) Undertaking by project proponent for not disturbing the general flow of seasonal nala during mining activity.
- (x) Any water reservoir / dam / bridge / barrage exist nearby and if yes, the distance of the same with geo co-ordinates.
- (xi) License for use and storage of explosive used in the mining from the appropriate Authority to be submitted.
- (xii) Certificate from the concerned DFO / Tahasildar that there is no DLC land involved in lease area. Distance of the mines from the boundary of the Notified Eco-Sensitive Zone / Wildlife Sanctuary if any.
- (xiii) Details of drainage plan proposed.
- (xiv) Details of silt management be submitted.
- (xv) Present use of land.
- (xvi) NOC of Panchayat for usage of haulage road/Panchayat road.
- (xvii) Any run off water/wash off water will be discharged directly to the river channel without treatment? If so, the details to be furnished and the mechanism to prevent the same be furnished.
- (xviii) Status of NOC/permission letter from CGWA/WR Deptt, Govt. of Odisha respectively for drawl of ground water.

ITEM NO. 04

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF NAYAGARH IRON ORE MINES FOR ENHANCEMENT IN PRODUCTION CAPACITY FROM 80,000 TPA TO 3,00,135 TPA OF IRON ORE WITH OPENCAST SEMI-MECHANIZED MINING METHOD OVER AN MINING LEASE AREA OF 4.570 HA. AT VILLAGE-NAYAGARH, DIST-KEONJHAR, ODISHA OF SRI K.C PRADHAN – 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 project falls under item category ‘B’ 1(a)-Mining of Minerals in the schedule of EIA Notification, 2006 & subsequent amendments thereof.
3. Environmental Clearance was accorded in favor of Nayagarh Iron Ore Mines of Sri K.C Pradhan (ML area 24.570Ha) for 5 years vide no.598 dated 16.12.2010 for production @80,000 ton / annum of Iron Ore and subsequently same was extended for 30 years or life of the mine whichever is less vide letter No.3434/SEIAA dated 30.05.2015 from State Environment Impact Assessment Authority (SEIAA), Odisha.
4. Mining has been going on obtaining Consent to Establish order vide No.16760/IND-II-CON-4378 dated 25.07.2012 and Consent to Operate order from the State Pollution Control Board (SPCB), Odisha vide Consent Order No.1050/IND-I-CON-6398 dated 18.01.2017 for production of iron ore @80,000 ton / annum.
5. Modified Mining Plan along with Progressive Mine Closure plan was obtained under Rule 23 of MCDR, 2017 form IBM, Bhubaneswar Vide letter no MPM/A/05-ORI/BHU/2020-21 date 15.07.2020 for production of 300135 ton /annum Iron ore with Opencast Semi-mechanized mining method. For production beyond 2021-22, the mining operation shall be continued for production of 300135 TPA of crushed Iron ore with same technology.
6. Lessee / User agency has obtained the Forest Clearance Vide letter no. 5-ORC059/2007-FCE dated 06.06.2011 over an area of 20.310 hectares out of 24.570 hectares excluding safety zone. As per MoEF&CC guideline F-No. 11-85/2016-FC dated 30th March, 2017 NPV for entire forest area has been deposited.
7. Present proposal is to obtain Environmental Clearance for enhancement in production capacity from 80,000 Ton/annum to 3,00,135 ton/annum of iron ore with Opencast Semi-mechanized Mining Method.
8. **Location & Connectivity** - The mine located in village Nayagarh, tahasil Jhumpura, district Keonjhar, Odisha is a part of Survey of India Toposheet bearing No.73G/5 is bounded by the latitudes from 21⁰51'30.87" to 21⁰51'53.46"N & longitudes from 85⁰25'03.67" to 85⁰25'33.83" E. Lease area is accessible from Joda via Jururhi through 18 km long road consisting of 17 km long metal and one (1) km long all weather roads. The nearest railway station is Nayagarh railway station at a distance of 3.0 Km . The nearest local market at Dubuna (3 km) and communication facilities are available at Joda (25 km), Barbil (39 km) and Keonjhar (77 km), the district Head Quarter.
9. **Method of Mining** - It is proposed for Mining with opencast method of mining for production of 3, 00,135 tonne of iron ore per Annum @ 1000 tonne per day. Operation shall be carried out for 300 days per annum. However, in case of exigency a two shift may also carried out. As estimated, mineable resource / reserve of iron ore (+45%

- Fe) is 4.855 Mt. Therefore, life of the mine is 16.18, say 17 years on the basis of 0.3 Mt / annum. However, life of the mine may change depending upon the statutory clearances, extent of mechanization, cut-off grade and market demand. Height and Depth of bench will be 6m and 9m respectively and slope angle shall be 30° with horizontal and individual slope angle shall be 85°. Stripping Ratio will be 1: 0.07 (t/m³)
10. **Drilling & Blasting:** Wet drilling shall be carried out if required and control Blasting shall be carried out in daytime only.
 11. **Excavation, Loading & Transportation:** Run-off-mine ore and overburden will be excavated & loaded in the 25 t dumper by 1.2m³ capacity excavator. R.O.M ore will be transported to the crusher & screening site for crushing & sizing. Average distance / lead between the quarry and disposal / unloading sites are assumed to be 1 km.
 12. **Topsoil Generation Management:** Topsoil generation will be 9,411m³ which will be stored over earmarked area and utilized for reclamation and rehabilitation of safety zone, non- mineralized area and waste dump and mined out area.
 13. **Waste Management:** A total of 188,929m³ overburden shall be generated out of these 44,801m³ waste generated in plan period will be disposed off in Dump1 over an area of 5,490m² or 0.549 hectare at 12m height and remaining 144,128m³ waste will be utilized for back-filling of float quarry over an area of 5.451 hectares at 3m (approx) thick filling on an average.
 14. **Greenbelt:** At present green belt has been developed over 0.348 ha, at end of plan period same shall be developed over additional 0.696 ha of area as such the total area of greenbelt shall be 2.465ha.
 15. **Water Requirement** - Total Water Requirement for different purposes like domestic, Dust suppression, plantation purposes is 33KLD sourced from bore well.
 16. **Power Requirement** - Total Electricity required is 735 KVA and same will be sourced from state Grid. Approximate quantity of the fuel/Diesel used per day is 100Lit/day.
 17. **Employment Potential** - A total of 77 persons will be employed in the mine for production and processing of 300,135 TPA iron ore, out of which most of the un skilled & semi-skilled labour is sourced from local villages.
 18. **Cost of Project** - Capital Cost of the project is estimated to be ` 5.09crores for production of iron ore @300,135 t/annum and Environmental Management Cost is 50 Lakhs(capital cost) and (recurring cost is 26 Lakhs/annum).
 19. The Environment consultant **M/s Ardra Consulting Services Pvt. Ltd., Bhubaneswar** 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 Ardra Consulting Services Pvt. Ltd., Bhubaneswar**, the SEAC prescribed the following specific ToRs in addition to standard ToRs along with specific conditions as recommended by CSIR-NEERI on carrying capacity study as per **Annexure – A** for conducting detailed EIA study.

- (i) Details of Sub grade ore generated and sold off with details year wise plan.
- (ii) Details of Geological and Mineable Reserves.

- (iii) Certified copy of condition wise compliance Report on Environmental Clearance conditions submitted to MoEF&CC, Govt. of India Regional Office, Bhubaneswar.
- (iv) Details of Rainwater Harvesting done earlier and proposed taking into consideration of the maximum rainfall.
- (v) Details of disposing of sediments.
- (vi) NOC from CGWA and permission from Water Resources Deptt., Odisha for usage of ground water. NOC and permission to be submitted for the existing operation for the groundwater being used also.
- (vii) Detailed report on Socio economic gaps that was found out and the measures taken (Action Taken Report – ATR) to bridge/address the gap.
- (viii) Details on environmental concerns to be addressed.
- (ix) Number of crushing and screening plants (existing and proposed) including pollution control measures.
- (x) Production details of mine duly certified by Mining officer.
- (xi) Slope study both for mines and OB/waste to be undertaken by an Institute of repute.
- (xii) Waste/OB produced and managed including details of back filling to be submitted.
- (xiii) Licence/ Permission for storage and use of explosives for use in blasting to be obtained from the appropriate authority.
- (xiv) Traffic Density should to be undertaken by a domain expert inside the mine lease area at intersection with the haulage road and at intersection points of haulage road with NH/SH/Public roads etc. and mitigation measures for decongestion, if any.
- (xv) Details of “zero waste” management to be submitted.
- (xvi) “Silt and Desilting” management with silt composition and periodic desilting SOP to be submitted. To indicate the possibility which silt can go to river/water body/ agricultural land environment.
- (xvii) Baseline Data study to be made with three-dimensional simulation study and predictive study indicating the existing mines, proposed expansion, other nearby existing mines and proposed mines.
- (xviii) Environmental concerns/ issues raised during the last public Hearing held in 2008 and physical measures taken to be submitted.

ITEM NO. 05

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR ANABADI DECORATIVE STONE (GARNETIFEROUS GRANITE GNEISS) MINES DEPOSIT OVER A MINING LEASE AREA OF 12.1 HA. OR 29.90 AC. LOCATED IN VILLAGE- ANABADI NO.21, TAHASIL: BANDHUGAON, DISTRICT - KORAPUT OF SRI NEMANI RAMKRISHNA – 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 Anabadi mining lease area for decorative stone (Garnetiferous Granite Gneiss) over an area of 12.100 Ha or 29.90 Acre located in the village Anabadi no 21, under

Tahasil Bandhugaon, District Koraput, Orissa, in favor of Sri Nemani Ramakrishna.

3. As per the EIA Notification S.O. 1533, dated 14th September 2006 and subsequent amendments, this project falls under Category B (B1).
4. The applied Mining lease area over 12.100 Hectares or 29.90 Acres in village Anabadi, under Bandhugaon Tahasil of Koraput district, Odisha was granted by Department of Steel & Mines, Govt. of Odisha vide Letter No. $\frac{5641}{IV (DS) SM-04/2019}$, Bhubaneswar, on dated **02.08.2019** in favour of Sri Nemani Ramakrishna for 30 years.
5. The Mining Plan along was approved by Director of Mines, Odisha, Bhubaneswar vide letter No. **MX XII-(a) 9/2019/5089/DM** on dated **23.07.2020** for a period of five years.
6. **Location and Connectivity** - The mining lease area is located in the Survey of India Toposheet no. 65M/8 (E44F8), of latitudes 19°04'46.09"N to 19°04'58.40"N & longitudes- 83°20'12.71"E to 83°20'30.74"E. The land use pattern of the mining lease area comes under the non-forest agricultural land (Abada Ajogya Anabadi), bearing Khata no.31, Plot no. 148/P (18.40 Acre) & 152/P (11.50 Acre) and Kissam: Pahada. The applied area is a part of the revenue village Anabadi No.21 covers 12.100.Hectares or 29.90 Acres under Bandhugaon Tahasil of Koraput District, Odisha. Nearest railway stations is Muniguda Railway Station at an aerial distance of 7.2 Km. The lease area can be approached from SH: 36 & SH: 4 at a distance of 8Km & 11 Km. Nagaballi River at a distance of 8.2Km. Nearest Airport is Jeypore Airport which is at a distance of 85Km. Interstate boundary at 8km. The drainage pattern of the area is dendrite. As the region shows an undulated hilly topography, there is neither any seasonal nor any perennial nalla flowing within the applied mining lease area.
7. **Method Of Mining** - There will be excavation of decorative stone from the lease area through Opencast Semi Mechanized Mining method with of bench height will be 3 m & Width of will more than bench height, Slope of the benches will be maintained at 70° to 80° and overall slope of the benches will be less than 45° with the horizontal. As per the estimation the geological reserve is found to be 381510m³ & Mineable reserve for decorative stone is found to be 202968m³.
8. **Total Production** - During the total plan period (five years), it has been targeted to excavate 90,000m³ of rock mass, 18000m³ of decorative stone, 4500m³ of khanda and remaining 67500m³ of waste/rejects. The details of the proposed production during the plan period is given below the table,

Table No.1.1 Details of the proposed production during the Plan Period

Year	Total volume of Rock Mass (m ³)	Volume of Rock as Khanda (m ³)	Volume of Recoverable Decorative Stone (m ³)	Volume of Waste (m ³)
1 st Year	18000.00	900.00	3600.00	13500.00
2 nd Year	18000.00	900.00	3600.00	13500.00
3 rd Year	18000.00	900.00	3600.00	13500.00
4 th Year	18000.00	900.00	3600.00	13500.00
5 th Year	18000.00	900.00	3600.00	13500.00
Total	90000.00	4500.00	18000.00	67500.00

9. **Waste generation and utilization** - A total of 67500m³ waste is likely to be generated during the plan period. These wastes will be utilized con-currently for construction and

maintenance of road in the lease area. For temporary storing of these wastes, an area of 0.695 Ha has been earmarked in the southern part of the mining lease area.

10. **Green Belt** - There will be proposed for green belt development over an area of 1.552 Ha in and along the periphery of the quarry lease area of during the plan period by 500 nos. of saplings for rehabilitation.
11. **Water Requirement** - Total water requirement for the project will be 5 KLD out of which 2 KLD will be required for drinking and domestic purpose and 1.5 KLD for dust suppression and 1.5 KLD for plantation purpose. Source of domestic water will be nearby village well. The area is devoid of any stream.
12. **Power Requirement** - Power Requirement will be met through DG sets.
13. **Employment Potential** - The mining activity will generate employment for 25nos of skilled worker 08nos, unskilled worker 12nos & 5nos managerial staffs.
14. The project cost is 200 lakhs.
15. The Environment consultant **M/s Kalyani Laboratories (Pvt) Ltd. Pahala, Bhubaneswar** 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 Kalyani Laboratories (Pvt) Ltd. Pahala, Bhubaneswar**, the SEAC prescribed the following specific ToRs in addition to standard ToRs for mining project for conducting detailed EIA study.

- (i) Certificate from the concerned Tahasildar about the geo coordinates and other mines located within 500 meter from the periphery of the lease boundary.
- (ii) Distance of the nearest habitation / village (s) etc. from the lease boundary duly certified by the concerned Tahasildar.
- (iii) Details of waste management i.e., quantity to be used, stored and typical waste composition.
- (iv) NOC from concerned competent authority for usage of road for transportation of minerals.
- (v) Plantation on both sides of approach road and its maintenance.
- (vi) Zero discharge from lease area to be maintained.
- (vii) Distance of inter-State boundary Andhra Pradesh from the boundary of the lease area.
- (viii) DSR not prepared for the district for the decorative stone mines. Final DSR to be submitted at the time of submission of final EIA/EMP report.
- (ix) In case village / any habitation is very nearby, plan to ensure safety of human life and livestock from accidents be submitted.
- (x) Number and type of vehicles to be engaged per day and their frequency of plying.
- (xi) Certificate from the concerned DFO / Tahasildar that there is no DLC land involved in lease area. Distance of the mines from the boundary of the Notified Eco-Sensitive Zone / Wildlife Sanctuary if any.
- (xii) Certificate from the concerned mining officer that the mine has not operated earlier and this is a new mine.
- (xiii) NOC of Panchayat for usage of haulage road/Panchayat road.
- (xiv) Details of water harvesting to be submitted.

ITEM NO. 06

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR KUNTESHU DECORATIVE STONE (GARNETIFEROUS GRANITE GNEISS) MINES DEPOSIT OVER A MINING LEASE AREA OF 13.703 HA. OR 33.86 AC. LOCATED IN VILLAGE KUNTESHU NO.52, TAHASIL - BANDHUGAON, DISTRICT - KORAPUT OF SRI NEMANI RAMKRISHNA – 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. As per EIA Notification dated 14.09.06 and its subsequent amendments S.O.141 (E) on dated 15.1.2016, the project falls under, Category “B1”.
3. The Kunteshu mining lease area for decorative stone (Garnetiferous Granite Gneiss) over an area of 13.703 Ha or 33.86 Acres located in the village Kunteshu no 52, under Tahasil Bandhugaon, District Koraput, Orissa, in favor of Sri Nemani Ramakrishna.
4. The applied Mining lease area over 13.703 Ha or 33.86 Acres in village Kunteshu, under Bandhugaon Tahasil of Koraput district, Odisha was granted by Department of Steel & Mines, Govt. of Odisha vide Letter No6538/(IV (DS) SM-03/2019), Bhubaneswar, on dated 05.09.2019 in favour of Sri Nemani Ramakrishna for 30 years.
5. The Mining Plan along was approved by Director of Mines, Odisha, Bhubaneswar vide letter No. **MXII-(a) 10/2019/5103/DM** on dated **27.07.2020** for a period of five years.
6. The mining lease area is located in the Survey of India Toposheet no. 65M/8 (E44F8), of latitudes 18° 59'36.09" N to 18° 59'59.80"N & Longitudes 83°17'41.90" to 83°17'52.90"E. The land use pattern of the mining lease area comes under the non-forest agricultural land (Abada Ajogya Anabadi), bearing Khata no.67, Plot no. 385/P (13.21 Acre), & 397/P (20.65 Acre) and Kissam: Pahada. The applied area is a part of the revenue village Kunteshu No.52 covers 13.703 Ha or 33.86 Acres under Bandhugaon Tahasil of Koraput District, Odisha. Nearest railway stations is Palasingi Railway Station Railway Station & Jemedipeta Railway Station at an aerial distance of 55 & 14 Km. The lease area can be approached from SH: 36 & SH: 4 at a distance of 15 Km & 11 Km. Nagaballi River at a distance of 15 Km. Nearest Airport is Jeypore Airport which is at a distance of 80 Km. Interstate boundary at 1.5km. The area is devoid of any stream. The drainage pattern of the area is dendrite. As the region shows an undulated hilly topography, there is neither any seasonal nor any perennial nalla flowing within the applied mining lease area.
7. **Method of Mining** - There will be excavation of decorative stone from the lease area through Opencast Semi Mechanized Mining method with of bench height will be 3 m & Width of will more than bench height, Slope of the benches will be maintained at 700 to 800 and overall slope of the benches will be less than 450 with the horizontal. As per the estimation the geological reserve is found to be 375519m³ & Mineable reserve for decorative stone is found to be 281596m³.
8. **Total Production** - During the plan period of five years total volume of decorative stone will be 118,960m³, total volume of presently non saleable stone will be 2,990m³and total volume of waste will be 44,850m³. The details of the proposed production during the plan period is given below the table,

Table No.1.1 Details of the proposed production during the Plan Period

Year	Vol. of Total Excavation (M³)	Vol. of Decorative Stone (M³)	Vol. of Non-Saleable Ore (M³)	Vol. of Waste (M³)	Swell Waste (M³)
1 st Year	11900	2380	595	8925	11602.5
2 nd Year	11900	2380	595	8925	11602.5
3 rd Year	12000	2400	600	9000	11700
4 th Year	12000	2400	600	9000	11700
5 th Year	12000	2400	600	9000	11700
Total	59800	11960	2990	44850	58305

9. **Waste generation and utilization** - A total of 44850m³ waste is likely to be generated during the plan period. These wastes will be utilized con-currently for construction and maintenance of road in the lease area. For temporary storing of these wastes, an area of 0.423 Ha has been earmarked in the southern part of the mining lease area.
10. **Green Belt** - There will be proposed for green belt development over an area of 1.23 Ha in and along the periphery of the quarry lease area of during the plan period by 250 nos. of saplings for rehabilitation.
11. **Water Requirement** - Total water requirement for the project will be 5 KLD out of which 2 KLD will be required for drinking and domestic purpose and 1.5 KLD for dust suppression and 1.5 KLD for plantation purpose. Source of domestic water will be nearby village well. The area is devoid of any stream.
12. **Power Requirement** – Power Requirement will be met through DG sets.
13. **Employment Potential** - The mining activity will generate employment for 25nos of skilled worker 08nos, unskilled worker 12nos & 5nos managerial staffs.
16. The project cost is 200 lakhs.
17. The Environment consultant **M/s Kalyani Laboratories (Pvt) Ltd. Pahala, Bhubaneswar** along with the proponent has made a presentation on the proposal before the Committee.
18. The committee observed that the Inter-State boundary of Andhra Pradesh is 1.5 km away from the boundary of the lease area. Hence, general condition will apply for this project as per EIA notification, 2006 and amendment thereafter.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Kalyani Laboratories (Pvt) Ltd. Pahala, Bhubaneswar**, the SEAC opined that the proposal will be considered as category A project and will be appraised at MoEF&CC, Govt. of India.

After detailed discussion, the SEAC decided to return the proposal to SEIAA, Odisha with a request to ask the proponent to apply to MoEF&CC, Govt. of India as category A project as Inter-State boundary of Andhra Pradesh is 1.5 km away from the boundary of the lease area and hence, general condition will apply.


Secretary, SEAC


Chairman, SEAC

TERMS OF REFERENCE (ToR) FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT FOR NAYAGARH IRON ORE MINES FOR ENHANCEMENT IN PRODUCTION CAPACITY FROM 80,000 TPA TO 3,00,135 TPA OF IRON ORE WITH OPENCAST SEMI-MECHANIZED MINING METHOD OVER AN MINING LEASE AREA OF 4.570 HA. AT VILLAGE-NAYAGARH, DIST-KEONJHAR, ODISHA OF SRI K.C PRADHAN – 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 alongwith 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.

Secretary, SEAC

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,

Secretary, SEAC

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 (SQTM)

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
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

Code	EC	Suggested Ore Transport Mode
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.

Secretary, SEAC

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 at least 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 outtees and land losers/affected people, if any, should be compensated and rehabilitated as per the national/state policy on Resettlement and Rehabilitation, (iii) The 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, PM₁₀ should be monitored near the roads towards entry & exit gate on regular basis, and be maintained within the acceptable limits. Responsibility: Individual Mine Lease Holders and Dept, of Steel & Mines.
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 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. 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.	SPCB	Continuous Annually

Sl. No.	Study component / Action Plan	Responsibility	Monitoring and Reporting Time Frame (Approx.)
	Installation of online ambient air quality monitor for PM ₁₀ , PMP.S, SO _x and NO _x within the mine having more than 3 MTPA EC Capacity	Respective Mine Lease Holders	Continuous Annually
	Installation of online ambient air quality monitor for PM ₁₀ , PM _{2.5} , SO _x and NO _x 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 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.	SPCB	Once in 2 years
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	Dept. of Steel & Mines	Continuous 6 months

Sl. No.	Study component / Action Plan	Responsibility	Monitoring and Reporting Time Frame (Approx.)
	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).		
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, OSPCCB, 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

Secretary, SEAC

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.**