PROCEEDINGS OF THE MEETING OF STATE LEVEL EXPERT APPRAISAL COMMITTEE, ODISHA HELD ON 01ST SEPTEMBER, 2021

The SEAC met on 01th September, 2021 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.	Dr. K. Murugesan	-	Secretary
3.	Dr. D. Swain	-	Member
4.	Prof. (Dr.) H.B. Sahu	-	Member
5.	Sri. J. K. Mahapatra	-	Member
6.	Sri. K. R. Acharya	-	Member
7.	Prof. (Dr.) B.K. Satpathy	-	Member
8.	Prof. (Dr.) P.K. Mohanty	-	Member
9.	Dr. K.C.S Panigrahi	-	Member
10.	Dr. Sailabala Padhi	-	Member

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

ITEM NO. 01

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF M/S ADISH MINERALS PVT. LTD. FOR PROPOSED CHROME ORE BENEFICIATION PLANT OF CAPACITY 1,20,000 TPA THROUGHPUT OVER AN MINING LEASE AREA 13.43 ACRES AT MOUZA-BAUNSAMALI, PS- BADACHANA, DIST-JAJPUR, ODISHA OF SRI NRUSINGHA CHARAN PARIDA (DIRECTOR) – EC

1. The proposed project is for Environmental Clearance of M/s Adish Minerals Pvt. Ltd. for proposed chrome ore beneficiation plant of capacity 1,20,000 TPA throughput over an mining lease area 13.43 acres at Mouza- Baunsamali, PS- Badachana, Dist-Jajpur, Odisha of Sri Nrusingha Charan Parida (Director).
2. M/s Adish Minerals Private Limited has proposed for installation of greenfield Chrome Ore Benefication Plant of capacity 1, 20, 000 TPA throughput located at - Mouza-Baunsamuli, Thana- Badachana, District Jajpur, Odisha.
3. As per EIA Notification dated 14th Sep, 2006 as amended from time to time, the project falls under Category “B”, Project or Activity 2(b) – Mineral Beneficiation Unit.
4. The Company “Adish Minerals Private Limited” (AMPL) is incorporated under Companies Act 2013 on 25th April 2018. The Company is a private limited company with Corporate Identity Number- U14298OR2018PTC028769. The Major Objective of the Company is to Beneficiate Low Grade Chrome to Chrome concentrate and sell to various industries of Odisha & other states of India. The Project will have an 100% capacity of beneficiation 120000 TPA of Siliceous Chrome ore material. The concentrated chrome ore output is envisaged as 74400 TPA with conc. Of Cr2O3 between 46 to 54%.
5. **Site Location and Connectivity -** The site is located at Mouza- Baunsamuli, Thana-Badachana, District- Jajpur of Odisha bounded by Latitude 20°41’49.3” N and Longitude 86°00’04.1” E which falls under the Survey of India Toposheet No.F45T13, F45T14,F45U1,F45U2. Total Area of the plant is 13.43 acres. Out of Total land, 5.38

acres (5.435 Ha.) had been acquired at Village- Salapada, Tehsil- Darpan, Thana- Badachana, District- Jajpur of Odisha State. There is no habitation in the proposed area. Nearest habitation is Salapada which is at a distance of 0.30 km from project site. The site is well connected with the road. NH-5 is at a distance of 12- 15 Km from the project site. The nearest railway facility is Barithengarh Railway Station which is 7.5 km. The Nearest airport is Bhubaneswar at 53 km and nearest seaport is Paradeep at a distance of 84 km (SE) from the project site. Water Bodies: Kumaria Nadi- 8.2 Km & Mahanadi River- 17 Km. Nearest town Chandikhol located at a distance of 10.0 Km from the project site. NH- 5 connects the factory site with major cities like Jajpur ,Dubri ,Sukhinda ,Kailpani in order to get their raw materials transported to the factory site . It also connected the States like West Bengal, Andhra Pradesh, therefore the end processed products can easily be transported to the buyers site with the convenient connecting Conveyance Facilities.

6. No National Park / Wildlife Sanctuary /Biosphere Reserve /Tiger reserve have been reported to be located in the core & buffer Zone of the project and the area does not report to form corridor for schedule-1 Fauna.
7. There is no forest land involved in the proposed site. No rehabilitation and resettlement is required for the proposed project.
8. ToR was granted on 20th August 2019 vide letter no. 231/SEAC-4/19.
9. Baseline Study was conducted during the period 1st March 2019 – 31th May 2019 (Pre-Monsoon Season)
10. Public Hearing was conducted in 15th December 2020.
11. **Water Requirement:** Total Water requirement for the plant– 2,880 m3/day. Water will be kept in closed circuit & will be recycled and hence, conservation of freshwater to about 30% of the total requirement. Thus fresh make water requirement is envisaged to be 46 m3/hr or 1,104 m3/day and source is borewell. Total Circulation Water: 120 m3/hr or 2,880 KLD. The unit has applied to CGWA for drawl of water vide Application Number: 21-4/2404/OR/IND/2020, Dated: 07.01.2020. Treated water from STP will be used for plantation activities and greenbelt development.
12. **Power Requirement:** There will be an installation of a 315 KVA Transformer and it has been estimated that approximately 292 KVA will be used for running the motors of the Plant & Machinery if all machines work at full capacity and there will be utilization of the rest 24 KVA for the Office administrative & Staff Quarters . The Power connection will from CESU. In future, if there will be an expansion of the plant capacity from current 100% capacity of 1, 20,000 tons, accordingly the power connectivity for 33 KVA transformer will be installed . In Case of Power Failure situation, it is envisaged that a D.G Set of 320 KVA, of Kirloskar make will be installed which will operate the plant at full load even there is a power cut.
13. Fuel: Diesel as a fuel is required for running the Tipper & JCB Loader. And there will be requirement of 115 litres per Day.

14. The Raw Material used will be Chrome Ore of below 40% Grade Cr_2O_3 with 10% moisture with recovery rate of 62%. The finished products generated will be Chrome Concentrate Cr_2O_3 with 8% moisture.

15. The project will generate 90 nos. of manpower, out of which 70 nos. Labourer's skilled & unskilled employees and the rest 20 nos. will be recruited as Administrative & operating facilities.

16. Safeguard Measures like, as regular water sprinkling shall be carried out in critical areas prone to pollution, like haul road, loading & unloading points. It shall be ensured that the ambient Air Quality Parameters conform to the norms prescribed by the central pollution control board in his regard.

Sl. No.	Source of Pollution	Pollutants	APC measures
1	Raw material handling yard (Unloading, Stacking)	Fugitive Dust	Dust suppression system such as water sprinkling
2	Screening	Fugitive Dust	Dry Fog system
3	Internal Roads	Fugitive Dust	Mobile Tanker, Internal Roads will be made Black topped
4	Fines stock yard of COB Plant	Fugitive Dust	Will kept under a shed
5	Product discharge system (finished product)	Fugitive Dust	Water sprinkling
6	Movement of vehicles	Fugitive Dust	Water sprinkling

17. **Solid waste and management:** The estimated Tailing generation from the process would be 45,600 Ton/Yr. Considering the life of plant 6 years, total tailing generation worked out to be 2,73,600 Tons. The tailings discharged through beneficiation process will be treated with ferrous sulphate to minimize the hexavalent chromium in the tailings. The tailings will be processed in filter press and the cake disposed off in TSDF.Garland drains will be constructed to collect the discharges and the same will be drained down to re-circulation pond. To control the dust handling of feed ore and finished product, water sprinklers in Raw material yard and finished product yard have been recommended. In addition adequate plantations are recommended. ETP Sludge – 1200 TPA will be disposed off in TSDF. Waste oil in small quantities will be generated from gear box and other machineries and will be disposed off to authorized recyclers registered with Pollution Control Board.

18. **Greenbelt / plantation** will be done in 33% (i.e. 4.43 acres) of the total plant area. The entire plant is set up at an area of 1.30 acres. Plantation will be done in and around the plant premises. 80% survival rate will be maintained with all possible efforts. The trees will be planted at suitable grid spacing to encourage proper growth. Local plant species will be preferred.

19. Total Cost of the proposed project will be ` 984.81 Lakhs.

20. The project proponent along with the environment consultant **M/s Visiontek Consultancy Services Pvt. Ltd., Bhubaneswar** made a detailed presentation before the SEAC.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Visiontek Consultancy Services Pvt. Ltd., Bhubaneswar** the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent followed by visit of the sub-committee of SEAC to the site.

i) Complete material balance of the whole process occurring in Plant.

ii) Detailed description on utilization/disposal of tailings from process till end users using the treated tailings and related documents i.e. copy of agreement made with end users for disposal of treated tailings commensurating with disposal SOP of tailings.

iii) Content of *E. coli* in treated water is more than norm. Justify the result and mitigation measures to be undertaken to control the same.

iv) Source of chromite ore and copy of agreement made with mine owners.

v) Detailed to the scale plant layout map (in A1 size) with legend indicating location of the beneficiation plant, office building, rainwater harvesting pond, ETP, tailing pond, raw material storage yard and green area etc.

vi) Tailing pond design and specification along with tailing utilization and disposal plan year wise for 5 years. In case of storage plan the land area and storage plan to be elaborated. The design capacity of the tailing pond need to include the waste water associated with tailings. The material of construction including matting material to leachate be submitted. The ETP design and capacity need to be made in reference to treatment of waste water of a tailing pond to arrest overflowing at any point of time suitably.

vii) Analysis of Nickel and Cobalt content in Tailings and Mines waste

viii) The report has in many places' hexavalent chromium more than norms or close to norm (page-32, SW-3, SW-1. Similarly, E-coil in SW-2, SW-7, SW-8 etc are more than norm. Mitigation plan to be reworked and submitted.

ix) Separate chapter on monitoring Study of cumulative effect on soil, air, water due to establishment of chrome ore beneficiation unit for 3 months.

x) Distance of agricultural land from beneficiation unit.

xi) Details of existing units near to the Chrome Ore Beneficiation Plant.

xii) Study of Disaster Management for this new Chrome Ore Beneficiation unit.

xiii) Detailed proposal to adopt Zero Liquid Discharge (ZLD) concept.

xiv) Source of waste water and details of Effluent Treatment Plant for treatment of waste water containing hexavalent chromium. Cost of ETP with breakup.

xv) Water balance diagram along with compensating water balance from rain harvesting pond.

xvi) Design and dimensions along with capacity of rain harvesting pond.

xvii) How much quantity of total water requirement (1104 kld) to be sourced from ground water will be reduced on use of ground water harvested and stored in rain water harvesting pond (with detail calculations).

xviii) Mitigative measures to be taken for serious occupational health hazards due to hexavalent chromium- SOP of measures to be undertaken for employees and local habitation including adoption of ISO 14001 and OHSAS be submitted.

xix) Detailed cost breakup towards pollution control measures for this Chrome Ore Beneficiation Plant.

xx) Surface runoff management and detailed treatment facility for surface runoff.

xxi) Analysis result of surface and ground water and soil within study area w.r.t. hexavalent chromium.

xxii) Detailed land schedule with kissam of land in tabulated form. Whether land kissam has been converted to "Industrial Use", if so, detailed document to be submitted.

xxiii) Report has several mistakes with regard to process reactions (Chapter-IV, Chapter-X and other places) given by the Consultant. It is necessary that the report needs to be revised and resubmitted as the corrections are many. The consultant and proponent are required to understand the impact of the process and reaction and be serious in providing environmentally friendly solution with regard to hexavalent chromium and other pollutants.

xxiv) Minutes of Meeting of Public Hearing conducted and mitigation measure on the concerns of the public in physical terms be submitted.

xxv) Maintenance of Biodiversity register.

xxvi) Findings of traffic study undertaken at point of intersection with NH Vis-a vis the norm in terms of PCU and traffic decongestion measures recommended if any be submitted.

xxvii) How DG set height of 30 mtr is arrived for 24 KVA DG set including installation layout and drawing of the chimney be submitted.

xxviii) Conversion of land "to industrial use" and submission of the relevant document thereof from the appropriate revenue authority be submitted.

ITEM NO. 02

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF M/S JAI PRAKASH HOSPITAL AND RESEARCH CENTRE PVT. LTD FOR REGULARIZATION OF B+G+5 HOSPITAL BUILDING & AMPHITHEATRE LOCATED AT – BRAHMANI TARANG, TAHASIL – LATHIKATA, DIST – SUNDARGARH, ODISHA OF SRI SANJAY BANSAL – EC

1. The proposal is for Environmental Clearance of M/s Jai Prakash Hospital and Research centre Pvt. Ltd for Regularization of B+G+5 Hospital Building & Amphitheatre located located at – Brahmani Tarang, Tahasil – Lathikata, Dist – Sundargarh, Odisha of Sri Sanjay Bansal.
2. The project falls under category "B" or activity 8 (a)-Building and Construction projects under EIA Notification dated 14th September 2006 as amended from time to time.

3. M/s Jai Prakash Hospital & Research Centre Pvt. Ltd. has applied for Regularization of B+G+5 Hospital Building & Amphitheatre., located at Dayanand Nagar, Dandiapali, Rourkela on the bank of river Brahmani.

4. **Location and Connectivity** - The Project Site is located at - Brahmanitarang, P.S-Brahamanitarang, Tahasil- Lathikata, Dist-Sundargarh, Odisha and part of the Survey of India Toposheet No. F45G11, F45G12, F45G15 & F45G16. And is on Plot No: No's-3486, 3477, 3480, 3501, 3477/4089, 3482, 3499, 3447/4084, 3500, 3485, 3484, 3483, 3483/3957, 3481, 3498, 3474/4086, 3477/4062 & 3447/P Khata No. 1708/703 & 535 of Area – 28.447 Acres. The Geographical coordinate of the project site is: Latitude – 22º 13′ 28.78" N & Longitude – 84º 47′ 48.64" E. National Highway-143 is about 0.26 Km away from the project site. The Panposh Railway Station at a distance of about 1 Km from the project site. The Rourkela Airport at a distance of about 8.00 Km from the project site.

5. The site is coming under Rourkela Development Authority. The total plot area is 15195.94 Sqmt with total built-up area 21992.01 Sq.mt. and Kissam of land is Gharabari.

6. The Building Details of The Project:

PARTICULARS	**DETAILS**		
	Existing	**Expansion**	**Total**
Hospital Bed	307	218	**525**
Plot Area	15195.94 SQ.M	-	15195.94 SQ.M
Built up Area	21992.01 SQ.M	-	21992.01 SQ.M
Water Requirement	138 KLD	98 KLD	**236 KLD**
Bio-medical Waste	460.0 Kg/day	327.0 Kg/day	**787.0 Kg/day**
Solid Waste Generation	--	555 Kg/day	**555 Kg/day**
Power Requirement	--	1782 KVA	**1782 KW**
DG set	--	2x750 KVA	**2x750 KVA**

7. **<u>Chronological Order of Activities</u>**

i. The Building Plan of M/s Jai Prakash Hospital & Research Centre Pvt. Ltd. over (B+G+3+Service) was approved on 24.04.2015. This area does not required EC.as the total built up area was approx. 18,564 sq.m.

ii. Consent to Establish was granted by SPCB, Odisha on 12.10.2018, vide letter no. 2629 for 307 bedded hospital.

iii. Consent to Operate was granted by SPCB, Odisha on 26.04.2019, vide letter no. 1397 for 307 bedded hospital, which is valid upto 2023.

iv. Authorisation under Biomedical Waste Rule, 2016 was granted by SPCB, Odisha on 15.05.2019 vide letter no. 4621/SPCB/Authorization (Biomedical Waste), which is valid upto **31.03.2023** for 307 beds.

v. The Hospital becomes operational on 13.12.2019 vide letter no. 3935/CE, RGH of Dist. Collector-cum-Supervising Authority under Clinical Establishment Act, Sundargarh.

vi. Rourkela Development Authority approves regularisation of B+G+5 Hospital Building & Amphitheatre on 09.04.2021 with total build up area over 21,992.01sq.m.

vii. So, now Project proponent have applied for Environmental Clearance for 525 bedded hospital, as build up area comes under the purview of EC.

8. **Water requirement**: The Jaiprakash Hospital has 307 beds & PP wants to expand it to 525 beds without addition of staff & doctors. The existing water use is 163 KLD which will be increased to 240 KLD by a quantity of 77 KLD for the extra nos. of beds.

9. **Waste water details**: The project will generate approx. 292 KLD (sewage load) of wastewater. The wastewater will be treated in the ETP of capacity 29 KLD & STP of capacity 330 m3/day provided within the complex. Out of which 227 m3/day will be recycled within the project for Flushing (105 m3/day), HVAC (94 m3/day) & discharged to drain is 25 KLD in Non-Monsoon Season.

Water Requirement during Operation Stage (Existing + Expansion)
Fresh Water requirement (Existing + Expansion)

Sl. No.	Description	Total Population	Per Capita Consumption (ltr/day)	Total Water Requirement (KLD)
1.	Existing- 307 beds	307 nos	450	138.0
2.	Expansion- 218 beds	218 nos	450	98.0
			TOTAL	**236.0**

10. **Power requirement**: The daily power requirement for the hospital is preliminarily assessed as 1782 KW (Existing & Expansion) source from NESCO of Odisha State Electricity Board. In order to meet emergency power requirements during the grid failure, there is provision of 2 nos. of DG sets of 750 KVA capacities for power back up in the Hospital Project. Energy Saving by Solar Power/ Light =92.57/1782=0.051x 100 =5.1 %.

11. **Rain Water Harvesting**: Rain Water will be harvested and recharge through 4 recharge pits from the plot area and volume of storm water is 179cum.

12. **Parking Requirement**: Total parking area required 6201.08 m^2 Sq.mt./240 ECS and open area and basement parking area will be provided.

13. Fire fighting Installations: Fire fighting system will be installed as per recommendation of the Fire fighting Officer, Odisha and as per the guideline of NBC (part-4).

14. **Green Belt Development**: Out of the total area, green belt will be developed over an area of 1519.59 sqm (20.50% of the plot area).

15. **Solid Waste Management**: From the existing project solid waste has been generated about 555 kg/day. RMC has collecting & treatment of Solid waste.

16. **Biomedical Waste Management**: Bio-medical waste generation from Existing 307 beds is 460.0 Kg/day and Bio-medical waste generation from Proposed 218 beds is 327.0 Kg/day.

17. The total population of project will be 2825 persons.

18. The estimated project cost is ` 93 Crores and cost for EMP is 41.7 crores.

19. The project proponent along with the consultant **M/s Centre for Envotech & Management Consultancy Pvt. Ltd., Bhubaneswar** made a detailed presentation on the proposal.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Centre for Envotech & Management Consultancy Pvt. Ltd., Bhubaneswar**, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent.

i. Copy of approved building plan along with approval letter approved by Rourkela Development Authority of M/s Jai Prakash Hospital & Research Centre Pvt. Ltd. over (B+G+3+Service) as approved on 24.04.2015. for 18,564 sq.m.

ii. Copy of Consent to Establish granted by SPCB, Odisha on 12.10.2018, vide letter no. 2629 for 307 bedded hospital.

iii. Copy of Consent to Operate granted by SPCB, Odisha on 26.04.2019, vide letter no. 1397 for 307 bedded hospital, which is valid upto 2023.

iv. Copy of Rourkela Development Authority approval letter for regularisation of B+G+5 Hospital Building & Amphitheatre on 09.04.2021 with total build up area over 21,992.01sq.m.

v. Detailed write up as to why the proposal will not be considered as violation case.

ITEM NO. 03

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF M/S. KHUSI REALCON PVT. LTD FOR PROPOSED RESIDENTIAL APARTMENT TOWER-1 (B+S+23), TOWER-2 (B+S+22), TOWER-3 (B+S+22) & TOWER-4 (B+S+22) LOCATED AT MOUZA-PAHALA, TAHASIL-BHUBANESWAR, DIST- KHORDHA OF MR. PRADEEP THACKER (DIRECTOR) - EC

1. The proposal is for Environmental Clearance of M/s. Khusi Realcon Pvt. Ltd for proposed Residential Apartment Tower-1 (B+S+23), Tower-2 (B+S+22), Tower-3 (B+S+22) & Tower-4 (B+S+22) located at Mouza-Pahala, Tahasil-Bhubaneswar, Dist- Khordha of Mr. Pradeep Thacker (Director).

2. The project falls under category “B” or activity 8 (a)-Building and Construction projects under EIA Notification dated 14th September 2006 as amended from time to time.

3. M/s Khusi Realcon Pvt. Ltd. proposes to construct Residential / Commercial Apartments Tower-1(B+S+23), Tower-2 (B+S+22), Tower-3 (B+S+22) & Tower-4 (B+S+22). The project is in Plot No.:- PlotNo: 277, 272, 275, 269, 281, 272/683 Khata No- 352/1194, 352/1204, 352/185, 352/1242, 352/1241, 352/1195 and Kissam – Gharabari of Mouza-Pahal, Bhubaneswar, Dist- Khurda, Odisha.

4. **Location and Connectivity** - The Project Site is a part of the Survey of India Toposheet No. 73H/15 & 73H/16. The proposed site is located at Mouza - Pahala, Tahashil - Bhubaneswar, Dist - Khurda, Odisha. The Geographical co-ordinates of the project site is: Latitude –20^0 20’ 16.9” N & Longitude - 85^0 53’ 3.5” E. The project site is well

connected with National Highway NH-16. The nearest railway station is Vani Vihar Railway station at a distance of approx 6.53 Km & Bhubaneswar Railway Station at a distance 9.5 Km. The nearest airport is Biju Patnaik International Airport at a distance of approx. 15 Km in South-west direction from project site.

5. The site is coming under Bhubaneswar Development Authority. The project comprises of Tower 1 B+S+23, Tower 2 B+S+22, Tower 3 B+S+22 and Tower-4 (B+S+22).

6. The total plot area is 15565.82 Sqmt with total built-up area 84372 sqm Sq.mt.

7. The Building Details of The Project:

Particular	Proposed
Project Name	Khushi Realcon Pvt. Ltd.
Plot Area	15565.82 Sqm.
Ground Coverage	5589.69 sqm (39.51 %)
FAR (Floor Area Ratio)	4.07
Built up Area	84372.2 sqm
Maximum Height	78.85 m
Total Parking Area	19000.9 sqm
Green Belt Area	3421.6 sqm (21.99 %)
Maximum No. of Floor	Tower-1(B+S+23), Tower 2(B+S+22), Tower-3(B+S+22) Tower-4(B+S+22)
Power/Electricity Requirement & Sources	Total - 2620 KW Solar - 83 KW CESU - 2537 KW
No. of DG sets	4x700 KVA
Water requirement	257 KLD (Fresh)
Sewage Treatment Plant	STP Capacity - 350 KLD
Estimated Population-Residential, Commercial, Floating/visitors	3090 nos.

8. **Water requirement**: The total water requirement for the project will be approx. 367 KLD, out of which domestic water demand is 245 KLD and commercial is 12 KLD. The fresh water requirement will be 257 KLD. Fresh water will be extracted from ground water through borewell.

9. **Waste water details**: The project will generate approx. 328 KLD (sewage load) of wastewater. The wastewater will be treated in an onsite STP of 350 KLD capacity. Out of which 312 KLD will be recycled within the project for flushing (129.0 KLD), landscaping (14 KLD), dust suppression (12 KLD) and 157.0 KLD in non monsoon period and 183.0 KLD in monsoon period will be discharged to drain.

10. **Power requirement**: The daily power requirement for the proposed complex is preliminarily assessed as 2620 KW (Solar System- 83 KW & CESU – 2537 KW). In order to meet emergency power requirements during the grid failure, there is provision of 4 nos. of DG sets having 700 KVA capacities with DG set stack height is 40m for power back up in the Residential/Commercial Building Project. Total Energy saving from renewable energy = 133.39 KW i.e 5.1 % is contributed from solar energy.

11. **Rain Water Harvesting**: Rain Water will be harvested and recharge through 12 recharge pits from the plot area.
12. **Parking Requirement**: Total parking area required 19000.9 m^2 Sq.mt./728 ECS will be provided.
13. Fire fighting Installations: Fire fighting system will be installed as per recommendation of the Fire fighting Officer, Odisha and as per the guideline of NBC (part-4).
14. **Green Belt Development**: Out of the total area, green belt will be developed over an area of 3421.6 sqm (21.99% of the plot area).
15. **Solid Waste Management**: From the residential complex solid waste inform of food wastes from kitchen and miscellaneous wastes will be generated @ 0.45 kg/person/day, which will be about 1224.0 kg/day. The generated solid wastes from the residential complex will be segregated as biodegradable and non-biodegradable. This will be collected in separate-coloured bins. Proper waste management practices will be adopted during the collection, storage and disposal of the generated solid wastes and construction and demolition wastes.

S. No.	Category	Counts (heads)	Waste generated (kg/day)
1.	Residents	2720 @ 0.45 kg/day	1224.0
2.	Commercial	270 @ 0.15 kg/day	40.5
3.	Club	150 @ 0.15 kg/day	22.5
5.	STP sludge		0.16
TOTAL SOLID WASTE GENERATED			**1287.16 kg/day**

16. The total population of project will be 3090 persons.
17. The estimated project cost is ` 30 Crores and cost for EMP is 0.75 crores.
18. The project proponent along with the consultant **M/s Centre for Envotech & Management Consultancy Pvt. Ltd., Bhubaneswar** made a detailed presentation on the proposal.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Centre for Envotech & Management Consultancy Pvt. Ltd., Bhubaneswar**, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent followed by visit of the sub-committee of SEAC to the site.

i) Detailed land schedule with kissam of land in tabulated form. Whether land kissam has been converted to “Gharabari”, if so, detailed document to be submitted.

ii) Layout of drainage system and exact distance of project site to nearest drain and outfall of drain.

iii) Status of NOC from BMC/ appropriate authority for the above drain for sewage disposal.

iv) Proposal to increase in usage of treated waste water in premises and thereby reducing quantity of discharge to drain. Revised water balance to be submitted.

v) Surface runoff management plan with details of surface water to be used in the project.

vi) Percentage of Rain water Harvesting /recharging vis-à-vis fresh water consumption according to norms of CGWA be submitted.

vii) Details of DG sets to be installed at the suitable places after due consideration of pre-dominant wind direction to avoid air pollution from entering the dwelling house of the colony. DG set location w.r.t wind direction, stack height with layout / installation and drawing of the stack / exhaust pipe be submitted, considering cumulative capacity(s) of all DG sets and height of the tallest tower.

viii) Adequate parking in terms of ECS for dwelling units, floating population & visitors with locations including compatibility with the proposed parking space provided needs to be submitted in tabular form.

ix) Fire clearance from the appropriate authority need to be obtained and their observations is to be submitted.

x) Plan for solar power with exact calculations to be submitted.

xi) Since, this being a flood prone/ water lodging zone, detailed SOP for proper management of the same to be submitted.

xii) Permission status from Water Resources Deptt. for usage of ground water.

xiii) Details of solid waste management.

xiv) Separate compartments for storing of storm water and sewage water.

xv) Findings of traffic study undertaken at point of intersection with NH Vis-a vis the norm in terms of PCU and traffic decongestion measures recommended if any be submitted.

xvi) Proposal to install 2 DG sets of higher capacities instead of four DG sets of capacity 4x700 KVA.

xvii) Proposal to install electric charging points for Electrical Vehicles in basement parking.

ITEM NO. 04

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF M/S INDIAN METALS & FERRO ALLOYS LTD. FOR MAHAGIRI MINES (CHROMITE) FOR ENHANCEMENT OF CHROMITE MINERAL PRODUCTION CAPACITY FROM 3 LTPA TO 6 LTPA OVER AN MINING LEASE AREA 73.777 HA. LOCATED AT VILLAGE- KALIAPANI, TEHSIL: SUKINDA, DIST: JAJPUR, ODISHA OF SANJEEV DAS (SR. VICE PRESIDENT AND HEAD – MINING BUSINESS UNIT) - TOR

The project proponent intimated that they will not able to attend the meeting. The SEAC decided to defer the proposal to next meeting.

ITEM NO. 05

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF M/S. GEETARANI MOHANTY FOR RAIKELA IRON ORE MINES FOR ENHANCEMENT OF IRON ORE PRODUCTION CAPACITY FROM 2.99 MTPA TO 4.99 MTPA ALONG WITH INSTALLATION OF 1000 TPH FIXED CRUSHING & SCREENING UNIT OVER AN AREA 67.586 HA LOCATED AT RAIKELA, TAHASIL – KOIRA, DIST – SUNDARGARH, ODISHA OF MR. SRINIBASH SAHOO (MANAGING PARTNER) - 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. M/s. Geetarani Mohanty for Raikela Iron Ore Mines for enhancement of Iron ore production capacity from 2.99 MTPA to 4.99 MTPA along with installation of 1000 TPH fixed crushing & screening unit over an area 67.586 ha located at Raikela, Tahasil – Koira, Dist – Sundargarh, Odisha.
3. The project falls under category "B" or activity 1 (a) - Mining of Minerals under EIA Notification dated 14th September 2006 as amended from time to time.
4. Raikela iron ore mine over an area of 67.586 Ha was initially executed in favor of Smt. Geetarani Mohanty for a period of 20 years w.e.f. 02.07.1991. Subsequently, the lease was transferred in favour of M/s Geetarani Mohanty, a registered firm bearing Registration No 5/92 (Cuttack) on 13.01.1993 with prior approval of the State Govt.
5. The lease was expired on 01.07.2011. Therefore, the lessee has filed the application on 20.05.2010 under Rule 24 (A) (6) of MCR 1960 for Renewal of the Mining Lease for a period of 20 years w.e.f. 02.07.2011. However, under Section 8A(3) of the M&M (D&R) Act, 1957 as amended by the MMDR Amendment Act, 2015, on and from the date of commencement of the Mines and Minerals (Development and Regulation) Amendment Act, 2015 all mining lease shall be granted for the period of fifty years. On the expiry of the lease period, the lease shall be put up for auction as per the procedure specified in this Act. Hence, under the Mines and Minerals (Development and Regulation) Amendment Act, 2015 the validity of Raikela Iron ore mines of M/s Geetarani Mohanty shall be up to 01.07.2041.
6. Environmental Clearance has been granted for the production capacity of 2.99MTPA capacity vide SEIAA File No. 41890/08-MINB1/09-2019 dated 23.11.2020.
7. Mining Plan with Progressive Mine Closure Plan has been approved by IBM vide letter No: MRMP/A/05-ORI/BHU/2021-22 dt 01.07.2021 for 4.99 MTPA Iron Ore production.
8. Out of the 67.586ha of mining lease area, forest land under DLC category is 66.671ha and 0.915ha is non-forest land. Ministry of environment and forest, Govt. of India has accorded the stage-II (final stage) forest clearance over an area of 66.671ha vide letter no 8-37/2007-FC dated 22.10.2014.
9. The lessee has obtained the consent to establish under section 25/26 of the water (PCP) act 1974 and under section 21 of air (PCP) act 1981 for the production capacity of 2.99MTPA vide letter no 8918/IND-II-CTE-8420, dt 18.09.2020.
10. The lessee has obtained the consent to operate under section 25/26 of the Water (PCP) act 1974 and under section 21 of Air (PCP) act 1981 for the production capacity of

2.99MTPA, vide letter no 875/IND-I-CON-2572 dt 19.01.2021 and is valid up to 31.03.2022.

11. **Location and Connectivity**: The ML area is featured under Toposheet F45N1 and bounded by geo coordinates Lat: 210 51' 54.47556'' to 210 52' 35.39676" N Long: 85010'32.27952"to 85011'05.16660" E. The mining lease area is approachable from Koira town (8 km) by Bhadrasahi – Rourkela NH–215. And from Tensa town ship which is on NH – 215 at a distance of 2 km. Nearest Rail is Barsuan Railway station located at 17 km. District Headquarters is at Sundargarh – 110 km from lease area. The nearest water bodies are Sarkunda Nala- 4.2 km, Kuradhi Nadi- 8km and Karo Nala -3km respectively.There is no reserve forest in the core zone. However, the reserve forests found in the buffer zone are as follows - Sarkunda R.F - 2.5 Km (South), Tohra R.F - 3.3km (South), Karo R.F - 9.5km (North-east), Kathmal R.F - 8.2km (East).

12. **Topography** - The topography of mining lease area is hilly terrain with maximum elevation of the area is 840m AMSL at NW part of the area whereas the lowest elevation is 630m AMSL at eastern part.

13. The total geological and mineral reserve of iron ore is estimated to be 90.295 MT and 76.316 MT. Proposed production during the plan period is 22950000 MT. The life of mines is 16 years. Open cast fully mechanized method category 'A' (FM) will be used for mining.

14. **Production Details:** The year-wise in-situ tentative excavation for the first five years from the date of opening of the mine is given as follows :-

Year	Quarry Name	Total tentative Excavation (MT)	Top Soil (MT)	OB/SB/IB (MT) (SB+IB)	ROM (MT)		ROM(MT)	ROM Waste / Ratio (MT/MT)
					Ore * (MT)	Mineral Reject (MT		
1	2	3	4	5	6	7	8=6+7	9
2021-22	Top Quarry	1746832	Nil	260660	1145934	340238	1486172	1:0.175
	Middle Quarry	1575628	Nil	71800	877118	626710	1503828	1:0.048
	Total	**3322460**	**Nil**	**332460**	**2023052**	**966948**	**2990000**	**1:0.111**
2022-23	Top Quarry	1295490	Nil	116200	1145189	34101	1179290	1:0.099
	Middle Quarry	3948010	Nil	137300	3266352	544358	3810710	1:0.036
	Total	**5243500**	**Nil**	**253500**	**4411541**	**578459**	**4990000**	**1:0.051**
2023-24	Top Quarry	2784768	Nil	241400	2198505	344863	2543368	1:0.095
	Middle Quarry	2508032	Nil	61400	2400342	46290	2446632	1:0.025
	Total	**5292800**	**Nil**	**302800**	**4598847**	**391153**	**4990000**	**1:0.061**
2024-25	Top Quarry	3818487	Nil	283800	3281527	253160	3534687	1:0.080
	Middle Quarry	1483293	Nil	27980	1398860	56453	1455313	1:0.019

	Total	**5301780**	**Nil**	**311780**	**4680387**	**309613**	**4990000**	**1:0.062**
2025-26	Top Quarry	1408906	Nil	126200	1282706	Nil	1282706	1:0.098
	Middle Quarry	4444694	Nil	737400	3707294	Nil	3707294	1:0.199
	Total	**5853600**	**Nil**	**863600**	**4990000**	**Nil**	**4990000**	**1:0.173**
Grand Total:-		**25014140**	**Nil**	**2064140**	**20703827**	**2246173**	**22950000**	**1:0.090**

1. The proposal is to increase production capacity from existing 2.99 MTPA to 4.99 MTPA. During plan Period 2020-21, to 2025-26 total excavation will be 2,50,14,140 MT consisting 2,29,50,000 MT ROM and 10,32,070 waste generated will be used for internal road maintenance and be disposed at dumping site.
2. During Plan period it has been planned for plantation over an area of 1.60 Ha with 2560 nos. of saplings consisting Mango, Karanj, Chakunda, Neem etc.
3. The Water Requirement is 180KLD and Source is Ground Water which has been already approved by CGWA vide letter no CGWA/NOC/MIN/ORIG/2021/10588 dt 31.01.2021 and is valid till 30.01.2023.
4. The Power Requirement is about 1400KW and the source is from WESCO.
5. The total man power is 560 Persons.
6. The cost of Project is ` 10,000 lakh. A sum of ` 645.10 Lakh will be spent towards capital cost for EMP and a sum of ` 49.30 Lakh will be spent towards annual recurring cost of EMP.
7. The baseline data on micro- meteorology, ambient air quality, Water quality, noise level, soil and flora & fauna are collected during Summer Season (Mar 2021 – May 2021).
8. The Environment Consultant **M/s Global Tech Enviro Experts Pvt. Ltd. Bhubaneswar** along with the proponent made a detailed presentation on the proposal before the Committee.

Considering the information / documents furnished by the proponent and presentation made by the consultant **M/s Global Tech Enviro Experts Pvt. Ltd. Bhubaneswar**, the SEAC prescribed the following specific ToRs in addition to standard ToRs as per **Annexure – A** for conducting detailed EIA study.

i) EC conditions wise detailed compliance duly certified by MoEF&CC, Govt. of India, Regional office, Bhubaneswar be given in EIA/EMP.

ii) The following information to be submitted.

a) Compliance of mining plan, including waste and OB dump management, mine closure plan etc.

b) Compliance to Common cause judgment

c) Status of R&R

d) Compliance of plantation

e) Compliance of public hearing issues

f) Status of complaints/ court cases/legal action

g) Compliance of specific conditions of earlier EC.

h) Any other relevant environmental issue / parameter.

iii) The following studies be undertaken by domain experts, viz:

a) Blast vibration study

b) Socio economic study of the neighbouring habitation

c) Biodiversity study with audit mechanism.

d) Slope stability study for both mines and OB /waste dumps.

e) Surface runoff management along with rainwater harvesting and ground water recharge include the design of drainage structures.

f) Traffic density study, both inside the mines and at haulage roads, intersecting points of haulage road with public road.

g) Hydrology study: The study findings and the mitigation measures thereof to be submitted

iv) The Project Proponent shall undertake the peripheral plantation and closed areas as well as gap plantation within 6 months with the seedling of 4-6 ft height having atleast 90% survival rate. An undertaking for the same also needs to be submitted by Project Proponent.

v) Cost of the CER calculated shall be utilized for the concerns of the people in terms of health, education, and infrastructure and environment protection. Project Proponent also shall include the budget for the betterment of schools nearby and to facilitate the online education system by providing Wi-Fi connectivity and desktops/tablets.

vi) The project proponent should provide in the EIA Report details of all the statutory clearances, permissions, no objection certificates, consents etc. required for this project under various Acts, Rules and regulations and their status or estimated timeline after grant of EC.

vii) The project proponent should submit the revenue plan for mining lease, revenue plan should be imposed on the satellite imaginary clearly demarcate the Govt. land, private land, agricultural land etc.

viii) The project proponent should submit the real-time aerial footage & video of the mining lease area and of the transportation route. The project proponent should submit the detailed plan in tabular format (year-wise for life of mine) for afforestation and green belt development in and around the mining lease. The project proponent should submit the number of saplings to be planted, area to be covered under afforestation & green belt, location of plantation, target for survival rate and budget earmarked for the afforestation & green belt development. In addition to this the project proponent should show on a surface plan (5-year interval for life of mine) of suitable scale the area to be covered under afforestation & green belt clearly mentioning the latitude and longitude of the area to be covered during each 5 years. The capital and recurring expenditure to be incurred needs to be submitted. Presently in India there are many agencies which are developing forest in short interval of time. Thus, for the plantation activities details of the experts/agencies to be engaged needs to be provided with budgetary provisions.

ix) The project proponent should submit the quantity of surface or ground water to be used for this project. The complete water balance cycle needs to be submitted. In addition to this PP should submit a detailed plan for rain water harvesting measures to be taken. PP should submit the year wise target for reduction in consumption of the ground/surface water by developing alternative source of water through rain water harvesting measures. The capital and recurring expenditure to be incurred needs to be submitted.

x) The project proponent should clearly bring out the details of the manpower to be engaged for this project with their roles /responsibilities/designations. In addition to this the project proponent should mention the number and designation of person to be engaged for implementation of environmental management plan (EMP). The capital and recurring expenditure to be incurred needs to be submitted.

xi) The project proponent should submit the year-wise, activity wise and time bound budget earmarked for EMP, occupational health surveillance & Corporate Environmental Responsibility. The capital and recurring expenditure to be incurred needs to be submitted.

xii) The project proponent should submit the measures/technology to be adopted for prevention of illegal mining and pilferage of mineral. The project proponent should submit the detailed mineralogical and chemical composition of the mineral and percentage of free silica from a NABL/MoEF&CC accredited laboratory.

xiii) The project proponent should clearly show the transport route of the mineral and protection and mitigative measure to be adopted while transportation of the mineral. The impact from the center line of the road on either side should be clearly brought out supported with the line source modelling and isopleth. Further, frequency of testing of Poly Achromatic Hydrocarbon needs to be submitted along with budget. Based on the above study the compensation to be paid in the event of damage to the crop and land on the either side of the road needs to be mentioned. The project proponent should provide the source of equations used and complete calculations for computing the emission rate from the various sources.

xiv) The project proponent should clearly bring out that what is the specific diesel consumption and steps to be taken for reduction of the same. Year-wise target for reduction in the specific diesel consumption needs to be submitted.

xv) The project proponent should bring out the awareness campaign to be carried out on various environmental issues, practical training facility to be provided to the environmental engineer/diploma holders, mining engineer/diploma holders, geologists, and other trades related to mining operations. Target for the same needs to be submitted.

xvi) The budget to be earmarked for the various activities shall be decided after perusal of the Standard EC conditions. After perusal of Standard EC conditions if agreed the project proponent should also submit an undertaking by the way of affidavit for Compliance of Standard EC conditions already prescribed by the Ministry vide O.M. No and Specific condition if prescribed by the SEAC/SEIAA, Odisha.

xvii) The project proponent should ensure that only NABET accredited consultant shall be engaged for the preparation of EIA/EMP Reports. The project proponent shall ensure

that accreditation of consultant shall be valid during the collection of baseline date, preparation of EIA/EMP report and during the appraisal process. The project proponent and consultant should submit an undertaking the information and data provided in the EIA Report and submitted to the SEIAA, Odisha are factually correct and the project proponent and consultant are fully accountable for the same.

xviii) The project proponent should submit the photograph of monitoring stations & sampling locations. The photograph should bear the date, time, latitude & longitude of the monitoring station/sampling location. In addition to this the project proponent should submit the original test reports and certificates of the labs which will analyze the samples.

xix) The percentage of iron in the final waste generated and not used as iron ore or its upgradation.

xx) Compliance to NEERI recommendations.

xxi) "Zero discharge" management & "Zero Dust Re-suppression" management with SOP be submitted.

xxii) Internal roads, drain management with network of the drain, retaining walls and settling tanks with ETPs be submitted.

xxiii) Details of air quality monitoring stations of the area and additional stations at entry and exit of mines and haulage roads, habitation to be considered.

xxiv) Construction and perennial maintenance of haulage road with details of plantation and the species thereof to be submitted.

xxv) Parking plaza layout with maximum no. of vehicles and types of vehicles that can be parked with basic amenities and facilities.

xxvi) Forest Clearance details with copy of all Forest Clearance.

xxvii) Status of complaints/ court cases/legal action regarding to lease along with a detailed write up indicating case no., purpose of the case etc.

xxviii) Copy of lease document.

xxix) Details of waste management i.e. composition and nature of waste generated, tabulated form showing year wise waste generation, usage and storage.

xxx) Comparative statement for increase in pollution load for existing production Vrs. proposed production (taking all parameters like water consumption, waste water generation, air pollutants, OB management, greenbelt, haulage roads, settling ponds, ETP etc.) In matrix form on environmental parameter and superimposing in layout on physical features.

xxxi) Project Proponent shall consider developing a good nursery in nearby village for production of saplings of 4-6 feet height for planting in safety zone, sides of external haulage roads and distribution among villagers for planting in their private land/ community land. The nursery may be developed by company on their own or in collaboration with forest department. A detailed proposal to this effect shall be submitted. The proponent shall ensure to use organic fertilizer in the nursery.

xxxii) Comprehensive water management, water balance with water harvesting and its

reuse both monsoon and non-monsoon period.

xxxiii) STP plan with design with location in the layout map for domestic waste water treatment.

xxxiv) Provision of solar power (percentage wise) with detail plan.

xxxv) To submit the network with dimension of concrete cement roads inside the mining lease area and haulage road.

xxxvi) To submit parking plaza at entry and exit of the mines with basic amenities.

xxxvii) Plan and SoP to be submitted for water sprinkling inside the mines and outside in haulage road including regular vacuum cleaning and Zero Dust Resuspension system to completely mitigate and arrest fugitive dust emission.

xxxviii) Comparative matrix previous and proposed production w.r.t overburden, green belt, water balance, haulage roads, settling ponds, ETP, runoff management etc.

xxxix) Wagon drill blasting must be avoided- to confirm.

xl) Details of grade of Fe to be mined, cutoff grade, management of off grade, quantity of each year wise and the dumping or storage plan of off grade and wastes to be provided.

xli) Additional environmental measures taken for expansion of the project be submitted.

xlii) Compliance to CTO for the existing mines to be submitted.

xliii) Total water management including domestic use wrt sourcing from borewell, rain water harvesting and recycling of waste water from ETP/STP, both for monsoon and non monsoon be submitted of the existing mines and propose expansion.

xliv) Measures taken and proposed to be taken further for arresting and mitigation of occupational health hazard including identification of the same, both for employees and nearby/surrounding habitation.

xlv) Year wise waste/OB management with reference to generation and utilization in consideration with dynamic movement of inventory indicating dump area and dimension of storage be submitted for the existing one and the propose expansion during the plan period and beyond up to 11 years.

xlvi) In all the above information short, a comparison of the existing vis-à-vis the propose expansion be submitted for clarity.

ITEM NO. 06

PROPOSAL FOR ENVIRONMENTAL CLEARANCE FOR BALANDA STONE QUARRY CLUSTER (1,2,3,5,6,7,8,9,10) OVER AN AREA OF 93.688 ACRES OR 37.915 HECTARES IN VILLAGE BALANDA UNDER LATHIKATA TAHASIL OF SUNDARGARH DISTRICT ODISHA OF SRI PREM KUMAR SAHU – TOR

The project proponent did not attend the meeting. The proposal is deferred to next meeting.

SECRETARY, SEAC

Approved

17.09.21

CHAIRMAN, SEAC

ANNEXURE – A

TERMS OF REFERENCE (ToR) FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT FOR M/S. GEETARANI MOHANTY FOR RAIKELA IRON ORE MINES FOR ENHANCEMENT OF IRON ORE PRODUCTION CAPACITY FROM 2.99 MTPA TO 4.99 MTPA ALONG WITH INSTALLATION OF 1000 TPH FIXED CRUSHING & SCREENING UNIT OVER AN AREA 67.586 HA LOCATED AT RAIKELA, TAHASIL – KOIRA, DIST – SUNDARGARH, ODISHA OF MR. SRINIBASH SAHOO (MANAGING PARTNER) - TOR

A. STANDARD TOR FOR MINING PROJECT

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

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

10. The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.

11. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

12. Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.

13. A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

14. Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.

15. Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.

16. The vegetation in the RF / PF areas in the study area, with necessary details, should be given.

17. A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.

18. Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.

19. A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be

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

20. Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.

21. Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects failing under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

22. R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs/STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine (ease 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 PM_{10}, particularly for free silica, should be given.

24. Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.

25. The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.

26. Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.

27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided,

28. Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.

29. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater, Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter- alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

30. Details of any stream, seasonal or otherwise, passing through the tease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be.

31. Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.

32. A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.

33. Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

34. Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.

35. Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.

36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.

37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.

38. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.

39. Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.

40. Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.

41. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.

42. The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.

43. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.

44. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.

45. The activities and budget earmarked for Corporate Environmental Responsibility (CER) shall be as per MoEF&CC, Govt. of India O.M No 22-65/2017-IA. II (M) dated 01.05.2018 and the action plan on the activities proposed under CER shall be submitted at the time of appraisal of the project included in the EIA/EMP Report.

46. The Action Plan on the compliance of the recommendations of the CAG as per MoEF&CC, Govt. of India Circular No. J-11013/71/2016-IA.I (M), dated 25,10.2017 needs to be submitted at the time of appraisal of the project and included in the EIA/EMP Report.

47. Compliance of the MoEF&CC, Govt. of India Office Memorandum No. F: 3-50/2017-IA.III (Pt.), dated 30.05.2018 on the judgement of Hon'ble Supreme Court, dated the 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India needs to be submitted and included in the EIA/EMP Report.

B. <u>Specific TOR:</u> Recommendation of CSIR-NEERI Report on "Carrying Capacity Study for Environmentally Sustainable Iron and Manganese Ore Mining Activity in Keonjhar, Sundargarh and Mayurbhanj districts of Odisha State"

1. Department of Steel & Mines, Govt, of Odisha <u>should prepare 5 years regional</u> <u>plan for annual iron ore requirement from the state, which in turn shall be</u> <u>met from different mines/zones (e.g. Joda, Koira.') in the state.</u> Accordingly, sustainable annual production (SAP) for each zone/mine may be followed adopting necessary environmental protection measures.

2. The expansion <u>or opening of new manganese ore mines may be considered</u> <u>only when the actual production of about 80% is achieved.</u> Further, <u>the mines</u> <u>that have not produced Mn ore for last two years and have no commitment in the</u> <u>current year as well: EC capacity in such cases may be reviewed. The</u> <u>Department of Steel & Mines. Govt, of Odisha shall</u>

submit the Annual Report on this issue to the MoEF&CC for further necessary action.

3. Analysis of baseline environmental quality data for the year 2014 and 2016 indicates that existing mining activities appear to have little / no potential impact on environmental quality, except on air environment, which was mainly due to re-suspension of road dust. Therefore, all the working mines can continue to operate with strict compliance to monitoring of environmental quality parameters as per EC and CTE/CTO conditions of the respective mine, and implementation of suggested measures for control of road dust and air pollution. Odisha State Pollution Control Board has to ensure the compliance of CTE/CTO. Regional office of the MoEF&CC, Bhubaneswar shall monitor the compliance of the EC conditions. Regional office of the Indian Bureau of Mines (IBM) shall monitor the compliance of mining plan and progressive mine closure plan. Any violation by mine lease holder may invite actions per the provisions of applicable acts.

4. Considering the existing environmental quality, EC capacity, production rate, iron ore resources availability and transport infrastructure availability, the share of Joda and Koira sector works out to be 70% and 30% respectively for the existing scenario for the year 2015-16. However, for additional EC capacity, it can be 50:50 subject to commensurate infrastructure improvement (viz. SOTM. pollution free road transport, enhancement of rail network etc.) in the respective regions.

5. Continuous monitoring of different environmental quality parameters as per EC and CTE/CTO conditions with respect to air, noise, water (surface and ground water) and soil quality in each region shall be done. The environmental quality parameters should not indicate any adverse impact on the environment. Monitoring within the mines should be done by individual mine lease holders, whereas outside the mine lease area, monitoring should be done by the Govt, of Odisha through various concerned departments/ authorized agencies. Various monitoring/ studies should be conducted through national reputed institutes, NABET/ MoEF&CC accredited laboratories/organizations. The reports submitted by individual mine lease holders and study reports prepared by other concerned departments/agency for each of the regions should be evaluated and examined by SPCB/ MoEF&CC.

6. Construction of cement concrete road from mine entrance and exit to the main road with proper drainage system and green belt development along the roads and also construction of road minimum 300 m inside the mine should be done. This should be done within one year for existing mines and new mine should have since beginning. The concerned departments should extend full support; wherever the land does not belong to the respective mine lease holders. The Department of Steel & Mines, Govt, of Odisha should ensure the compliance and should not issue the Mining Permits, if mine lease holder has not constructed proper cement concrete road as suggested above.

7. In view of high dust pollution and noise generation due to road transport, it is proposed to regulate/guide the movement of iron and manganese ore material based on the EC capacity of the mines. Accordingly, ore transport mode has been suggested, as given below in Table.

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

Code	EC	Suggested Ore Transport Mode
SOTM 1	> 5 MTPA	100% by private railway siding or conveyor belt up to public

Code	EC	Suggested Ore Transport Mode
		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
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 SQTM 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 witn 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 fas per the provisions of EIA Notification 2QQ6, as amended time to time1) with proper justification on demand scenario for iron ore requirement and availability of pollution free transport network in the region. Responsibility: IBM, Department of Steel & Mines and MoEF&CC, New Delhi.

12. **Mine-wise Allocation of Annual Production:** In case the total requirement of iron ore exceeds the suggested limit for that year, permission for annual production by an individual mine may be decided depending on approved EC capacity (for total actual dispatch) and actual production rate of individual mine during last year or any other criteria set by the State Govt., i.e. Dept, of Steel & Mines. Department of Steel and Mines in consultation with Indian Bureau of Mines-RO should prepare in advance mine-wise annual production scenario as suggested in Table, so that demand for iron ore can be anticipated, and actual production/dispatch does not exceed the suggested annual production.

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

Mine Lease	EC Capacity (MTPA)	**Suggested Annual Production (MT)**				
		2016-17	2017- 18	2018-19	2019-20	2020-21
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Mine 1	XI					
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, SQ2, NCb^ 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, PMiO, PM2.5, S02, NOx and CO) shall be regularly monitored at locations of nearest human habitation including schools and other public amenities located nearest to source of the dust generation as applicable. 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 3 using closed container trucks should be explored for direct to destination movement of iron ore. Air quality monitoring at one location should also be carried out along the transport route within the mine (periodically, near truck entry and exit gate).Responsibility: Individual Mine Lease Holders and SPCB.

23. **Noise and Vibration Related:** (i) Blasting operation should be carried out only during daytime. Controlled blasting such as Nonel, should be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented, (ii) Appropriate measures (detailed in Section 5.4) should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs, (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone. Further, date, time and distance of measurement should also be indicated with the noise levels in the report. The data should be used to map the noise generation from different activities and efforts should be made to maintain the noise levels with the acceptable limits of CPCB (CPCB, 2000) (iv) Similarly, vibration at various sensitive locations should be monitored atleast once in month, and mapped for any significant changes due to successive mining operations. Responsibility: Individual Mine Lease Holders.

24. **Water/Wastewater Related :** (i) In general, the mining operations should be restricted to above ground water table and it should not intersect groundwater table. However, if enough resources are estimated below the ground water table, the same may be explored after conducting detailed geological studies by GSI and hydro- geological studies by CGWB or NIH or institute of national repute, and ensuring that no damage to the land stability/ water aquifer system shall happen. The details/ outcome of such study may be reflected/incorporated in the EIA/EMP report of the mine appropriately, (ii) Natural watercourse and/or water resources should not be obstructed due to any mining operations. Regular monitoring of the flow rate of the springs and perennial nallas should be carried out and records should be maintained. Further, regular monitoring of water quality of nallas and river passing thorough the mine lease area (upstream and downstream locations) should be carried out on monthly basis, (iii) Regular monitoring of ground water level and its quality should be carried out within the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out on monthly basis, (iv) In order to optimize water requirement, suitable conservation measures to augment ground water resources in the area should be undertaken in consultation with Central Ground Water Board (CGWB). (v) Suitable rainwater harvesting measures on long term basis should be planned and implemented in consultation with CGWB, to recharge the ground water source. Further, CGWB can prepare a comprehensive plan for the whole region, (vi) Appropriate mitigation measures (viz. ETP, STP, garland drains, retaining walls, collection of runoff etc.) should be taken to prevent pollution of nearby river/other water bodies. Water quality monitoring study should be conducted by State Pollution Control Board to ensure quality of surface and ground water sources on regular basis. The study can be conducted through NABL/ NABET approved water testing laboratory. However, the report should be vetted by SPCB. (vii) Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated in ETP so as to conform to the discharge standards applicable, (viii) Oil and grease trap should be installed before discharge of workshop effluents. Further, sewage treatment plant should be installed for the employees/colony, wherever applicable, (ix) Mine lease holder should ensure that no silt originating due to mining activity is transported in the surface water course or any other water body. Appropriate measures for prevention and control of soil erosion and management of silt should be undertaken. Quantity of silt/soil generated should be measured on regular basis for its better utilization, (x) Erosion from dumps site should be protected by providing geo-textile matting or other suitable material, and thick plantation of native trees and shrubs should be carried out at the dump slopes. Further, dumps should be protected by retaining walls.(xi) Trenches / garland drain should be constructed at the foot of dumps to arrest silt from being carried to water bodies. Adequate number of check dams should be constructed across seasonal/perennial nallas (if any) flowing through the mine lease areas and silt be arrested. De-silting at regular intervals should be carried out and quantity should be recorded for its better utilization, after proper soil quality analysis, (xii) The water so collected in the reservoir within the mine should be utilized for the sprinkling on hauls roads, green belt development etc. (xiii) There should be zero waste water discharge from the mine. Based on actual water withdrawal and consumption/ utilization in different activities, water balance diagram should be prepared on monthly basis, and efforts should be made to optimize consumption of water per ton of ore production in successive years. Responsibility: Individual Mine Lease Holders, SPCB and CGWB.

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 longperiod. The dump height should be decided on case to case basis, depending on the size of mine and quantity of waste material generated. However, slope stability study should be conducted for larger heights, as per IBM approved mine plan and DGMS guidelines. The OB dump should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles should be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Proper records should be maintained regarding species, their growth, area coverage etc, (iv) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine operation, soil, OB and mineral dumps. The water so collected can be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de-silted, particularly after monsoon and should be maintained properly. Appropriate documents should be maintained. Garland drain of appropriate size, gradient and length should be constructed for mine pit, soil. OB and mineral dumps and sump capacity should be designed with appropriate safety margin based on long term rainfall data. Sump capacity should be provided for adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and de-silted at regular intervals, (v) Backfilling should be done as per approved mining plan/scheme. There should be no OB dumps outside the mine lease area. The backfilled area should be afforested, aiming to restore the normal ground level. Monitoring and management of rehabilitated areas should continue till the vegetation is established and becomes self-generating, (vi) Hazardous waste such as, waste oil, lubricants, resin, and coal tar etc. should be disposed off as per provisions of Hazardous Waste Management Rules, 2016, as amended from time to time. Responsibility: Individual Mine Lease Holders.

26. **Ecology/Biodiversity (Flora-Fauna) Related:** (i) As per the Red List of IUCN (International Union for Conservation of Nature), six floral species and 21 faunal species have been reported to be under threatened, vulnerable & endangered category. Protection of these floral and faunal species should be taken by the State Forest & Wildlife Department on priority, particularly in the mining zones, if any, (ii) The mines falling within 5-10 km of the Karo- Karampada Elephant corridor buffer need to take precautionary measures during mining activities. The forest and existing elephant corridor routes are to be protected and conserved. Improvement of habitat by providing food, water and space for the elephants is required to be ensured to avoid Man- Elephant conflicts. Though as per the records of State Forest Department, movement of elephants in the Karo-Karampada elephant corridor within 10 km distance from the mines in Joda and Koira is not observed, the Forest Department shall further record and ensure that elephant's movement is not affected due to mining activities, (iii) All precautionary measures should be taken during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. Action plan for conservation of flora and fauna should be prepared and implemented in consultation with the State Forest and Wildlife Department within the mine lease area, whereas outside the mine lease area, the same

should be maintained by State Forest Department, (iv) Afforestation is to be done by using local and mixed species saplings within and outside the mining lease area. The reclamation and afforestation is to be done in such a manner like exploring the growth of fruit bearing trees which will attract the fauna and thus maintaining the biodiversity of the area. As afforestation done so far is very less, forest department needs to identify adequate land and do afforestation by involving local people in a time bound manner, (v) Green belt development carried out by mines should be monitored regularly in every season and parameters like area under vegetation/plantation, type of plantation, type of tree species /grass species/scrubs etc., distance between the plants and survival rate should be recorded, (vi) Green belt is an important sink of air pollutants including noise. Development of green cover in mining area will not only help reducing air and noise pollution but also will improve the ecological conditions and prevent soil erosion to a greater extent. Further, selection of tree species for green belt should constitute dust removal/dust capturing plants since plants can act as efficient biological filters removing significant amounts of particulate pollution. Thus, the identified native trees in the mine area may be encouraged for plantation. Tree species having small leaf area, dense hair on leaf surface (rough surface), deep channels on leaves should be included for plantation, (vii) Vetiver plantation on inactive dumps may be encouraged as the grass species has high strength of anchoring besides medicinal value, (viii) Details of compensatory afforestation done should be recorded and documented by respective forest divisions, and State Forest Department should present mine-wise annual status, along with expenditure details, (ix) Similarly, Wildlife Department is also required to record and document annual status of wildlife in the region and should identify the need for wildlife management on regional level, (x) Maintenance of the ecology of the region is prime responsibility of the State Forest and Wildlife Department. They need to periodically review the status and identify the need for further improvement in the region. The required expenditure may be met from the funds already collected in the form of compensatory afforestation and wildlife management. Further, additional fund, if required can be sought from DMF. Responsibility: Individual Mine Lease Holders and State Forest & Wildlife Department.

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

28. **Road Transport Related:** (i) All the mine lease holders should follow thesuggested 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 bv covering the trucks with tarpaulin or other suitable mechanism so that no spillage of ore/dust takes place. Further, air quality in terms of dust, PMin should be monitored near the roads towards entry & exit gate on regular basis, and be maintained within the acceptable limits. Responsibility: Individual Mine Lease Flolders 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.)

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
	Installation of online ambient air quality monitor for PM1 0. PMP.S, SOx and NOx within the mine havina more than 3 MTPA EC Caoacitv	Respective Mine Lease Holders	Continuous Annually
	Installation of online ambient air quality monitor for PM_{10}, $PM_{2.5}$, SOx and NOx in the Joda and Koira Region (total 11 locations.	SPCB	Continuous Annually
2.	Status of flora and fauna in each of the regions shall be assessed on annual basis. Changes, if any, taking place in the region shall be brought out clearly. The study shall be conducted in consultation with State Forest and Wildlife Department.	State Forest & Wildlife Dept.	Annually in mining zone and once in 3 years in the region
3.	Socio-economic study incorporating developments taking place in each of the region, CSR initiatives made by the mining companies shall be conducted on annual basis. Further, micro level developmental needs shall be clearly brought out in the report for each region. The study shall be conducted in consultation with district administration.	Respective District Administration	Annually

Sl. No.	Study component / Action Plan	Responsibility	Monitoring and Reporting Time Frame (Approx.)
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 traffic/roads leading to different mines and connecting to different railway sidings shall be undertaken on annual basis. Further, detailed traffic study shall be undertaken on every 5 yearly basis to ensure adequacy of road/rail infrastructure in each of the regions. The study can be undertaken through national/ state level research/ academic institute (such as CSIR-CRRI, New Delhi).	Dept. of Steel & Mines	Continuous 6 months
8.	Assessment of land use/ land cover changes in each of the regions, with particular focus on mining areas, afforestation activities, variation in flow path of various water bodies etc. using remote sensing data	ORSAC	Annually
9.	R&.D Studies for utilization of low-grade iron ore	Dept. of Steel & Mines through R&D / Academic Institutes	Upto 45% by 2020 and upto 40% by 2025

The data so generated for the region should be made available on the website of Department of Steel & Mines and also at MoEF&CC website, so that it can be effectively utilized by Individual Mine Lease Holders for preparing EIA/ EMP reports. This will meet the requirement for separate one season baseline environmental quality data collection by the

individual proponents, if the mine proposed is in the same study region. Further. MoEF&CC fthrouah 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 upiiftment of people of the region, there is a need to create an agency, who will integrate all the aspects relating to sustainable mining in the region on long term basis. It could be a SPV of Govt, of Odisha or a cell within the overall control and supervision of Dept, of Steel & Mines, with members from

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

a) All documents to be properly referenced with index and continuous page numbering.

b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.

c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.

d) Where the documents provided are in a language other than English, an English translation should be provided.

e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.

f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006- IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.

g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

h) As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.

i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) Sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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