PROCEEDINGS OF THE MEETING OF STATE LEVEL EXPERT APPRAISAL COMMITTEE, ODISHA HELD ON 26TH JULY, 2019

The SEAC met on 26th July, 2019 at 11:00 AM in the Conference Hall of Odisha State Pollution Control Board, Bhubaneswar under the Chairmanship of Sri. B. P. Singh. The following members were present in the meeting.

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

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

ITEM NO. 1

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF JINDAL CHROMITE MINES FOR ENHANCEMENT IN THE PRODUCTION CAPACITY OF CHROME ORE FROM 1.0 LTPA TO 2.15 LTPA OVER MINING LEASE AREA OF 89 HA. AT VILLAGE KALIAPANI, SUKINDA TEHSIL, JAJPUR DISTRICT OF M/S. JINDAL STAINLESS LTD – REGARDING SUBMISSION UNDER VIOLATION CASE (EC).

1. The proposal is for Expansion in production from 0.1 million TPA (MTPA) to 0.215 milion TPA (MTPA) of Chrome Ore from 89 ha Mine lease area with common boundary mining located at Village-Kaliapani, Tehsil Sukinda, District Jajpur, Odisha. Khasra No. / Plot No. / Block Range /Survey No/Gut No Survey No/Gut No : Forest Block 27.
2. The project proponent has obtained Environment Clearance for production of 0.1 MTPA vide letter No J – 11015/12/2000-IA. II(M), dated 13.02.2001.
3. The latitude and longitude of the site are

Corner	Latitude North	Longitude East
J1	21°02'03.53184"	85°45'30.76020"
J2	21°01'56.10432"	85°45'18.17352"
J3	21°01'39.80028"	85°45'29.13624"
J4	21°01'52.37472"	85°45'50.06628"
J5	21°01'04.39824"	85°46'22.37448"
J6	21°01'09.93252"	85°46'31.69704"
J6-C	21°01'33.76560"	85°46'15.70188"
J7	21°02'01.48668"	85°45'57.09528"
J7-B	21°01'53.59836"	85°45'44.30016"
J8	21°01'50.68092"	85°45'39.48048"

4. The earlier proposal for (i) enhancement of production from mines from 0.1 MTPA to 0.215 MTPA with (ii) enhancement of capacity of Chrome Ore Beneficiation Plant

(COBP) from 36,000 to 60,000 MT per annum was applied to MoEF&CC for obtaining Environment Clearance (EC) and was presented for TOR on 22nd January, 2010.

5. EAC has approved TOR for the proposal on 15th February, 2010. Based on the Approved TOR - EIA/EMP was prepared and Public Hearing was successfully completed on 31st August, 2010 covering both proposals as mentioned above.
6. After Public Hearing was completed for 0.215 MTPA, JSL has dropped the proposal of expansion from 0.1 MTPA to 0.215 MTPA and obtained Environmental Clearance for Chrome Ore Beneficiation Plant (COBP) to enhance the production capacity from 36,000 to 60,000 MT per annum on 24th February, 2016.
7. Obtained Consent to Establish for 60,000 TPA COBP vide letter No. 20031/Ind-II-NOC-5299 Dated 30/11/11 from State Pollution Control Board, Odisha.
8. Obtained Consent to Operate for 60,000 TPA COBP vide letter No. 4258/Ind-I-CON-2562 Dated 20/03/17 from State Pollution Control Board, Odisha and valid upto 31/03/2018.
9. M/s JSL applied for obtaining fresh ToR for enhancement of Production capacity from 0.1 MTPA to 0.215 MTPA, which was considered by the EAC, MoEF&CC, Govt. of India on 21st July, 2016. Based on the presentation made, the committee sought additional information which was presented on 16th December, 2016 & 27th April, 2017.
10. The EAC recommended the proposal for grant of standards TOR conditions subject to submission of authenticated past production details to ascertain violation of EIA notification, if any.
11. The MoEF&CC, Govt. of India received the past production details vide our Letter of 04th August, 2017, wherein the Ministry observed the mineral production in excess of Environmental Clearance granted capacity of 0.1 MTPA. Based on the facts, the MoEF&CC, Govt. of India has put the case under violation of EIA Notification.
12. The MoEF&CC, Govt. of India issued the letter to close down the mining operation vide letter no-J/11015/163/2016-IA-II(M) on dated 21/02/2018 with immediate effect due to excess granted capacity production from 2002-03 to 2007-08 and also dispatched more than 0.1MTPA from 2006-07 to 2007-08 and treated as Violation case in 21/02/2018.
13. State Pollution Control Board did not issue Consent to Operate for the year 2018-19 vide letter No 3860/IND-CON-2562 , dated 29.03.2018, due to excess production beyond the approved limit and with a remark to obtain necessary permission from MOEF &CC.
14. M/S Jindal Stainless Limited applied to MOEF & CC for issuance of TOR from 0.1MTPA to 0.215MTPA vide our proposal no. 1A/OR / MIN/74317/2018 dated 13/04/2018, as per MoEF&CC Circular on violation case. M/s-JSL requested to MoEF&CC to give permission to run all COBP related operation.

15. The MoEF&CC, Govt. of India vide letter no J-11015/163/2016-1A. 11(M) dated 26.09.2018 asked M/s. JSL to submit the details after examining their letter of 26.07.2018.

16. The MoEF&CC, Govt. of India vide their letter J-11015/163/2016-IA.II(M) dated 26/12/2018, directed to ADDL PCCF (C) MoEF&CC, Regional Office (E/Z), Bhubaneswar to submit the factual report on PP's submission vide letter no. 3.10.2018 as well as compliance report of both E.C.'s(No. J- 11015/12/2000-IA.II(M) dated 13/02/2001 and J-11015/369/2016-IA.II(M) dated 24.02.2016.

17. Joint Director(S), Regional MoEF&CC, Bhubaneswar issued Certified Compliance report after monitoring the site on 10.01.2019,as desired by MoEF&CC , New Delhi.

18. Closure report w.r.t. Certified compliance report submitted to MoEF&CC, New Delhi vide letter No 101-664/EPE/467, dated 07.03.2019 duly signed by Joint Director /Scientist –D.

19. As per violation case, M/S Jindal Stainless Limited applied to MoEF&CC for issuance of TOR from 0.1 MTPA to 0.215 MTPA vide proposal no. 1A/OR/MIN/74317/2018 dated 13.04.2018.

20. MoEF&CC transferred the case vide proposal no SIA /OR/MIN/28926/2018 to Member Secretary SEIAA, Odisha as per notification no. dated SO 3977(E) dated 14.8.2018, as the lease area is less than 100 ha.

21. The Proposal was transferred to SEIAA, Odisha due to change in notification (Category – A to Category-B). Presentation was made before SEIAA/SEAC and TOR has been issued vide letter no 1098/SEAC-180 dated 14.12.2018 for enhancement of production of chrome ore from 0.1 MTPA to 0.215 MTPA.

22. The mine lease area is 89 Ha which is forest land. Mining scheme approved for the period 2012-13 to 2016-17 vide letter no. 314 (3)/2011/MCCM (CZ) / MS-58 of 2nd May, 2012 and subsequently approved for 0.215 MTPA of opencast mining with common boundary mining till 31st March, 2022 vide letter No: MS/FM/13-ORI/BHU/2016-17/7383, dated 29th December, 2016.

23. Forest land 22.80 ha is already diverted vide letter no.8-68/2000-FC/2327(F), dated 05th July 2001. As per Hon'ble Supreme Court guidelines of 10th March, 2015 remaining non-forest area of 66.20 Ha is forest as per sabik record has been taken under forest diversion proposal and is under process at the State Govt.

24. The mining lease 89.00 ha. of forest land(in village Kaliapani and forest block-27) was executed in favour of M/s Jindal Strips Ltd. on 04.01.2002 for a period of 20 years w.e.f 04.01.2002 to 03.01.2022. Subsequently name of lessee M/s Jindal Strips Ltd. was changed to M/s Jindal Stainless Ltd. On 26.12.2007 after obtaining necessary permission from Govt. of Odisha. As per section 8A(3) of MM(D&R) Amendment Act 2015 mining lease period is deemed to be extended for 50 years .i.e. 04.01.2002 to 03.01.2052.

25. It is reported by the project proponent that mine is proposed for annual production of 0.215 MTPA.

26. Open cast mining method will be adopted for production of chrome ore. Since, the maximum annual production is 0.215 MTPA (i.e. 2,15,000 TPA), fully Mechanized mining method will be followed.

27. Drilling and blasting is being carried out to disintegrate the hard ore and associated rocks. At present the mRL of bottom most working bench is 122 mRL. Top RL of the lease with at 300 m in south and bottom RL at 122 m. The dimension of the working quarry is around 289m long and 306 m wide.

28. Development and Production from the Quarry-2 and common boundary mining i.e. Eastern boundary of M/s Jindal Stainless Limited and western boundary of M/s Balasore Alloys Limited is the proposed area of working. From common boundary mining the blocked ore shall be mined out/recovered by both the lessees.

29. Method of mining will be Opencast Fully mechanized. Development and production will carry out by deploying excavator and tipper combination. Drilling and blasting will carried out to loosen the strata and hard rock, to minimize the secondary blasting Rock breaker also engaged for breaking of hard rocks.

30. Mining operation will be continued by both the lessees simultaneously. The direction of the quarry shall be north-south.

31. For the purpose of transportation of ROM, 25 tonne capacity tippers will be deployed. Haul road shall be developed wherever required at a gradient of 1:14.

32. Run off Mine (ROM) Friable band and Lumpy band in this area is overlain by Laterite, Silicified Chert and others such as diorites Lateritic limonite etc. The wall rock in the area is mainly Laterite and weathered Serpentinites. For recovery of chromite ore it would be essential to remove Overburden (OB) since opencast mechanized method of mining is continued.

33. Around the waste dumps, retaining wall of substantial strength shall be constructed. Perforation (weep holes) shall be left at intervals to allow for passage of water. Adjacent to this, garland drain shall be provided to prevent any wash off or leaching of dump materials during heavy rains. Dump height will be increased to 15 m (max) from existing level. Individual slopes shall not exceed 37° and the overall shape of the dump shall be 28°. Catch drains shall be provided at the inward side of the terrace. Catch drains of the terrace shall be connected to the garland drain outside the periphery of the dump. Each terrace shall have provision of berms at the outer end to reduce gully formation due to rainwater wash offs. The existing area waste dump area is 28.377 Ha which will be increased to 28.782 Ha by the end of scheme period. In course of time plantation on the dead end slopes of waste dumps with local species shall be done in consultation with forest authorities.

34. It has been proposed to dump the overburden or waste at Dump No-1. Presently garland drain of 2360 m long, retaining wall of 440 m and two no of settling tanks exist. Towards south side of dump – 1 and north side of reclaimed area, garland drain of

380 m long and retaining wall of 380 m shall be constructed. Check dams shall be constructed intermittently across the garland drain to check / arrest sediments flowing with water.

35. About 815 KLD of water will be required out of which 55 KLD will be sourced through Ground water and 760 KLD from mine quarries.

36. It was reported by the PP that there is no wildlife sanctuary/tiger reserve/national park, etc. within the 10 km radius area around the mine lease.

37. Damsala nala is the main perennial which flows in the south west direction and is located towards the northern side of the leasehold at a distance of 0.6 km away from the northern boundary .Various first and second order streams both from the northern and southern slopes of Mahagiri and Daitary hill range join on to the Damsala nala which finally discharge in to the Brahmani river.

38. The southern part of the area is bounded by a dry nala .The drainage pattern of the buffer zone has natural drainage such as Damsala nala in the near vicinity of the leasehold. The dry nala in the southern part carries the surface run-off during monsoon and ultimately converge with Damsala nala towards north-western part of the leasehold.

39. The cost of the project is ` 4.00 Crore.

40. It was reported by the PP that there is no court case/litigation pending against the project.

41. From 2002-03 to 2007-08 (i.e. 6 years), the production figure was in excess of 0.1 MTPA. From 2006-07 to 2007-08 (2 years) and 2016-17, the dispatch figure was in excess of 0.1 MTPA.

Authenticated Production / Dispatch Details

Sl. No.	Year	Actual Production (TPA)	Actual Dispatch (TPA)
1.	2001-02	23354.580	8992.630
2.	2002-03	152163.250	56887.100
3.	2003-04	191746.000	68227.326
4.	2004-05	114578.000	52190.260
5.	2005-06	194021.730	64136.750
6.	2006-07	158712.000	111046.860
7.	2007-08	120189.000	135342.300
8.	2008-09	79794.000	83950.990
9.	2009-10	62335.000	62780.070
10.	2010-11	74000.000	90374.490
11.	2011-12	66000.000	58733.470
12.	2012-13	96022.622	43667.800
13.	2013-14	64086.842	89708.110
14.	2014-15	69298.000	66775.190
15.	2015-16	87988.000	99313.690
16.	2016-17	99847.218	100232.890
17.	2017-18 (June-2017)	30577.679	33316.750

42. During 2002 -03 to 2007-08 (6years) the production figure has exceeded 0.1 MTPA for which Deputy Directorate of Mines, Govt. of Odisha has raised a demand note of ` 77,52,97,589 /- vide office letter no. 568/Mines dated 11.04.2018. as per judgment of Hon'ble Supreme Court of India.

43. The lessee filed a revision application in the revision authority Ministry of Mines, New Delhi vide. Case no. 22/(43)/2018/RC-I.

44. The revision authority considered the case and passed an order "The Impugned order" be stayed till the next hearing vide order on 10.05.2018.

45. They have given undertaking by way of affidavit to comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated. 02.08.2017 in writ petition (Civil) No. 114 of 2014. The undertaking inter-alia include commitment of the PP not to repeat any such violation in future. This is in accordance with OM of MoEF&CC, vide F. No. 3-50/2017-IA.III(Pt.), dated 30.05.2018.

46. Conducting a fresh Public Hearing for the proposal was exempted by the SEAC as same has already been conducted for the proposal earlier on 31st August, 2010.

47. The project proponent along with the consultant **M/s Visiontek Consultancy Services Pvt. Ltd., Bhubaneswar** made a detailed presentation on the proposal.

Considering the information / documents furnished by the proponent and presentation made by the consultant, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent followed by a site visit by the Sub-Committee of SEAC.

(1) Study on effect of chromite mines to nearest human habitation which is about 1.3 km.

(2) Pandara nallah is adjacent to the project site. Hence study on impact of mining activity on Pandara nallah is to be carried out and report to be submitted.

(3) Repeat the estimation of Arsenic, Lead, Cadmium, Hexa chromium, Copper, Zinc, Selenium on surface water analysis and it should be have absolute figures. A fresh analysis report is to be submitted.

(4) Distance of sampling stations from project site should be mentioned.

(5) Copy of valid explosive licence.

(6) Status of permission from Water Resources Department, Govt. of Odisha for drawal of Ground Water.

(7) Number of existing bore-wells and proposed for the expansion proposal along with the NoC from CGWA and permission for Water Resources Department, Govt. of Odisha.

(8) Detailed water balance including compensating water balance mentioning requirement.

(9) Details of depth of Quarry No. 1 and 2.

(10) Quality of water present in Quarry 1 & 2 need to be assessed and analysis report to be submitted.

(11) Copy of Annual compliance Report on CGWA to be submitted

(12) Plant layout showing previous plantation and proposed plantation.

(13) List of plant species used for plantation on dump area.

(14) Traffic Density study in mines area covering neighboring mines to be carried out by Operational Research (OR) expert and report to be submitted.

(15) Specific occupational health study for employees and surrounding villages.

(16) Pollution Control Measures on common haulage roads.

(17) Details of CSR activities covered under Company Act 2013 in year 2012-13 including study of Socio-Economic conditions of the periphery with an institute of repute.

(18) Details of Renewable energy to be used in the mines.

(19) Calculation of life of Quarry Dump 1 & 2 and alternative suggested if any other than these 2 dump sites.

(20) Mass Balance diagram related to treatment of hexavalent chromium and its zero discharge from the mines.

(21) Details of drainage management previously operated and proposed.

(22) Submission of complete set of listed annexures in the EMP.

(23) Year wise details of groundwater drawn.

(24) Details of rainwater harvesting proposed in the mine and amount compensated towards water requirement.

(25) Status of Forest Clearance (Stage-I) for remaining forest land.

(26) In surface water analysis Standards as per IS- 2296:1992 Class –'C' has been used, hence it should be upgraded to 2012 and submitted.

(27) The model simulations are done for the air pollutant arising from the mining operations, namely PM_{10}, $PM_{2.5}$, SO_2, NO_X & CO. Ground Level Concentration (GLC) have been computed using hourly meteorological data for 2 scenarios namely without control measures & with control measures. Details of control and without control parameters shall be submitted.

(28) Copy of application to State Govt. to execute supplementary deed and other clearances subsequently.

(29) Copy of Steel and Mines Department, Govt. of Odisha letter about mining lease and ownership of lease and its validity.

(30) Copy of Wildlife Conservation Plan.

(31) Measures taken for treatment of surface runoff.

(32) Water quality of Damsala Nallah and analysis report of Damsala Nallah for last 3 months.

(33) Analysis report of soil samples w.r.t hexavalent chromium for last 3 months.

(34) Analysis of ground and surface water sample w.r.t hexavalent chromium for last 3 months.

(35) Copy of certified compliance report of earlier Environmental Clearance conditions issued by MoEF&CC, Regional Office, Bhubaneswar.

(36) Copy of order of Reviewing Authority (RA) and final order if any.

(37) Copy of MoEF&CC closure order and cancellation of ToR.

(38) Preparation of EMP comprising remediation plan and natural and community resource augmentation plan corresponding to the ecological damage assessed and economic benefits derived due to violation. The remediation plan and the natural and community resource augmentation plan to be prepared as an independent chapter in the EIA report by the accredited consultants.

(39) Compliance to issues raised in public hearing conducted on 31st August, 2010.

ITEM NO. 2

PROPOSAL FOR AMENDMENT OF ENVIRONMENTAL CLEARANCE FROM MULTI STORIED COMMERCIAL IT/ITES BUILDING TO INSTITUTIONAL BUILDING "TOWER 2010" AT MANCHESWAR INDUSTRIAL ESTATE, BHUBANESWAR, DIST- KHURDA, ODISHA OF M/S ODISHA INDUSTRIAL INFRASTRUCTURE DEVELOPMENT CORPORATION ORGANIZATION (IDCO), WITH BUILT UP AREA -55,141.83 SQ.MT – REGARDING AMENDEMENT OF EC.

1. This proposal is for amendment of Environmental Clearance from Multi Storied Commercial IT/ITES Building to Institutional Building "Tower 2010" at Mancheswar Industrial Estate, Bhubaneswar, Dist- Khurda, Odisha of M/s Odisha Industrial Infrastructure Development Corporation Organization (IDCO), with built up area - 55, 141.83 sq.mt.

2. M/s IDCO has obtained Environment Clearance from SEIAA, Odisha vide letter no. 620/SEIAA, dated 11.04.2014 for Multi Storied Commercial IT/ITES building "Tower 2010" at Mancheswar Industrial Estate, Bhubaneswar, Dist- Khurda, Odisha with built up area -55,141.83 m^2.

3. Building permission from BDA was obtained vide letter no. 21630/BP/BDA, Bhubaneswar, dated 26.09.2012 for Multi Storied Commercial IT/ITES building "Tower 2010" at Mancheswar Industrial Estate, Bhubaneswar, Dist- Khurda, Odisha with built up area -55,141.83 m^2.

4. M/s IDCO has requested for amendment of Environmental Clearance for Changing of Activity of "Tower 2010" of IDCO at Mancheswar Industrial Estate, Bhubaneswar, Dist-Khurda, Odisha, from Commercial IT/ITES Building to Institutional Building.

5. The institutional building will carry out the following courses:

    - Mechatronics
    - Facilities Technology (Mechanical & Electrical)
    - Facilities Technology (Air-con and Refrigeration)

- Facilities Technology (Vertical Transportation)
- Precision Engineering
- Logistics Operations
- Beauty & Wellness
- Hair Fashion & Design

6. Total Land area -16187.4 sq. m (4.0 Ac) and Total Built up area – 55,141.83 sq. m. There will be no change in total land area as well as built-up area due to changing activity.

7. A comparison statement of requirement and utilities of previous activity & proposed activity are given below :

Sl. No.	Particular	Existing EC (Ref. No. 620/SEIAA, dated 11.04.2014)	Amendment EC
(i)	Building Activity	Commercial IT/ITES Building	Institutional Building
(ii)	Plot No.	4941(p), 4954(p), 488(p), 493(p), 492(p) & 490(p)	4941(p), 4954(p), 488(p), 493(p), 492(p) & 490(p)
(iii)	Khata No.	2076, 1352 & 685	2076, 1352 & 685
(iv)	Plot Area	16,187.4 sqm	16,187.4 sqm
(v)	Built up Area	55,141.83 sqm	55,141.83 sqm
(vi)	Height of the Building	88 m	88 m
(vii)	No. of Storied	18 Storied	18 Storied
(viii)	Water Requirement	380 KLD	337.5 KLD
(ix)	Fresh Water Requirement	150 KLD	125.0 KLD
(x)	Waste Water Requirement	230 KLD	154.6 KLD, Recycled water after STP treatment is 148.4 KLD
(xi)	STP Capacity with MBBR Technology	230 KLD	230 KLD
(xii)	Power Requirement	4600 KW	4600 KW
(xiii)	DG Set	4 x 1600 KVA	4 x 1600 KVA
(xiv)	Solid Waste Generation	1200 kg/day	1000 kg/day
(xv)	Estimate Population	3000 Nos.	2500 Nos.
(xvi)	Cost of the Project	97.7 Crores	97.7 Crores

8. The Environment Consultant **M/s Centre for Envotech and Management Consultancy 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, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent.

a) Copy of half yearly compliance Report to Environmental Clearance conditions submitted to MoEF&CC, Regional Office, Bhubaneswar.
b) Details of power to be consumed from CESU and percentage of Solar energy to be used in the project.
c) Details of Greenbelt area. Plants previously planted and proposed to be planted.

ITEM NO. 3

PROPOSAL FOR ENVIRONMENT CLEARANCE FOR CONSTRUCTION OF (S+12) MULTI-STORIED RESIDENTIAL APARTMENTS AT RANASINGHPUR (PHASE-II) BHUBANESWAR OF ODISHA STATE HOUSING BOARD WITH TOTAL BUILT UP AREA 1,01,370.40 SQ.M OVER AN AREA OF 11.325 ACRES (EC).

1. Odisha State Housing Board (OSHB) has applied for Environmental Clearance for construction of Multi-Storied Residential Apartments, At-Ranasinghpur (Phase-II) Bhubaneswar of with total built up area 1,01,370.40 Sq.m over an area of 11.325 Acres.
2. OSHB Bhubaneswar has the plans for construction of S+12 Multistoried resisdential apartment over plot no. 278 (P) and 280 (P) at Ranasinghpur, Phase II, Bhubaneswar. The proposed site is located at Ranasinghpur, Phase II, Bhubaneswar under Bhubaneswar Tehsil. Total Plot area of the project as ascertained by the total station survey is 12.892acres i.e. 52191.32 Sq.m. Out of the total area, road is 6340.47 sq.m. The net area available for the construction work will be 11.325 acres.
3. The project is located in

   Khata No: 254, Plot No. 11/737, 278(P) & 280
   Latitude:20°13’30.0N; Longitude-85°47'03.7"E
   Latitude-20°13’37”1N; Longitude-85°46’49.3”E
   Latitude - 20°13’36.5”N Longitude-85º47’9.6”E
   Latitude-20'13.36.5"N; Longitude: 85º46’49.4”E
   Toposheet No. 73 H/16

4. The project is proposed for construction of 29 blocks (HIG, MIG, LIG & EWS) with 1052 residential apartments and constructed over a total builtup area of 101370.40 Sq.m. There will be community hall, shopping complex and club house constructed for the project.
5. Total amount of domestic water requirement during the operational phase of the project will be 650 KLD. Out of the total water requirement 400 KLD is fresh water used for domestic purpose and rest 250 KLD will be required for flushing and met from treated

water source. The required quantity of water can be supplied by Bhubaneswar P.H. Division on payment basis by the water supply line of PHED.

6. The rain water harvested from the project area will used for ground water recharge. Total harvestable quantity of rainfall from the project site is 1807.22 cu.m
7. Plantation will be done along the road side and along the boundary area to make a green city plan. The green area will be developed over 10333 sqm with 2583 saplings.
8. Electricity requirement for the apartment will be 3.597 MW which will be supplied from the central Electricity supply Utility (CESU), Bhubaneswar, Odisha. There is the proposal of installation of DG Set (2 nos 82.5 kVA, 14 nos 50 kVA) will be used for the power back up source.
9. The parking has been provided in stilt floor and open parking. Total cover parking provided will be 17712.26 sq.m and open parking is 8699 sq.m. Total parking area available for the proposed building will be 26411.26 sq.m.
10. Approximately 1920 Kg / day waste will be generated of from the group housing complex. The organic waste generated will be used for composting and inorganic waste will be disposed through Bhubaneswar Municipal Corporation.
11. Odisha state housing board obtained structural safety certification from the competent authority regarding the construction of the building.
12. Height of the Residential building is 36 m. Fire Fighting System (Integrated wet riser system) to the proposed building is designed based on the recommendations of NBC part IV table 23. 2016.
13. Energy conservation measures will be adopted by the using maximum use of sun light and minimize the use of electricity.
14. The approximate cost of the project will be ` 361.80 crore.
15. The project proponent along with the consultant **M/s Kalyani Laboratories Pvt. Ltd., Plot No.: 78/944, Pahala, Bhubaneswar -752101** made a detailed presentation on the proposal.

Considering the information / documents furnished by the proponent and presentation made by the consultant, the SEAC decided to take decision on the proposal after receipt of the following information / documents from the proponent followed by a site visit by the Sub-Committee of SEAC.

a) Status of land as on 25.10.1980 w.r.t. Forest Conservation Act, 1980.
b) Detailed land schedule and kisam of land. Status of conversion of land to Gharabari.
c) Details of status of village forest near to the plot.
d) Detail of stack height of DG set.

e) Number of small capacity DG sets should be reduced and replaced by minimum number higher capacity DG sets to reduce noise and air pollution. A detailed proposal to this effect shall be submitted.

f) Details of Fire corridor.

g) Leaf litter compost provision shall be kept and manure so generated shall be used in plantation. A detailed proposal to this effect shall be submitted.

h) Details of Organic Convertor shall be submitted.

i) Status of building plan approval from BDA.

j) Study of heat transfer in bricks to be carried out and report to be submitted.

ITEM NO. 4

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF M/S. VASUNDHARA POWER AND INFRASTRUCTURE PRIVATE LIMITED FOR PRODUCTION OF 9,60,000 TPA COAL WASHERY OVER AN AREA OF 23.02 ACRES AT MOUZA - KALOBAHAL, TAHASIL – HEMGIRI, DIST- SUNDARGRAH (TOR).

The project proponent didn't attend the meeting. Therefore, the proposal was deferred to next meeting.

ITEM NO. 5

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF M/S. VASUNDHARA POWER AND INFRASTRUCTURE PRIVATE LIMITED FOR PRODUCTION OF 9,60,000 TPA COAL WASHERY OVER AN AREA OF 23.02 ACRES AT VILLAGE-TAPARIA MOUZA - GAINKAPALLI, TAHASIL –HEMGIRI, DIST- SUNDARGRAH (TOR).

The project proponent didn't attend the meeting. Therefore, the proposal was deferred to next meeting.

ITEM NO. 6

PROPOSAL FOR ENVIRONMENTAL CLEARANCE OF ADAGHAT IRON ORE DEPOSIT OF M/S NATIONAL ENTERPRISES AT VILLAGE ADAGHAT IN DISTRICT SUNDARGARH OVER MINING LEASE AREA OF 15.074 HA. FOR PRODUCTION OF 3, 00, 300 TPA IRON ORE (TOR).

1. The proposal was considered by the Committee to determine the "Terms of Reference (ToR)" for undertaking detailed EIA study for the purpose of obtaining environmental clearance in accordance with the provisions of the EIA Notification, 2006 and amendment thereafter.
2. The proposed mine lease hold area of 15.074 Ha granted in favour of M/s National Enterprises is in village Adaghat of Bonai Sub-division in Sundargarh District of Odisha. Sri Charanjit Singh Grewal is the proprietor of the firm.
3. As per EIA Notification dated 14th Sep, 2006 as amended from time to time, the project falls under Category "B", Project or Activity 1(a) – Mining of Minerals.

4. M/s National Enterprises, Barbil had applied to Govt. of Odisha on 24.2.1997 for grant of a mining lease over 15.074 ha. in Adaghat village of Sundargarh dist. for mining of Iron ore. The Steel & Mines Dept. of the State Govt. had issued terms and conditions for acceptance by the applicant regarding grant of the mining lease vide letter no. 12730/SM, dt 20.10.2000 with a condition to obtain Forest Clearance from MoEF under FC Act, 1980 for a period of 20 years. The lease deed was executed on 11.01.2017.

5. Modified mining plan has been approved by Regional Controller of Mines, Indian Bureau of Mines vide letter no- MPM/OTF-MECH/14-ORI/BHU/2010-11 dated 27-09-2010.

6. The area is featured in Toposheet No 73G/5 bounded by latitude 21^0 55' 45" N - 21^0 56' 00" N and longitude 85^0 18' 45" E - 85^0 19' 15" E. Plot No. 225(P), 226(P), 227(P), 228(P), 341(P) Khata No. 39. Nearest town is at Koira, 7.5 km where all facilities like medical, postal, education etc are available. Nearest Railway station is Barbil, 40kms away and Roxy railway siding is at a distance of 38 km. Nearest airport is Bhubaneswar, 195km. This Kundra / Suna Nadi, a tributary of Baitarani River, controls the drainage system of the area and flows due north in the region and then east to meet the Bay of Bengal. Nearest habitation is 3km from project site. Interstate boundary between Odisha and Jharkhand lies at distance of 12km in North-West direction from the proposed project site.

7. The entire lease area is in DLC Forest Land. Stage –I clearance for the forest land involved in the lease area has been issued by the Eastern Regional Office, Bhubaneswar of the MoEF & CC vide letter no. 5-ORC256/2015-BHU,dt. 26.09.2018. 13.674 ha. of non-forest govt. land has been identified in village Paramdihi (Khata No. 32, Plot No. 503, 504, 505 & 487) of Koira Tehsil (Banki Forest Range of Rourkela Forest Division) in lieu of forest land involved in the ML area for compensatory afforestation.

8. Earlier Public Hearing for EC was conducted on 15.05.2012 for the project and the final EIA /EMP report was presented for EC before the SEAC. Though SEAC had recommended for EC after the presentation but SEIAA has not issued final EC letter due to the want of Stage-I of Forest Clearance. Later on 10.06.2019, SEIAA, Odisha vide letter no. 6824/SEIAA has directed the company to apply afresh online for issue of ToR to conduct EIA study.

9. The mining lease area is mainly dominated by hill & a part of NW-SE trending hill. The highest altitude is 635mRL and lowest elevation is 560mRL. No seasonal or perennial nala in the ML area. Surface runoff water flows along the natural slopes into Suna Nadi/ Kundra nala in eastern side of the lease area

10. The mining lease area is located in tropical region where climate is characterized by very hot summers and cool winters. Temperature: 5^0C to 43^0C and Annual Rainfall (Average): 1535.5mm

11. Geological reserve of 22, 97, 264 Ton and Mineable reserves of 20, 31, 533 Ton have been assessed for the iron ore in the lease area. Based on the exploration input it is

planned to produce 3, 25,152 Ton iron ore per annum. Samples collected randomly from the various type of iron ore exposures show the average Fe- content of 63.24%. Life of the mine is 9 years.

12. Open cast method of mining on single shift basis is proposed to excavate the iron ore to gradually achieve the production target. Drilling and blasting will be adopted for loosening of hard rock mass both by the jack hammer drills and DTH drills. Height and width of the benches will be kept at 5m each.
13. 3,56,142 m^3 waste will generate during the plan period. Ore to waste ratio was 1:0.36.
14. The mine will provide employment to 258 persons daily.
15. 13 m^3/day water will require which will source from Suna Nadi. The peak water requirement shall be 13 m^3/ day and shall be met from the ground water with due permission. The ground water of the area varies between 564.3mRL to at 561.7 mRL below the general surface level. The depth of such water tables are assumed in comparison with the nearest dug wells in the inhibited area. Expected depth of mine working by the end of the life of the miens is up to 12m (up to 588mRL) from surface level. Thus ground water table is not going to be intersected.
16. The area does not have any monuments of historical or archaeological importance, pilgrimage, any place of tourist interest, national park, bird or wild life sanctuary.
17. To maintain ecological balance and to check harmful effects imposed on the environment of Adaghat due to proposed mining and allied activities, environmental control measures such as Land use planning, Solid waste management, Air pollution control measures, Water pollution control measures, Noise pollution control measures, Occupational safety health and Socio-economic condition have been envisaged.
18. The project cost is estimated to be ` 5 crores and there is a budgetary provision of ` 70 lakhs as capital cost towards environmental protection measures. ` 15 lakhs will be spent under CER for various socio-economic activities, whereas ` 7 lakhs will be spent annually towards regular maintenance & recurring activities.
19. The Environment Consultant **M/s Centre for Envotech and Management Consultancy Pvt. Ltd. Bhubaneswar** along with the proponent made a detailed presentation on the proposal before the Committee.
20. The project proponent requested for exemption of conducting public hearing as same has already been conducted on 15.05.2012 and issue Terms of Reference for conducting EIA study as per MoEF&CC, Govt. of India OM No. J-11013/41/2006-IA.II(I), dated 18.05.2012.
21. MoEF&CC, Govt. of India OM No. J-11013/41/2006-IA.II(I), dated 18.05.2012 stipulates "In the eventuality that the stage-I forestry clearance is not submitted by the project proponent within the prescribed time limit mentioned at para (ii) above, as and when the stage-I forestry clearance is submitted thereafter, such projects would be referred to EAC / SEAC for having a relook on the proposal on case by case basis depending on the environmental merits of the project and the site. In such a situation the EAC / SEAC may either reiterate its earlier recommendations or decide on the need for its reappraisal, as the case may be. In the eventuality, a reappraisal is asked for, the

Committee will simultaneously decide on the requirement of documents / information for reappraisal as also the need for a fresh public hearing".

The SEAC after detailed presentation by the project proponent along with consultant noted that the public hearing for the proposal had already been conducted earlier on 15.05.2012 and a copy of which is also furnished with EIA/EMP report earlier. For this reason, conducting a fresh Public Hearing may be exempted. Environmental Clearance for the proposal had already been recommended. But, due to non-submission of stage-I Forest Clearance within the stipulated time, Environmental Clearance could not be issued. This is a proposal for reappraisal. The SEAC, after detailed deliberations on the proposal in terms of the provisions of the MoEF&CC, Govt. of India OM No.J-11013/41/2006-IA.II(I), dated 18.05.2012, recommended for exemption of fresh public hearing for the proposal as well as **recommended for issuing Standard Term of Reference as per Annexure- I along with additional specific conditions as recommended by CSIR-NEERI on carrying capacity study as per Annexure - II** for undertaking EIA and preparation of Environmental Management Plan (EMP).

Sri. B. P. Singh Chairman, SEAC	Dr. D. Swain Member, SEAC	Prof. (Dr.) P.K. Mohanty Member, SEAC	Sri. J. K. Mohapatra Member, SEAC
Sri. K. R. Acharya Member, SEAC	Dr. Sailabala Padhi Member, SEAC	Prof. (Dr.) B.K. Satpathy Member, SEAC	Dr. K.C.S Panigrahi Member, SEAC

Approved

Chairman, SEAC

Secretary, SEAC

ANNEXURE – I

TERMS OF REFERENCE (ToR) FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT OF ADAGHAT IRON ORE DEPOSIT OF M/S NATIONAL ENTERPRISES AT VILLAGE ADAGHAT IN DISTRICT SUNDARGARH OVER MINING LEASE AREA OF 15.074 HA. FOR PRODUCTION OF 3, 00, 300 TPA IRON ORE.

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 and EIA 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

Secretary, SEAC

at large, may also be detailed in the proposed safeguard measures in each case should also be provided.

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

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

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

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

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

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

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

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

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

19. A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and

buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

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

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

22. R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs/STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine (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. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.

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

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

43. 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.

44. 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.

45. 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.

46. 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.

47. **The prescribed TOR would be valid for a period of three years for submission of the EIA/EMP report, as per the O.M. No. J-11013/41/2006-IA.II (I) (Part) dated 29.08.2017.**

Secretary, SEAC

ANNEXURE – II

SPECIFIC TOR AS PER RECOMMENDATION OF CSIR-NEERI REPORT ON "CARRYING CAPACITY STUDY FOR ENVIRONMENTALLY SUSTAINABLE IRON AND MANGANESE ORE MINING ACTIVITY IN KEONJHAR, SUNDARGARH AND MAYURBHANJ DISTRICTS OF ODISHA STATE"

1. Department of Steel & Mines, Govt, of Odisha should prepare 5 years regional plan for annual iron ore requirement from the state, which in turn shall be met from different mines/zones (e.g. Joda, Koira.') in the state. Accordingly, sustainable annual production (SAP) for each zone/mine may be followed adopting necessary environmental protection measures.
2. The expansion or opening of new manganese ore mines may be considered only when the actual production of about 80% is achieved. Further, the mines that have not produced Mn ore for last two years and have no commitment in the current year as well: EC capacity in such cases may be reviewed. The Department of Steel & Mines. Govt, of Odisha shall submit the Annual Report on this issue to the MoEF&CC for further necessary action.
3. Analysis of baseline environmental quality data for the year 2014 and 2016 indicates that existing mining activities appear to have little / no potential impact on environmental quality, except on air environment, which was mainly due to re-suspension of road dust. Therefore, all the working mines can continue to operate with strict compliance to monitoring of environmental quality parameters as per EC and CTE/CTO conditions of the respective mine, and implementation of suggested measures for control of road dust and air pollution. Odisha State Pollution Control Board has to ensure the compliance of CTE/CTO. Regional office of the MoEF&CC, Bhubaneswar shall monitor the compliance of the EC conditions. Regional office of the Indian Bureau of Mines (IBM) shall monitor the compliance of mining plan and progressive mine closure plan. Any violation by mine lease holder may invite actions per the provisions of applicable acts.
4. Considering the existing environmental quality, EC capacity, production rate, iron ore resources availability and transport infrastructure availability, the share of Joda and Koira sector works out to be 70% and 30% respectively for the existing scenario for the year 2015-16. However, for additional EC capacity, it can be 50:50 subject to commensurate infrastructure improvement (viz. SOTM. pollution free road transport, enhancement of rail network etc.) in the respective regions.
5. Continuous monitoring of different environmental quality parameters as per EC and CTE/CTO conditions with respect to air, noise, water (surface and ground water) and soil quality in each region shall be done. The environmental quality parameters should not indicate any adverse impact on the environment. Monitoring within the mines should be done by individual mine lease holders, whereas outside the mine lease area, monitoring should be done by the Govt, of Odisha through various concerned departments/ authorized agencies. Various monitoring/ studies should be conducted through national reputed institutes, NABET/ MoEF&CC accredited laboratories/organizations. The reports submitted by individual mine lease holders and study reports prepared by other concerned departments/agency for each of the regions should be evaluated and examined by SPCB/ MoEF&CC.

Secretary, SEAC

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

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

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

Code	EC	Suggested Ore Transport Mode
SOTM 1	> 5 MTPA	100% by private railway siding or conveyor belt up to public railway siding or pipeline for captive mines and 70% for non-captive mines
SOTM 2	Between 3 and <5 MTPA	Minimum 70% by public railway siding, through conveyor belt and maximum 30% by road - direct to destination or other public railway siding or above option
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

Secretary, SEAC

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, 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.)
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

Secretary, SEAC

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. 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.

33. 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.

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.

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