The Chairman
State Environment Impact Assessment Authority, Odisha
5RF-2/1, Acharya Vihar, Unit-IX, OPTCL Colony,
Anand Bazar, Bhoi Nagar,
Bhubaneswar, Odisha 751022
Email: seiaaodisha@gmail.com

MD/ENV/ 1082 / 109 /2024
Date: 27.05.2024

Ref: Environmental Clearance File No.55807/89-MINB1/06-2022, dated: 18.10.2022.

Sub: Half-yearly compliance status report of Environmental Clearance conditions for the period October 2023 – March 2024 in respect of Kalamang West (Northern Part) Iron Ore Mines, M/s Tata Steel Limited.

Dear Sir,

Kindly find attached herewith the half-yearly compliance status report in respect of the stipulated Environmental Clearance conditions of Kalamang West (Northern Part) Iron Ore Mines, M/s Tata Steel Limited for the period from **October 2023 – March 2024.** The same has been mailed in soft copy to your good office on email: seiaaodisha@gmail.com for your ready reference.

We trust that the measures taken towards environmental safeguards comply with the stipulated environmental conditions. We look forward to your further guidance which shall certainly help us in our endeavor for further improve upon our Environmental Management practices.

Thanking you,

Yours faithfully,
f: Tata Steel Limited

Chief (Mine Planning & Projects), OMQ

Encl.: As above

Copy to

- The Chairman, Central Pollution Control Board, Southern Conclave, Block 502, 5th & 6th Floors, 1582 Rajdanga Main Road, Kolkata - 700107 (W. B.)
- The Member Secretary, State Pollution Control Board, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit – VIII, Bhubaneswar – 751012 (Odisha)
- The Regional Officer, SPCB, Near Panposh Hockey Chowk, Rourkela, Dist – Sundargarh
- The Regional Officer, SPCB, College Road, Baniapata, Keonjhar – 758001 (Odisha)
- The Regional Officer, MoEF & CC, (EZ), MoEF & CC, Govt. of India, A/3, Chandrasekharpur, Bhubaneswar – 751013 (Odisha).

Environment Clearance compliance condition for Kalamang West (Northern Part)

Iron ore Block

Sr. No.	Condition	Compliance status
A.	**Specific conditions:**	
(i)	The proponent shall implement the Pollution Control Measures and safeguards as proposed in the Environment Management Plan (EMP) of EIA report.	Agreed. Necessary arrangements being carried out. It will be complied once the mine is operational.
(ii)	The public road passing through the mining lease shall be given access to the public after lease execution in consultation with the villagers.	The public road inside the mining lease shall be given access to the general public after Mining Lease Deed execution. The public road passing inside the mine lease area will be diverted along southern mine lease boundary for mining purpose. NoC for the diversion of road has been obtained by Directorate of Mines & Geology, Steel & Mines Dept., Govt. of Odisha, Bhubaneshwar vide letter no. DMO-MCIII-MACON-0017-2023 10766/DoMG dated 21.08.2023. The copy of the letter is attached as Annexure-1. Till the time diversion of public road is completed, villages will be given access to use existing road.
(iii)	As submitted by project proponent vide letter no.GM/OMQ/70/11-G/FY"23 dated 17.10.2022, an amount of Rs.140 Lakhs shall be spent towards implementation for surface water run-off management, installation of STP & ETP in three years time period.	In progress of compliance. Surface Runoff Management study has been conducted & the recommendations of the same will be implemented when the mine is in operation. Installation of STP & ETP shall be done within stipulated timeframe and after starting of mining operation.
B.	**Standard Conditions:**	
I.	**Statutory compliance:**	
(i)	This Environmental Clearance (EC) is subject to orders/ judgment of Hon"ble Supreme Court of India, Hon"ble High Court, Hon"ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.	Agreed. We agreed to abide to all the orders/ judgment of Hon"ble Supreme Court of India, Hon"ble High Court, Hon"ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.
(ii)	The Project proponent complies with all the statutory requirements and judgment of Hon"ble Supreme Court dated 2nd August,2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors before commencing the mining operations.	Agreed. We agree to comply with obtaining all statutory requirements before commencing of mining operations.

(iii)	The State Government concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of Judgment of Hon"ble Supreme Court dated 2nd August, 2017 in Write Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors.	Not Applicable. It is a virgin iron ore block obtained through auction process. No prior compensation levied.
(iv)	This Environmental Clearance shall become operational only after receiving formal NBWL Clearance from MoEF&CC subsequent to the recommendations of the Standing Committee of National Board for Wildlife, if applicable to the Project,	The NBWL clearance from MoEFCC is not applicable for this project.
(v)	This Environmental Clearance shall become operational only after receiving formal Forest Clearance (FC) under the provision of Forest Conservation Act, 1980, if applicable to the project.	Agreed. The project has been granted Stage-I approval under Sec 2(ii) of FC Act,1980 vide F.No. 8-13/2022-FC, dated 22.12.2023 for forest land over 42.608 Ha. Forest Stage-I is attached as **Annexure-2**.
(vi)	Project Proponent (PP) shall obtain Consent to Operate after grant of EC and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish / Consent to Operate from the concerned State Pollution Control Board.	Agreed CTE for the project has been obtained by the State pollution control board of Odisha via letter **No. 20953/IND-II-CTE-6743** dated 11.11.2022. The project will start mining activity after obtaining CTO.
(vii)	The PP shall adhere to the provision of the Mines Act, 1952, Mines and Mineral (Development & Regulation), Act, 2015 and rules & regulations made there under. PP shall adhere to various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.	Agreed All the relevant provisions of the Mines Act, 1952, Mines and Mineral (Development & Regulation), Act, 2015 and rules & regulations made there under shall be adhered to. The various circulars issued by DGMS and IBM from time to time will be strictly adhered to as directed.
(viii)	The Project Proponent shall obtain consents from all the concerned landowners, before start of mining operations, as per the provisions of MMDR Act, 1957 and rules made there under in respect of lands which are not owned by it.	Agreed. Consents from all the concerned land owners, before start of mining operations will be obtained as per the provisions of MMDR Act, 1957 and rules made there under in respect of lands which are not owned
(ix)	The Project Proponent shall follow the mitigation measures provided in MoEF&CC"s Office **Memorandum No. Z-I1013/57/2014-IA.II (M), dated 29th October, 2014**, titled "Impact of mining activities on Habitations-Issues related to the mining Projects wherein Habitations and	Agreed. Provisions made in the Office Memorandum are taken into consideration and proper mitigative measures will be taken to address impact of mining on Habitations and villages.

	villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".	
(x)	The Project Proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and from CGWA for withdrawal of groundwater for the project.	Complied. CGWA NOC granted vide letter no. CGWA/NOC/MIN/ORIG/2022/16214 dated 01.09.2022 is valid till 31.08.2024.**(Annexure-3)**
(xi)	A copy of EC letter will be marked to concerned Panchayat / local NGO etc. if any, from whom suggestion / representation has been received while processing the proposal.	Complied A copy of EC letter has been marked to Guali Gram panchayat & Malda Gram panchayat. **(Annexure-4)**
(xii)	State Pollution Control Board shall be responsible for display of this EC letter at its Regional office, District Industries Centre and Collector"s office/ Tahasildar"s Office for 30 days.	Complied.
(xiii)	The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the State Pollution Control Board and web site of the Ministry of Environment, Forest and Climate Change (www.environmentclearance.nic.in). A copy of the advertisement may be forwarded to the concerned MoEF&CC Regional Office for compliance and record.	**Complied.** Advt. done in Sunday Pioneer dated 23.10.2022 and in Pragatibadi Odiya Newspaper on Sunday dated 23.10.2022 **(Annexure-5).** The copy of the advertisement is forwarded to the MoEFCC Regional Office at Bhubaneswar for compliance and record **(Annexure-6).**
(xiv)	The Project Proponent shall inform the MoEF&CC/SEIAA, Odisha for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred than mining operation shall only be carried out after transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.	Agreed. In case there will be any change in the ownership of Mining lease, MoEF&CC/SEIAA will be informed in prior & the same will be carried as per the provisions of EIA Notification,2006.
(I)	**Air quality monitoring and preservation**	
(i)	The Project Proponent shall install a minimum of 3 (three) online Ambient Air Quality Monitoring Stations with 1 (one) in upwind and 2 (two) in downwind direction based on long term climatological data about wind direction such that an angle of 120° is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM10, PM2.5, NO2; CO and SO2 etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCI/I, dated 18.11.2009 covering the aspects of transportation and use of heavy machinery in	It will be complied once the mine is operational. Installation of CAAQMS and digital display of the data shall be done in consultation with Regional office of OSPCB. Letter requesting approval for the location of CAAQMS has been submitted to RO,SPCB, Sundargarh has been submitted vide letter No. GM/OMQ/63/11-G/FY'24 dated 07.09.2023.**(Annexure-7)**

	the impact zone. The ambient air quality shall also be monitored at prominent places like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main Gate of the mine site.	Manual monitoring of ambient air quality is being carried out in core & buffer zone. Air Monitoring report attached as **(Annexure-8 (a))**
(ii)	Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metalled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM10 and PM2.5 are evident such as haul road, loading and unloading point and transfer points. The Fugitive dust emissions from ah sources shall be regularly controlled by installation of required equipment/ machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It shall be ensured that air pollution level conform to the standards prescribed by the MoEF&CC/ Central Pollution Control Board.	Effective safeguard measures for dust generation & subsequent suppression will be taken during mine operation. Fugitive emission from sources will be monitored by installation of pollution control equipment and necessary dust suppression arrangements shall be made to ensure air pollution level conform to the standards prescribed by the MoEF&CC/ Central Pollution Control Board.
(II)	**Water quality monitoring and preservation**	
(i)	In case, immediate mining scheme envisages intersection of ground water table, then Environmental Clearance shall become operational only after receiving formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall ensure that prior approval from CGWA and MoEF&CC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydro-geological study of the area.	Agreed During current mining scheme period there is no intersection of ground water (GW) table. In case there is an intersection of GW level , permission/NOC shall be taken from CGWA & MoEF&CC.
(ii)	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in an around the village, should not be disturbed. The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the	Being Complied. Regular water quality monitoring of the springs & nallahs is being carried out by NABL accredited lab. Monitoring report for surface water quality analysis attached as **(Annexure-8(b))**

	Ministry, CGWA and State Groundwater Department / State Pollution Control Board.	
(iii)	Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department / State Pollution Control Board.	Being Complied. Network will be established once the mine is in operation. In the mean time ground water quality and ground water level is monitored in open well in surrounding villages. Monitoring report for ground water quality analysis attached as **(Annexure-8(c))**
(iv)	The Project Proponent shall undertake regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease and maintain its records. The project proponent shall undertake regular monitoring of water quality upstream and downstream of water bodies passing within and nearby/ adjacent to the mine lease and maintain its records. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. PP shall carryout regular monitoring w.r.t. pH and included the same in monitoring plan. The parameters to be monitored shall include their water quality vis-a-vis suitability for usage as per CPCB criteria and flow rate. It shall be ensured that no obstruction and/ or alteration be made to water bodies during mining operations without justification and prior approval of MoEF&CC / SEIAA, Odisha. The monitoring of water courses/ bodies existing in lease area shall be carried out four times in a year viz. pre- monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the record of monitored data be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, SEIAA, Odisha, Central Ground Water Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on six-monthly basis.	Being complied. Regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease is being carried out by a NABL accredited lab. Monitoring report containing surface water quality analysis attached as **(Annexure-8(b))**
(v)	Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TDS), Dissolved Oxygen (DO), pH and Total	Agreed. It will be complied after the commencement of the mining activities.

	Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed at the project site in public domain, on a display board, at a suitable location near the main gate of the Company. The circular No. J- 20012/1 /2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.	
(vi)	The project proponent shall construct retaining wall and settling pond within the lease area. Further, check dams shall be constructed at strategic locations in which rainwater passes in rainy season. Finally, the excess supernanted after sedimentation shall be allowed to spill away through stone pitch structure to the nearby valley.	Agreed. Retaining wall and settling pond along with check dams will be constructed as per the approved mine plan after commencement of the mining activities.
(vii)	De-silting of agricultural lands in buffer zone and beyond including nearby Nalas/rivers perennially periodically and perpetually caused due to wash up of minerals/OB/dumps shall be done as per SOP submitted. A legal affidavit shall be submitted within 6 months from the date of issue of Environmental Clearance to this effect with periodicity of desilting.	De-silting of agricultural lands in buffer zone and beyond including nearby Nalas/rivers perennially periodically and perpetually caused due to wash up of minerals/OB/dumps shall be done as per SOP submitted. A legal affidavit with respect to this is attached **(Annexure-9)**
(viii)	Detail design of the existing retaining wall and the proposed for the expansion from a chartered Civil Engineer shall be submitted within 6 months from the date of issue of Environmental Clearance to ensure that no silt after wash up is escaped from the core/buffer zone of the mines.	Design of the retaining wall from a chartered civil engineer is enclosed. **(Annexure-10)**
(ix)	Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office, MoEF & CC annually.	Agreed. Rainwater harvesting measures as per the hydrogeological study will be implemented at the mine site.
(x)	Industrial waste water (workshop and waste water from the mine) should be properly collected and treated in an ETP as proposed so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be treated after its initial passage through Oil and grease trap.	It will be complied. An ETP will be established to treat the industrial waste water after treating it through oil & grease trap. The inlet & outlet properties of effluent will be monitored as per the standards issued by SPCB.
(xi)	The water balance/water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and	It will be complied after the commencement of the mining activities.

	reported to the Regional Office of the MoEF & CC and State Pollution Control Board.	Initiatives like rain water harvesting & reuse of water from ETP, STP will be done in order to reduce the consumption of water.
(III)	**Noise and vibration monitoring and prevention**	
(i)	The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.	It will be complied . The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer will be measured as per DGMS guidelines after the mine becomes operational.
(ii)	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day /night hours.	Agreed. All precautionary actions will be taken not to disturb the habitations or the animal population around.
(iii)	The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The worker engaged in operations of HEMM, etc. should be provided with ear plugs /muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/ personals/ laborers are working without personal protective equipment.	It will be complied. All the workers will be provided with earmuffs & ear plugs & other PPE w.r.t to the location and type of work. Adequate training & awareness will be provided for health & safety. Monitoring Report for Noise level in core & buffer zones is attached as **Annexure-8 (d).**
(IV)	**Mining Plan**	
(i)	The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State	Agreed. We will adhere to the working parameters of mining plan which was submitted at the time of EC appraisal.

	Govt. in the form to Short Term Permit (STP), Query license or any other name.	
(ii)	The Project Proponent shall get the Final Mine Closure Plan along with Financial Assurance approved from Indian Bureau of Mines/Department of Mining & Geology as required under the Provision of the MMDR Act, 1957 and Rules/ Guidelines made there under. A copy of approved final mine closure plan shall be submitted within 2 months of the approval of the same from the competent authority to the concerned Regional Office of the Ministry of Environment, Forest and Climate Change for record and verification.	Final Mine Closure Plan along with financial assurance shall be prepared before final closure of mine as per the relevant provisions of MMDR-1957. The approved final mine closure plan will be submitted to concerned regional office of MoEF&CC within 2 months of its approval.
(iii)	The land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life shall be governed as per the approved Mining Plan. The excavation vis-a-vis backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area shall be governed as per approved mining plan. PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance status shall be submitted half-yearly to the MoEF&CC and its concerned Regional Office / SEIAA, Odisha.	Agreed. Excavation vis-a-vis backfilling in the mine lease area and corresponding afforestation will be carried out as per the approved mine plan & the compliance status will be submitted half-yearly to the MoEF&CC and its concerned Regional Office / SEIAA, Odisha.
(V)	**Land reclamation**	
(i)	The Overburden (O.B.) generated during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by D.G.M.S w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of top soil/OB dumps. The topsoil shall be used for land reclamation and plantation.	Agreed. Mining operation is yet to start. The overburden generated shall be stacked & governed as per the approved mine plan.
(ii)	The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.	Agreed. It will be complied as per approved mining plan and DGMS guidelines.
(iii)	The reclamation of waste dump sites shall be done in scientific manner as per the Approved Mining Plan cum Progressive Mine Closure Plan.	Agreed. It will be done as per Approved Mining Plan cum Progressive Mine Closure Plan.

(iv)	The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozer/ compactors thereby ensuring proper filling/ leveling of dump mass. In critical areas, use of geo textiles/ geo-membranes / clay liners / Bentonite etc. shall be undertaken for stabilization of the dump.	Agreed. Adequate measures to prevent soil erosion like grass plantation/ coir matting on dump slopes will be practiced. Further plantation with native species will be done on all dump slopes. Dumps will be protected by retaining walls.
(v)	The Project Proponent shall carry out slope stability study in case the dump height is more than 30 meters. The slope stability report shall be submitted to concerned regional office of MoEF&CC, Govt. of India, Bhubaneswar as well as SEIAA, Odisha.	Agreed. The height of proposed Dump-A & B will be of 30m. However, the height of proposed Dump-C will be 40m for which the Slope stability study will be conducted. CIMFR, Dhanbad has been engaged to carry out slope stability study, which is under progress. Final report will be shared on completion of the study. The final report of the same will be submitted to the RO- MoEF&CC, Govt. of India, Bhubaneswar as well as SEIAA, Odisha.
(vi)	Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and topsoil / OB / waste dumps to prevent runoff of water and flow of sediments directly into the water bodies (Nallah/ River/ Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/ sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly.	It will be complied. A detailed surface management study is being carried out for the same & same shall be implemented with the start of mining operation.
(vii)	Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time period thereby allowing proper settling of sediments/ silt material. The sedimentation pits/ sumps shall be constructed at the comers of the garland drains.	It will be complied. Mining is yet to start. Check dams of appropriate size, gradient and length will be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies

(viii)	The top soil, if any, shall temporarily be stored at earmarked site(s) within the mine lease only and should not be kept unutilized for long. The physical parameters of the top soil dumps like height, width and angle of slope shall be governed as per the approved Mining Plan and as per the guidelines framed by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of dumps. The topsoil shall be used for land reclamation and plantation purpose.	Agreed. Top soil will be stored at earmarked site and its physical parameters will be maintained as per DGMS guidelines. The topsoil will be used for land reclamation and plantation purpose only.
(ix)	The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.	Agreed. Re-grassing of the mining area & planation will be carried out according to the mine closure plan.
(VI)	**Transportation**	
(i)	No Transportation of the minerals shall be allowed in case of roads passing through transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers.	Mining operation is yet to start. It will be complied. Proper traffic study of the mineral transportation has been carried out and the recommendations of the same will be implemented with start of mining operations. Pollution Under Control (PUC) certificate for all the vehicles from will be maintained and water sprinkling will also be done regularly to arrest the dust load.
(ii)	The Main haulage road within the mine lease should be provided with a permanent water arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipment like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor	It will be complied. The provision for permanent & mobile water sprinkling arrangement will be made in areas of dust generation. Pollution control equipment like dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. Closed belt conveyors will be installed in the crushing & Screening plant to arrest fugitive dust emission.

	should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.	
(iii)	Traffic management shall be done as per recommendation of Traffic Management Study Report.	It will be complied. Recommendations of the traffic study will be implemented.
(iv)	The Project Proponent shall provide parking plaza for the heavy vehicles within the lease area as recommendation of NEERI.	Agreed. Proper parking plaza will be made as per the recommendation of NEERI.
(VII)	**Green Belt**	
(i)	The Project Proponent shall develop greenbelt in 7.5m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole Green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the Ministry irrespective of the stipulation made in approved mine plan.	Agreed. 7.5 m wide safety zone will be developed all along the mine lease boundary as per CPCB guidelines in order to arrest pollution emanating from mining operations within the lease.
(ii)	The Project Proponent shall carryout plantation/ afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by planting the native species in consultation with the State Forest Department/ Agriculture Department/ Rural development department/ Tribal Welfare Department/ Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this respect shall also be adhered. The density of the trees should be around 2500 saplings per Hectare. Adequate budgetary provision shall be made for protection and care of trees.	Agreed. The CPCB guidelines will be adhered to carryout plantation. Plantation will be carried out in mining lease, around water body, along the roadsides, in community areas etc.
(iii)	The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Government. In this regard, Project Proponent should essentially implement the directions of the Hon"ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/ protected against felling and plantation of such trees should be promoted.	It will be complied. Arrangements for livestock feed will be developed in the nearby areas.

(iv)	The Project Proponent shall undertake all precautionary measures for conservation and protection of endangered flora and fauna and Schedule-I species during mining operation. A Wildlife Conservation Plan shall be prepared for the same clearly delineating action to be taken for conservation of flora and fauna. The Plan shall be approved by Chief Wild Life Warden of the State Govt and implemented in consultation with the State Forest and Wildlife Department. A copy of Wildlife Conservation Plan and its implementation status (annual) shall be submitted to the Regional Office of the Ministry.	The site-specific wildlife conservation plan for Kalamang (West) Northern Part Iron Ore Block has been approved by the PCCF(Wildlife)& Chief Wildlife warden, Odisha vide letter no.11356/CWLW-FDWC-FD-0170-2021, dated-30.10.2023 **(Annexure-11).** Implementation status (annual) will be submitted to the Regional Office of the Ministry
(VIII)	**Public hearing and human health issues**	
(i)	The Project Proponent shall appoint an Occupational Health Specialist for Regular as well as Periodical medical examination of the workers engaged in the mining activities, as per the DGMS guidelines. The records shall be maintained properly. PP shall also carryout Occupational health check-ups in respect of workers which are having ailments like BP, diabetes, habitual smoking, etc. The check-ups shall be undertaken once in six months and necessary remedial/ preventive measures be taken. A status report on the same may be sent to MoEF&CC Regional Office and DGMS on half-yearly basis.	Agreed. Regular as well as Periodical medical examination of the workers engaged in the mining activities will be carried as per the DGMS guidelines. It shall be complied once the mine is operational. Status report on the same will be submitted to MoEF&CC Regional Office and DGMS on half-yearly basis.
(ii)	A commitment in form of an undertaking for periodical occupational health check-up of the employee and the local people shall be done through an occupational health expert as per the detailed action plan submitted with the proposal within 6 months from the date of issue of Environmental Clearance.	A commitment in form of an undertaking has been submitted for periodical occupational health check-up of the employee and the local people to be done through an occupational health expert as per the detailed action plan submitted **(Annexure-12)**
(iii)	The Project Proponent must demonstrate commitment to work towards „Zero Harm" from their mining activities and carry out Health Risk Assessment (HRA) for identification workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and wellbeing of workers and nearby community. The proponent shall maintain accurate and systematic records of the HRA. The HRA for neighborhood has to focus on Public Health Problems like Malaria, Tuberculosis, HIV, Anaemia, Diarrhoea in children under five, respiratory infections due to bio mass cooking. The proponent shall also create awareness and educate the nearby community and workers for Sanitation, Personal Hygiene, Hand washing, not to defecate in open, Women Health and Hygiene (Providing Sanitary Napkins), hazard of tobacco and alcohol use.	We are committed to work towards „Zero Harm" from our mining activities and carry out Health Risk Assessment (HRA) for identification workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and wellbeing of workers and nearby community once the mine is operational.

	The Proponent shall carryout base line HRA for all the category of workers and thereafter every five years.	
(iv)	The Proponent shall carry out Occupational health surveillance which be a part of HRA and include Biological Monitoring where practical and feasible, and the tests and investigations relevant to the exposure (e.g. for Dust a X-Ray chest; For Noise Audiometric; for Lead Exposure Blood Lead, For Welders Full Ophthalmologic Assessment; for Manganese Miners a complete Neurological Assessment by a Certified Neurologist, and Manganese (Mn) estimation in Blood; For Inorganic Chromium-Fortnightly skin inspection of hands and forearms by a responsible person. Except routine tests all tests would be carried out in a Lab accredited by NABH. Records of Health Surveillance must be kept for 30 years, including the results of and the records of Physical examination and tests. The record of exposure due to materials like Asbestos, Hard Rock Mining, Silica, Gold, Kaolin, Aluminium, Iron, Manganese, Chromium, Lead, Uranium need to be handed over to the Mining Department of the State in case the life of the mine is less than 30 years. It would be obligatory for the State Mines Departments to make arrangements for the safe and secure storage of the records including X-Ray. Only conventional X-Ray will be accepted for record purposes and not the digital one). X-Ray must meet ILO criteria (17 xl4 inches and of good quality).	Agreed. It will be complied post commencement of mining operation.
(v)	The Proponent shall maintained a record of performance indicators for workers which includes (a) there should not be a significant decline in their Body Mass Index and it should stay between 18.5 -24.9, (b) the Final Chest X-Ray compared with the base line X-Ray should not show any capacities,(c) At the end of their leaving job there should be no Diminution in their Lung Functions Forced Expiratory Volume in one second (FEV1),Forced Vital Capacity (FVC), and the ratio) unless they are smokers which has to be adjusted, and the effect of age, (d) their hearing should not be affected. As a proof an Audiogram (first and last need to be presented), (e) they should not have developed any Persistent Back Pain, Neck Pain, and the movement of their Hip, Knee and other joints should have normal range of movement, (f) they should not have suffered loss of any body part. The record of the same should be submitted to the Regional Office, MoEF&CC annually along	It will be complied post commencement of mining operation. Records for performance indicators workers will be maintained & the same shall be submitted to Regional Office, MoEF&CC annually.

	with details of the relief and compensation paid to workers having above indications.	
(vi)	The Project Proponent shall ensure that 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.	Agreed. Training and information on safety and health aspects will be given to concerned person working.
(vii)	Project Proponent shall make provision for the housing for workers/labors or shall construct labor camps within/outside (company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure. The domestic waste water should be treated with STP in order to avoid contamination of underground water.	Agreed. Provision for housing with necessary infrastructure like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche for kids etc. will be provided. STP will be installed for the treatment of waste water.
(viii)	The activities proposed in Action plan prepared for addressing the issues raised during the Public Hearing shall be completed as per the budgetary provisions mentioned in the Action Plan and within the stipulated time frame. The Status Report on implementation of Action Plan shall be submitted to the concerned Regional Office of the Ministry along with District Administration.	The work is in progress and the status report will be submitted to Regional Office of the Ministry along with District Administration. Details of budget expended for fulfilling Public Hearing issues till Mar-24 is attached as **Annexure-13**
(ix)	Issues raised and recorded in proceedings of public hearing w.r.t. environment / pollution / CER shall be complied by the Mining Authority as per OM F. No. 22-65/2017-IA.III, dated 30.09.2020 of MoEF&CC, Govt. of India.	The Mine operation has not started. Issues raised will be dealt as per the prescribed plan and within stipulated time frame.
(IX)	**Corporate Environment Responsibility (CER)**	
(i)	The activities and budget earmarked for Corporate Environmental Responsibility (CER) as per Ministry's O.M No 22-65/2017-IA. II (M) dated 01.05.2018 or as proposed by SEAC should be kept in a separate bank account. The activities proposed for CER shall be implemented in a time bound manner and annual report of implementation of the same along with documentary proof viz. photographs, purchase documents, latitude & longitude of infrastructure developed & road constructed needs to be submitted to Regional Office MoEF&CC annually along with audited statement.	MoEFCC, vide its OM dated 30th September 2020, has stated that the CER (Corporate Environment Responsibility) cost for the project is based on Public Hearing outcome and as per the commitments made by the project proponent during the Public hearing. The action plan to comply with the Public hearing commitments was finalized and submitted as part of EIA report. Details of budget expended for fulfilling Public Hearing issues till Mar-24 is attached as **Annexure-13**
(ii)	Project Proponent shall keep the funds earmarked for environmental protection measures in a separate account and refrain from diverting the same for other purposes. The Year wise expenditure of such funds should be	It will be complied after start of mine operations and the data will be communicated to MoEF&CC and its concerned Regional Office / SEIAA, Odisha with six monthly compliance report.

	reported to the MoEF&CC and its concerned Regional Office / SEIAA, Odisha.	
(X)	**Miscellaneous**	
(i)	The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEF&CC.	Complied. Land use & land cover of the entire lease area is attached as **Annexure-14.**
(ii)	The Project Authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Agreed. The same will be communicated.
(iii)	The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MoEF&CC & its concerned Regional Office, SEIAA, Odisha, Central Pollution Control Board and State Pollution Control Board.	It will be complied. Compliance report will be submitted in every 6 months to MoEF&CC & its concerned Regional Office, SEIAA & SPCB.
(iv)	A separate „Environmental Management Cell" with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEF&CC.	Complied . Separate "Environment Management has been established. The organizational structure attached as **Annexure-15**
(v)	The proponent shall comply all the specific conditions as recommended by CSIR-NEERI on carrying capacity study (as applicable) in time bound manner as proposed.	It will be complied within stipulated timeframe.
(vi)	The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.	It will be complied.
(vii)	The project proponent shall augment infrastructure on drinking water, health care and education in nearby villages as per time bound action plan submitted.	Agreed. Infrastructure on drinking water, health care and education in nearby villages will be completed within stipulated time frame. Details of budget expended for fulfilling Public Hearing issues till Mar-24 is attached as **Annexure-13.**
(viii)	The project proponent shall obtain permission from DGMS under 106(2b) to carry out blasting operation within the lease area.	Agreed. Proper permission from DGMS will be taken to carry out blasting operation.
(ix)	Fe grade - 55 and +45 to be attempted to use by blending with higher grade.	Agreed. It will be done after the starting of mine operations.
(x)	It shall be mandatory for the project management to submit six (06) monthly	It will be complied.

	compliance reports on post environmental monitoring in respect of the stipulated terms and conditions in this Environmental Clearance to the State Environment Impact Assessment Authority (SEIAA), Odisha, SPCB & Regional Office of the Ministry of Environment & Forest, Odisha in hard and soft copies on 1st June and 1st December of each calendar year. The proponent shall also upload the compliance report including results of monitored data, as applicable in the website of the Ministry for monitoring of EC Conditions.	Compliance report will be submitted in every 6 months to MoEF&CC & its concerned Regional Office, SEIAA & SPCB
(xi)	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the Odisha State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of EC conditions and shall also be sent to the respective to the MoEF&CC & its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board.	It will be complied. It will be submitted in the stipulated time frame and will be done after starting of mine operation.
(xii)	The proponent shall submit/upload six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF&CC, Govt. of India, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	It will be complied. We are submitting the six monthly reports on the status of compliance of the stipulated Environmental Clearance conditions, including results of monitored data on our website and shall update the same periodically.
(xiii)	The concerned Regional Office of the MoEF&CC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEF&CC officer(s) by furnishing the requisite data / information / monitoring reports.	Agreed. The same will be practiced.
(xiv)	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act,1991 along with their amendments and rules made there under and also any other orders passed by the Hon'ble	Agreed.

	Supreme Court of India/ High Court and any other Court of Law relating to the subject matter.	
(xv)	This Environmental Clearance (EC) is subject to orders/judgment of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.	Agreed.
(xvi)	Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Not Applicable in our case.

By E-mail

Annexure-I

DIRECTORATE OF MINES & GEOLOGY
STEEL AND MINES DEPARTMENT, GOVT. OF ODISHA,
BHUBANESWAR

Heads of Department Building, Unit-V, Pin-751001
Tel No.: 0674-2391537, Fax No.: 0674-2391684
Email ID: dirmines_odisha@rediffmail.com

DMO-MCIII-MACON-0017-2023-10766/DoMG, **Dt.** 21-08-2023

From,

Sri Salil Kumar Behera,
Joint Director of Mines,
Directorate of Mines & Geology,
Odisha, Bhubaneswar

To

The General Manager, OMQ,
M/s TATA Steel Ltd.,
Plot No. N3/24, IRC Village-Nayapalli,
Bhubaneswar, Odisha-751015
E-mail: aswini.mohanty@tatasteel.com

Sub:- Regarding diversion of existing road passing through Kalamang West (Northern Part) Iron ore block for Public Safety, Eco- friendly and Sustainable mining.

In reference to your letter No. GM/OMQ/02/11-G/23 dt.16.06.2023 on the subject mentioned above, I am directed to forwarded herewith the copy of Govt. Letter No. 7286/SM dt. 17.07.2023 as a token of "No Objection Certificate" on the proposal of Diversion of existing road passing through Kalamong West iron ore block for public safety, eco-friendly and sustainable mining. Further course of action on the above issue shall be taken up by Rural Development Department which has been clarified (revised) in the Govt. Letter No. 8184/SM dt. 11.08.2022 (copy enclosed).

Encl:- As above.

Behera 19/8/2023

JOINT DIRECTOR OF MINES

Memo No. 10767 **/DoMG** **Dt.** 21-08-2023

Copy to Deputy Director of Mines, Koira for information.

Behera 19/8/2023

JOINT DIRECTOR OF MINES

By e-mail/Fax

Government of Odisha
Steel & Mines Department
***

No 7286 /SM, Bhubaneswar, Dated the 17/07/2023
SM-MC1-MISC-0027-2021

From
Sri S.K.Mohanty,
Deputy Secretary to Government.

To
The Director of Mines & Geology,
Odisha, Bhubaneswar.

DIRECTORATE OF MINES & GEOLOGY
18/7/23
18 JUL 2023
ODISHA, BHUBANESWAR

Sub: Regarding Diversion of existing road passing through Kalamang West (Northern Part) Iron Ore Block of M/s Tata Steel Ltd. for Public safety, Eco-Friendly and sustainable mining .

Ref: Your letter no. 7007/DoMG dated 18.05.2023.

Sir,

In inviting a reference to the correspondence on the subject cited above, I am directed to communicate approval of the Government to issue 'no objection' certificate on the proposal of M/s Tata Steel Ltd.

Further, the lessee may be directed for taking up the matter with Works Department for further needful action.

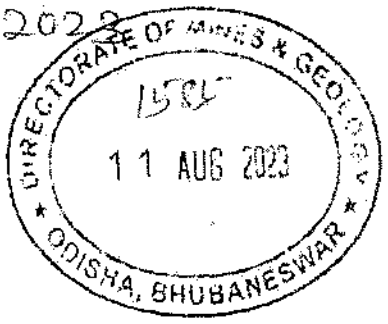
Yours faithfully,
17-07-2023
Deputy Secretary to Government

MC1-MISC-0027-2021/6/2023

By e-mail/Fax

Government of Odisha
Steel & Mines Department
***

No 8184 /SM, Bhubaneswar, Dated the 11.08.2023
SM-MC1-MISC-0027-2021



From
Sri S. K. Mohanty,
Deputy Secretary to Government.

To
The Director of Mines & Geology,
Odisha, Bhubaneswar.

Sub: Regarding Diversion of existing road passing through Kalamang West (Northern Part) Iron Ore Block of M/s Tata Steel Ltd. for Public safety, Eco-Friendly and sustainable mining.

Ref: This Department letter No.7286/S&M dated 17.07.2023 and DoMG letter No-10036 DoMG dated 28.07.2023.

Sir,

In continuation to this Department letter no. 7286/S&M dated 17.07.2023 on the subject cited above, I am directed to say that further course of action on the above issue shall be taken up by Rural Development Department instead of Works Department.

Yours faithfully,
11-08-2023
Deputy Secretary to Government

Annexure-2

I/60717/2023

Government of India
Ministry of Environment, Forest and Climate Change
(Forest Conservation Division)
Indira Paryavaran Bhawan,
Jor Bagh Road, Aliganj
New Delhi – 110003

Dated: 22nd December, 2023

To

The Addl. Chief Secretary (Forests),
Government of Odisha,
Bhubaneswar.

Sub: Proposal for seeking prior approval of the Central Government under Section 2 (ii) of the Forest (Conservation) Act, 1980 for non-forestry use of 42.608 ha of forest land (16.658 ha in Keonjhar Forest Division and 25.950 ha in Bonai Forest Division) within Kalmang West (Northern Part) Block for Iron Ore Mines in Keonjhar and Sundargarh District of Odisha, allotted to M/s Tata Steel BSL Limited (Formerly known as Bhusan Steel Ltd) (Online proposal no. FP/OR/MIN/49169/2020)

Madam/Sir,

I am directed to refer to the State Government of Odisha's letter No. FE-DIV-FLD-0048-2022-10644 dated 17.06.2022, and additional information submitted vide No. 22410/ 9F (MG) –66/2021 dated 03.11.2022, vide letter No. 4255/9F (MG) –51/2021 dated 03.03.2023, vide letter No. 15271/ 9F (MG) –66/2021 dated 28.07.2023 and vide letter No. 9F (MG)- 12/2023 dated 21.11.2023 on the above subject seeking prior approval of the Central Government in accordance with Section-2 of the Forest (Conservation) Act, 1980. The proposal was considered by the Advisory Committee (AC) in its meeting held on 29.11.2023 and to say that the proposal has been examined by the Advisory Committee constituted by the Central Government under section 3 of the aforesaid Act.

2. After careful examination of the proposal of the State Government and on the basis of the recommendations of the Advisory Committee, and approval of the same by the competent authority of the MoEF&CC, New Delhi, the Central Government hereby accords ***'in-principle'*** approval under Section - 2 of the Forest (Conservation) Act, 1980 for non-forestry use of 42.608 ha of forest land (16.658 ha in Keonjhar Forest Division and 25.950 ha in Bonai Forest Division) within Kalmang West (Northern Part) Block for Iron Ore Mines in Keonjhar and Sundargarh District of Odisha, allotted to M/s Tata Steel BSL Limited (Formerly known as Bhusan Steel Ltd) subject to fulfilment of the following conditions:

1. Legal status of the diverted forest land shall remain unchanged;
2. **Compensatory Afforestation:**
   a. The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation as per the approved CA Scheme at the current wage rate in consultation with State Forest Department in the account of CAMPA of the concerned State through online portal;
   b. The land identified for raising Compensatory Afforestation shall be

notified by the State Government as RF under Section-4 or PF under Section-29 of the Indian Forest Act. 1927 or under the relevant Section (s) of the local Forest Act, as the case may be, before the Stage-II approval;

c. The cost of survey, demarcation and erection of permanent pillars, if required on the identified CA land, shall be deposited in advance with the Forest Department by the user agency. The CA will be maintained for 10 years. The scheme may include afforestation of indigenous species with appropriate provision for anticipated cost increase for works scheduled for subsequent years;

d. The compensatory afforestation over non-forest land, equal in extent to the forest land being diverted i.e. 42.608 ha, shall be raised by the State Forest Department at the project cost within three years from the date of grant of Stage - II approval. The details of CA in NFL along with KML will be submitted at the time of submission of compliance of Stage-I.

e. Afforestation on degraded forest land to be selected elsewhere, measuring one and a half times the area under safety zone, shall also be done at the project cost under the supervisions of the State Forest Department and afforestation will be done within three years from the date of Stage-II clearance and maintained thereafter in accordance with the approved Plan in consultation with the State Forest Department;

f. User agency either himself or through the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.40), if any, located in the area within 100 meter from outer perimeter of the mining lease. The plan for plantation and SMC activities will be prepared and submitted to MoEF &CC before Stage-II Clearance;

g. 25% of the CA cost additionally will be spent towards soil and moisture conservation activities in the proposed CA area as per site requirement and deposited in CAF;

3. **NPV:**

   a. The User Agency shall transfer the funds towards the cost of Net Present Value (NPV) of the forest land being diverted under this proposal from the User Agency as per the orders of the Hon'ble Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No. 202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 06.01.2022 read with 22.03.2022 through online portal of CAMPA account of the State Concerned;

   b. At the time of payment of the Net Present Value (NPV) at the present rate, the user agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;

4. *Transportation of ore shall be as per the recommendation in the report submitted by CSIR-NEERI;*

5. *A holistic transportation plan shall be prepared by the State Govt. aiming to have minimum impact in the landscape. The same shall be implemented. Transportation of ore should be as far as possible through common conveyor*

belt, slurry pipeline, railways, etc. Transportation of ore through road should be minimized in a time bound manner;

6. *An Oversight Committee shall be constituted under the Chairmanship of the DDGF (Central) RO Bhubaneswar for 10 years who will monitor and review the compliance of the conditions stipulated in the approval for these five* ***mines [namely- 1. Netrabandha Pahar iron Ore Block (area 112.621 ha, 2. Netrabandha Pahar (West) area 66.242 ha), 3. Laserda Pacheri Manganese & Iron Ore Block (area 94.351 ha), 4. Kalmang West (Northern Part) Block for Iron Ore Mines Iron Ore Block (Area 42.608 ha) and 5. Guali Opencast Iron Ore Mines (area 194.683 ha)]*** *twice a year and submit their yearly report to this Ministry in the month of December. This Oversight Committee shall consist following members and logistics of this Committee shall be borne by State Government at the cost of UAs:*

    a. *DDGF (Central) – Regional Office Bhubaneswar- Chairman.*
    b. *One Representative from IIFM Bhopal.*
    c. *One Representative from WII Dehradun.*
    d. *One Representative from ICFRE.*
    e. *One Representative from NEERI.*
    f. *One expert in Geology.*
    g. *Two other experts nominated by MoEF&CC.*

    The recommendation made by the said committee shall be considered by the Ministry and if agreed the same shall be binding on the UAs;

7. *Integrated Regional Wildlife Conservation Plan shall be prepared for 10 years covering the forest Division of Sundargarh, Jharsuguda and Keonjhar Districts at the cost of UA. The works shall be executed as per APO and the regional plan shall have site/species specific wildlife sub plans/prescriptions;*
8. *A Bio-diversity Conservation Plan for this entire landscape shall also be prepared by the State Govt at the cost of UA;*
9. *Soil and moisture conservation measures shall be undertaken in and around 10 KM radius of the mining lease areas at project cost;*
10. *The conditions stipulated in EC should be strictly implemented and monitored;*
11. Compensatory levies to be realized from the User Agency under the project shall be transferred/ deposited, through e-challan, in to the account of CAMPA pertaining to the State concerned through e-portal (https://parivesh.nic.in/);
12. The KML files of diverted area, the CA areas, the proposed SMC treatment area and the WLMP area shall be uploaded on the e-Green watch portal with all requisite details prior to Stage-II approval;
13. Following activities, as per approved plan / schemes, shall be undertaken in the lease area by the User Agency under the supervision of the State Forest Department. Approved scheme/plan shall be submitted to the Ministry along with compliance of Stage-I approval:
    a. Mitigative measures to minimize soil erosion and choking of stream shall be implemented within a period of three years with effect from the issue of Stage-II clearance in accordance with the approved Plan in consultation with the State Forest Department;

b. Planting of adequate drought hardy plant species and sowing of seeds, in the appropriate area within the mining lease to arrest soil erosion in accordance with the approved scheme;
c. Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme;
d. Stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than 28o; and

14. **Safety Zone Management:** Following activities, at project cost, shall be undertaken by the user agency for the management of safety zone as per relevant guidelines issued by the Ministry's guidelines:
    a. User agency shall ensure demarcation of safety zone (7.5-meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration by erecting adequate number of 6 feet high RCC boundary pillars inscribed with DGPS coordinates with barbed wire fencing and deploying adequate number of watchers under the supervision of the. State Forest Department;
    b. Boundary of the safety zone of the mining lease, adjacent to habitation/roads, should be properly fenced by the user agency;
    c. Safety zone shall be maintained as green belt around mining lease and to ensure dense canopy in the area, regeneration shall be taken up in this area by the user agency at project cost under the supervision of the State Forest Department;
    d. The State Government and the user agency shall ensure that safety zone is maintained as per the prescribed norms;
15. No damage shall be caused to the top-soil and the user agency will follow the top soil management plan;
16. The User Agency shall prepare a list of existing village tanks and other water bodies with GPS co-ordinates located within five km from the mine lease boundary. This list is to be duly verified by the concerned Divisional Forest Officer. The User Agency shall regularly undertake desilting of these village tanks and other water bodies so as to mitigate the impact of siltation of such tanks/water bodies. A detailed approved plan for desilting of identified ponds and water bodies to be prepared in consultation with forest department and shall be submitted to MoEF & CC before Stage-II approval;
17. The cost of felling of trees shall be deposited by the User Agency with the State Forest Department;
18. Trees should be felled in phased manner as per the requirement in the approved Mining Plan with prior permission of concerned DFO;
19. The User Agency shall undertake that afforestation of the non-mineralized virgin forest land within the mining area shall be taken up at project cost;
20. The user agency shall explore the possibility of translocation of maximum number of trees identified to be felled and shall ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department.
21. A site-specific Wildlife Management Plan shall be prepared by the State Government in consultation with the PCCF (Wildlife) for the protection and conservation of wildlife of the area. A copy of approved Plan shall be

submitted to the Ministry along with the compliance of Stage-I approval. Entire cost of implementation of the provisions of the Wildlife Management Plan shall be deposited into the account of CAMPA of the State;

22. State Government shall complete settlement of rights, in term of the Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if any, on the forest land to be diverted and submit the documentary evidence, along with compliance of Stage-I approval, as prescribed by this Ministry's letter No. 11-9/1998-FC (Pt.) dated 03.08.2009 read with 05.07.2013, in support thereof;
23. The User Agency shall undertake that user agency and the State Forest Department shall create and maintain from funds to be provided by the user agency alternate habitat/ home for the avifauna, whose nesting trees are to be cleared in this project as per the plan duly approved by the Principal Chief Conservator of Forests (Wildlife) and the Chief Wildlife Warden Odisha. Bird nests artificially made out of eco-friendly materials shall be used in the area, including forest area and human settlements, adjoining the forest area being diverted for the project;
24. The User Agency shall undertake that the project authority needs to take up works for construction and cleaning of garland drains, stabilizing retaining walls, proper terracing of OB dumps and checking gully formation resulting in soil erosion;
25. The User Agency shall undertake that plants which are having lowest translocation factor can be preferred under afforestation on the OB dumps and fruit trees to be avoided in planting during biological stabilization of OB dumps;
26. The User Agency shall undertake that prevention of fall of wild animals into mining pit by fencing the open pit area;
27. The User Agency shall undertake that the angle of repose in OB dumps to be maintained to ensure stability and safety;
28. The User Agency shall undertake that vetiver grass can be planted at the lower reaches of the dump to bind the soil and prevent soil erosion giving better stability to the dump;
29. The User Agency shall undertake mining in a phased manner after taking due care for reclamation of the mined over area. The concurrent reclamation plan as per the approved mining plan shall be executed by the User Agency from the very first year, and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned Regional Office of the Ministry. If it is found from the annual report that the activities indicated in the concurrent reclamation plan are not being executed by the User Agency, the Nodal Officer or the concern Addl. Principle Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed;
30. The User Agency shall comply with the Hon'ble Supreme Court order on re-grassing, and re-grass the mining area and any other areas which may have been disturbed due to mining to restore them to a condition which is fit for growth of fodder, flora, fauna, etc. in a timely manner;
31. Period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease proposed to be

I/60717/2023

granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under;

32. The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required;
33. No labour camp shall be established on the forest land and the User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas;
34. The boundary of the diverted forest land, mining lease and safety zone, as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS coordinates;
35. The layout plan of the mining plan/ proposal shall not be changed without the prior approval of the Central Government and the forest land shall not be used for any purpose other than that specified in the proposal;
36. The forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government;
37. No damage to the flora and fauna of the adjoining area shall be caused;
38. Any other condition that the concerned Regional Office of this Ministry may stipulate with the approval of competent authority in the interest of conservation, protection and development of forests & wildlife; and
39. The user agency shall comply with all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.
40. Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as prescribed in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act, 1980 as issued by this Ministry's letter No. 5-2/2017-FC dated 28.03.2019.
41. The User Agency shall submit the annual self -compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year regularly; and
42. The compliance report shall be uploaded on **e-portal** (https://parivesh.nic.in/).

3. After receipt of the compliance report on fulfilment of the conditions mentioned above, the proposal shall be considered for final approval under Section-2 of the Forest (Conservation) Act, 1980. Transfer of forest land shall not be affected till final approval is granted by the Central Government in this regard.

Yours Sincerely,

Signed by
Charan Jeet Singh
Date: 22-12-2023 10:12:02

(Charan Jeet Singh)
Scientist 'D'

Copy to:

1. PCCF (HoFF), State Forest Department, Government of Odisha, Bhubaneswar
2. PCCF & Nodal Officer (FCA), O/o PCCF, State Forest Department, Government of Odisha, Bhubaneswar

I/60717/2023

3. DDGF (Central), Regional Office of MoEF&CC at Bhubaneswar.
4. User Agency.
5. Monitoring Cell, FC Division, MoEF&CC, New Delhi
6. Guard File.

भारत सरकार
जल शक्ति मंत्रालय
जल संसाधन, नदी विकास
और गंगा संरक्षण विभाग
केन्द्रीय भूमि जल प्राधिकरण
Government of India
Ministry of Jal Shakti
Department of Water Resources,
River Development & Ganga Rejuvenation
Central Ground Water Authority

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र)
NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION

Project Name:	Kalamang West (northern Part) Iron Ore Mines In Respect Of M/s Tata Steel Ltd		
Project Address:	Village-kalamang And Ghodabudani		
Village:	Kalmanga	Block:	Koida
District:	Sundargarh	State:	Odisha
Pin Code:			
Communication Address:	Bombay House, 24 Homi Mody Steet Fort, Mumbai-400001, Mumbai, Mumbai, Maharashtra - 400001		
Address of CGWB Regional Office :	Central Ground Water Board South Eastern Region, Bhujal Bhawan, Khandagiri Square, Nh-5, Bhubaneshwar, Khordha, Odisha - 750001		

1.	**NOC No.:**	CGWA/NOC/MIN/ORIG/2022/16214			
2.	Application No.:	21-4/3864/OR/MIN/2022	3.	Category: (GWRE 2020)	Safe
4.	Project Status:	New Project	5.	NOC Type:	New
6.	**Valid from:**	01/09/2022	7.	**Valid up to:**	31/08/2024

8. Ground Water Abstraction Permitted:

Fresh Water		Saline Water		Dewatering		Total	
m³/day	m³/year	m³/day	m³/year	m³/day	m³/year	m³/day	m³/year
65.00	23725.00						

9. Details of ground water abstraction /Dewatering structures

	Total Existing No.:0						Total Proposed No.:2					
	DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu
Abstraction Structure*	0	0	0	0	0	0	0	0	2	0	0	0

*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mine Pit;MPu-Mine Pumps

10. Ground Water Abstraction/Restoration Charges paid (Rs.): 23725.00

11. Number of Piezometers(Observation wells) to be constructed/ monitored & Monitoring mechanism.

No. of Piezometers	Monitoring Mechanism		
	Manual	DWLR**	DWLR With Telemetry
1	0	1	0

**DWLR - Digital Water Level Recorder

(Compliance Conditions given overleaf)

This is an auto generated document & need not to be signed.

Validity of this NOC shall be subject to compliance of the following conditions:

Mandatory conditions:

1) Installation of tamper proof digital water flow meter with telemetry on all the abstraction structure(s) shall be mandatory for all users seeking No Objection Certificate and intimation regarding their installation shall be communicated to the CGWA within 30 days of grant of No Objection Certificate.

2) Proponents shall mandatorily get water flow meter calibrated from an authorized agency once in a year.

3) Construction of purpose-built observation wells (piezometers) for ground water level monitoring shall be mandatory as per Section 14 of Guidelines. Water level data shall be made available to CGWA through web portal. Detailed guidelines for construction of piezometers are given in Annexure-II of the guidelines.

4) Proponents shall monitor quality of ground water from the abstraction structure(s) once in a year. Water samples from bore wells/ tube wells / dug wells shall be collected during April/May every year and analysed in NABL accredited laboratories for basic parameters (cations and anions), heavy metals, pesticides/ organic compounds etc. Water quality data shall be made available to CGWA through the web portal.

5) In case of mining projects, additional key wells shall be established in consultation with the Regional Director, CGWB for ground water level monitoring four (4) times a year (January, May, August and November) in core as well as buffer zones of the mine.

6) In case of mining project the firm shall submit water quality report of mine discharge/ seepage from Govt. approved/ NABL accredited lab.

7) The firm shall report compliance of the NOC conditions online in the website (www.cgwa-noc.gov.in) within one year from the date of issue of this NOC.

8) Industries abstracting ground water in excess of 100 m 3 /d shall undertake annual water audit through certified auditors and submit audit reports within three months of completion of the same to CGWA. All such industries shall be required to reduce their ground water use by at least 20% over the next three years through appropriate means.

9) Application for renewal can be submitted online from 90 days before the expiry of NOC. Ground water withdrawal, if any, after expiry of NOC shall be illegal & liable for legal action as per provisions of Environment (Protection) Act, 1986.

10) This NOC is subject to prevailing Central/State Government rules/laws/norms or Court orders related to construction of tube well/ground water abstraction structure / recharge or conservation structure/discharge of effluents or any such matter as applicable.

General conditions:

11) No additional ground water abstraction and/or de-watering structures shall be constructed for this purpose without prior approval of the Central Ground Water Authority (CGWA).

12) The proponent shall seek prior permission from CGWA for any increase in quantum of groundwater abstraction (more than that permitted in NOC for specific period).

13) Proponents shall install roof top rain water harvesting in the premise as per the existing building bye laws in the premise.

14) The project proponent shall take all necessary measures to prevent contamination of ground water in the premises failing which the firm shall be responsible for any consequences arising thereupon.

15) In case of industries that are likely to contaminate the ground water, no recharge measures shall be taken up by the firm inside the plant premises. The runoff generated from the rooftop shall be stored and put to beneficial use by the firm.

16) Wherever feasible, requirement of water for greenbelt (horticulture) shall be met from recycled / treated waste water.

17) Wherever the NOC is for abstraction of saline water and the existing wells (s) is/are yielding fresh water, the same shall be sealed and new tubewell(s) tapping saline water zone shall be constructed within 3 months of the issuance of NOC. The firm shall also ensure safe disposal of saline residue, if any.

18) Unexpected variations in inflow of ground water into the mine pit, if any, shall be reported to the concerned Regional Director, Central Ground Water Board.

19) In case of violation of any NOC conditions, the applicant shall be liable to pay the penalties as per Section 16 of Guidelines.

20) This NOC does not absolve the proponents of their obligation / requirement to obtain other statutory and administrative clearances from appropriate authorities.

21) The issue of this NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and take decisions independently of the NOC.

22) In case of change of ownership, new owner of the industry will have to apply for incorporation of necessary changes in the No Objection Certificate with documentary proof within 60 days of taking over possession of the premises.

23) This NOC is being issued without any prejudice to the directions of the Hon'ble NGT/court orders in cases related to ground water or any other related matters.

24) Proponents, who have installed/constructed artificial recharge structures in compliance of the NOC granted to them previously and have availed rebate of upto 50% (fifty percent) in the ground water abstraction charges/ground water restoration charges, shall continue to regularly maintain artificial recharge structures.

25) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, pharmaceutical, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution as per Annexure III of the guidelines.

26) In case of new infrastructure projects having ground water abstraction of more than 20 m3/day, the firm/entity shall ensure implementation of dual water supply system in the projects.

27) In case of infrastructure projects, paved/parking area must be covered with interlocking/perforated tiles or other suitable measures to ensure groundwater infiltration/harvesting.

28) In case of coal and other base metal mining projects, the project proponent shall use the advance dewatering technology (by construction of series of dewatering abstraction structures) to avoid contamination of surface water.

29) The NOC issued is conditional subject to the conditions mentioned in the Public notice dated 27.01.2021 failing which penalty/EC/cancellation of NOC shall be imposed as the case may be.
30) This NOC is issued subject to the clearance of Expert Appraisal Committee (EAC) (if applicable).

(Non-compliance of the conditions mentioned above is likely to result in the cancellation of NOC and legal action against the proponent.)

O/C

Annexure-4

To,

The Sarpanch
Guali Gram Panchayat
Guali, Dist- Keonjhar

Ref: JCO/13/175/118
Dated: 19th Oct' 2022

Sub: Environmental Clearance of M/s Tata Steel Limited for Kalamang West (Northern Part) Iron Mine of M/s Tata Steel Limited has been granted for mining of Iron Ore with Production Capacity of 2.95 MTPA (RoM) at Village- Kalamang & Ghodabudani, District- Sundergarh & Village - Gandhalpada, District - Keonjhar, Odisha (ML Area: 92.875 ha)

Ref: SEIAA, Odisha File No. 55807/89-MINB1/06-2022 (EC Identification No. - EC22B001OR117596, dated 18th October 2022)

Dear Sir,

Environmental Clearance of M/s Tata Steel Limited for Kalamang West (Northern Part) Iron Mine of M/s Tata Steel Limited has been granted for mining of Iron Ore with Production Capacity of 2.95 MTPA (RoM) at Village- Kalamang & Ghodabudani, District- Sundergarh & Village - Gandhalpada, District - Keonjhar, Odisha (ML Area: 92.875 ha). A copy of EC is enclosed for reference.

Thanking you,

Yours sincerely,
f: Tata Steel Limited

Chief (Kalamang & Gandhalpada Project)
Tata Steel Limited

Sarpanch
GUALI GRAM PANCHAYAT
GUALI

Encl: As above

TATA STEEL LIMITED
Mines Division Joda Keonjhar, Odisha 758 034 Tel 91 9238101031
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

O/C

To,

The Sarpanch
Malda Gram Panchayat
Malda, Dist- Sundergarh

Ref: JCO/13/174/118
Dated: 19th Oct' 2022

Sub: Environmental Clearance of M/s Tata Steel Limited for Kalamang West (Northern Part) Iron Mine of M/s Tata Steel Limited has been granted for mining of Iron Ore with Production Capacity of 2.95 MTPA (RoM) at Village- Kalamang & Ghodabudani, District- Sundergarh & Village - Gandhalpada, District - Keonjhar, Odisha (ML Area: 92.875 ha)

Ref: SEIAA, Odisha File No. 55807/89-MINB1/06-2022 (EC Identification No. - EC22B001OR117596, dated 18th October 2022)

Dear Madam,

Environmental Clearance of M/s Tata Steel Limited for Kalamang West (Northern Part) Iron Mine of M/s Tata Steel Limited has been granted for mining of Iron Ore with Production Capacity of 2.95 MTPA (RoM) at Village- Kalamang & Ghodabudani, District- Sundergarh & Village - Gandhalpada, District - Keonjhar, Odisha (ML Area: 92.875 ha). A copy of EC is enclosed for reference.

Thanking you,

Yours sincerely,
f: Tata Steel Limited

Chief (Kalamang & Gandhalpada Project)
Tata Steel Limited

Encl: As above

Surubali Patra
Sarpanch Malda G.P
Pin-770048

TATA STEEL LIMITED
Mines Division Joda Keonjhar, Odisha 758 034 Tel 91 9238101031
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

News paper Advertisement in English Daily, Sunday Pioneer dated 23.10.2022

sunday pioneer
BHUBANESWAR | SUNDAY | OCTOBER 23, 2022

sports 08

NZ CRUSH AUSTRALIA BY 89 RUNS IN SUPER 12 OPENER

We were very clinical in what we needed to do: Williamson

All-round England beat Afghanistan by 5 wickets after Curran's 5/10

We have plans for everyone, not just Surya: Babar

Surya tells me he will take his chances, just wants me to be there: Kohli

Strategy to deal with Shaheen is to play within 'V': Tendulkar

The Match: Confident India hoping to turn tables on Pakistan

Newspaper Advertisement in Odiya Daily, Pragativadi dated 23.10.2022

ଟ୍ୱିନ୍‌ସିଟି ମିରର୍

ଭୁବନେଶ୍ୱର

ପ୍ରଗତିବାଦୀ

କଳାକାରଙ୍କ ନୃତ୍ୟ ପ୍ରଦର୍ଶନ

ଦାବି ପୂରଣ ନ ହେଲେ କୁକୁଡାଗାଖାଙ୍କ ଆନ୍ଦୋଳନ

ସଂକୀର୍ତ୍ତନ ମହୋତ୍ସବ

TATA

110

To,

Deputy Director General of Forests (C)
MoEF&CC, Integrated Regional Office,
A/3, Chandrasekharpur,
Bhubaneswar – 751023

Ref: GM/OMQ/ 75 /11-G/ FY'23
Dated 24th Oct' 2022

Sub: **Environmental Clearance of M/s Tata Steel Limited for Kalamang West (Northern Part) Iron Mine has been granted for mining of Iron Ore with Production Capacity of 2.95 MTPA (RoM) at Village- Kalamang & Ghodabudani, District- Sundergarh & Village - Gandhalpada, District - Keonjhar, Odisha (ML Area: 92.875 ha)**

Ref: SEIAA, Odisha File No. 55807/89-MINB1/06-2022 (EC Identification No - EC22B001OR117596, dated 18th October 2022)

Dear Sir,

In reference to above letter on captioned subject, we would like to inform your good office that in compliance to the General condition no. xiii of the Environmental Clearance granted, we have widely advertised about the grant of this Environmental Clearance letter by printing the same at Odia newspaper" **Pragatibadi**" and English Newspaper "**The Pioneer**" on 23rd Oct' 2022 mentioning that the instant project has been accorded Environmental Clearance and copy of the Environmental Clearance letter is available with the State Pollution Control Board and web site of the Ministry of Environment, Forest and Climate Change (i.e. environmentclearance.nic.in). Copy of both the advertisement is enclosed herewith for your kind reference.

Thanking you,

Yours sincerely,
f: Tata Steel Limited

(Atul Kumar Bhatnagar)
General Manager, OMQ

Encl As above

TATA STEEL LIMITED
Mines Division Noamundi 833 217 India
Tel 91 9234301340 Fax 91 6596 290737
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

GOVT. OF INDIA
MoEF & CC Integrated R.O.
Bhubaneswar-751023
RECEIVED

GOVT. OF INDIA
MoEF & CC Integrated R.O.
RECEIVED

TATA

State Pollution Control Board (Odisha) RECEIVED No. Date 07/09/23 Regional Office, Rourkela

To,

The Regional Officer,
State Pollution Control Board
Near Panposh Hockey Chowk,
Panposh, Rourkela,
Dist: Sundargarh - 769 004

GM/OMQ/ 63 /11-G /FY'24
07th Sep'2023

Sub: Installation of CAAQM stations at Kalamang West (Northern Part) Iron Ore Mine of M/s Tata Steel Limited at Village - Kalamang & Ghodabudani, Dist- Sundargarh & Village-Gandhalpada, Dist- Keonjhar, Odisha (ML Area: 92.875 ha).

Ref: Letter no. NINL /KJR/2023/81, dated 10.08.2023.

Dear Sir,

With reference to the above captioned subject and discussion held with our officials at your office chamber, we would like to bring to your notice that we are proposing three locations for 3 CAAQM Station in respect with Kalamang West (Northern Part) Iron Ore Mine. The details of the proposed CAAQM location are mentioned below.

Sl. No	Station Name	Location	Zone	Latitude	Longitude
1.	CAAQMS 1	Near Kalamang Mines site office of M/s TSL.	Core	21°56'54.82"N	85°17'32.03"E
2.	CAAQMS 2	Site Office, Mithirda Iron Ore Mine of M/s NINL.	Buffer	21°52'37.40"N	85°20'36.10"E
3.	CAAQMS 3	Tata Steel Foundation Office, Guali	Buffer	21°59'13.78"N	85°17'19.32"E

Therefore, we request you to provide accord necessary approval for the installation of CAAQM station at aforesaid locations. Installation of CAAQM will be done in due course of time.

Thanking You,

Yours Faithfully,

(Atul Kumar Bhatnagar)
General Manager, OMQ

Encl: Map Showing Location of CAAQMS

Copy to: Member Secretary, State Pollution Control Board, Bhubaneswar

TATA STEEL LIMITED
Mines Division Noamundi 833 217 India
Tel 91 9262699402
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

Annexure – 8(a)

KALAMANG WEST IRON MINE
AIR QUALITY REPORT (CORE & BUFFER ZONE)

Month	Mine Lease Area-1					Mine Lease Area-2					Guali Village					Kalamang Village				
	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO
Oct 23	76.2	34.9	12.8	26.4	BDL	64.8	26.1	11.4	23.7	BDL	53.8	19.1	8.4	16.7	BDL	62.1	26.4	11.3	23.9	BDL
Nov 23	73.9	32.7	13.1	28.6	BDL	68.1	27.6	11.9	24.7	BDL	53.9	21.7	9.1	23.8	BDL	63.8	26.4	12.1	24.9	BDL
Dec 23	74.8	31.7	14.3	27.9	BDL	67.2	28.6	11.9	24.7	BDL	52.7	18.3	7.6	21.9	BDL	58.2	26.1	11.7	24.6	BDL
Jan 24	71.9	32.6	13.1	26.7	BDL	68.3	27.6	13.9	21.7	0.536	47.3	17.1	6.4	21.8	BDL	54.7	28.6	12.4	26.1	BDL
Feb 24	73.4	34.7	14.1	28.9	0.573	64.9	26.1	11.7	24.9	0.528	52.7	21.9	8.4	23.6	BDL	57.2	26.4	13.8	24.1	BDL
Mar 24	74.2	32.8	14.7	26.1	0.582	62.9	26.1	12.8	23.7	0.516	56.1	23.7	9.1	18.3	BDL	62.7	26.1	11.6	23.8	BDL

BDL - BDL (DL-0.5)

Month	Sagasahi					Gandalpada					Sunindpur				
	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO
Oct 23	54.9	21.6	8.1	17.4	BDL	51.6	16.9	7.3	18.4	BDL	57.6	26.1	11.7	24.9	BDL
Nov 23	57.1	23.9	11.6	21.3	BDL	49.7	16.3	8.1	18.6	BDL	54.7	19.6	9.2	21.4	BDL
Dec 23	56.3	21.9	12.7	17.2	BDL	47.3	16.1	9.6	18.2	BDL	57.2	23.9	11.4	21.7	BDL
Jan 24	61.7	23.4	11.9	18.3	BDL	51.2	17.6	9.1	18.4	BDL	62.7	24.9	12.6	23.1	BDL
Feb 24	56.3	21.9	9.2	17.6	BDL	53.7	19.2	8.6	17.3	BDL	61.9	23.6	11.7	26.1	BDL
Mar 24	61.9	23.8	11.2	27.6	BDL	57.2	19.6	11.4	23.1	BDL	64.8	24.3	12.6	26.2	BDL

Unit of measurement for all parameters except CO is $\mu g/m^3$. Co is in mg/m^3

Rishi Raj Kashyap

Manager (Environment)

SURFACE WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
October 2023

Parameters		Locations			
		Sona River (Upstream)	Sona River (Downstream)	Karo River (Upstream)	Karo River (Downstream)
I	**Biological Testing 1.Water**				
1	Total Colifom	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)
II	**Chemical Testing 1.Water**				
2	pH value	7.92 at 25°C	7.64 at 25°C	7.97 at 25°C	7.86 at 25°C
3	Colour	1	1	1	1
4	Dissolved Oxygen	6.7	6.3	6.8	6.4
5	Total Suspended Solid (as TSS)	BDL(DL-10)	BDL(DL-10)	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)	2.91	2.64	2.92	2.76
7	Chemical oxygen demand	8.26	7.59	21.43	18.92
8	Total Dissolved Solids (TDS)	1431	1264	1426	1381
9	Copper (as Cu)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
10	Chloride (as Cl)	52.91	47.36	63.81	53.76
11	Sulphate (as SO_4)	32.87	26.84	116.52	103.94
12	Nitrate (as NO_3)	11.52	9.26	13.81	11.62
13	Fluoride (as F)	0.51	0.47	0.47	0.39
14	Cyanide (as CN)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
	Chemical Testing 2. Residues in Water				
17	Iron (as Fe)	0.43	0.39	0.47	0.36
18	Cadmium (as Cd)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
19	Selenium (as Se)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
20	Arsenic (as As)	BDL(DL-0.05)	BDL(DL-0.05)	BDL(DL-0.05)	BDL(DL-0.05)
21	Lead (as Pb)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
22	Zinc (as Zn)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr^{+6})	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
24	Mercury (as Hg)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
25	Manganese (as Mn)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)

Annexure-8(b)

SURFACE WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
November 2023

Parameters		Locations			
		Sona River (Upstream)	Sona River (Downstream)	Karo River (Upstream)	Karo River (Downstream)
I	**Biological Testing 1.Water**				
1	Total Colifom	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)
II	**Chemical Testing 1.Water**				
2	pH value	8.21 at 25°C	7.98 at 25°C	7.81 at 25°C	7.76 at 25°C
3	Colour	6	4	7	4
4	Dissolved Oxygen	6.8	6.4	6.4	6.1
5	Total Suspended Solid (as TSS)	BDL(DL-10)	BDL(DL-10)	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)	2.87	2.59	2.76	2.61
7	Chemical oxygen demand	7.36	6.94	18.24	16.52
8	Total Dissolved Solids (TDS)	1371	1183	1439	1281
9	Copper (as Cu)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
10	Chloride (as Cl)	48.52	43.91	56.27	48.93
11	Sulphate (as SO_4)	53.81	48.29	104.73	94.76
12	Nitrate (as NO_3)	13.6	11.4	12.81	9.52
13	Fluoride (as F)	0.56	0.48	0.53	0.47
14	Cyanide (as CN)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
	Chemical Testing 2. Residues In Water				
17	Iron (as Fe)	0.41	0.38	0.43	0.38
18	Cadmium (as Cd)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
19	Selenium (as Se)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
20	Arsenic (as As)	BDL(DL-0.05)	BDL(DL-0.05)	BDL(DL-0.05)	BDL(DL-0.05)
21	Lead (as Pb)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
22	Zinc (as Zn)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr^{+6})	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
24	Mercury (as Hg)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
25	Manganese (as Mn)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)

SURFACE WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
December 2023

Parameters		Locations			
		Sona River (Upstream)	Sona River (Downstream)	Karo River (Upstream)	Karo River (Downstream)
I	**Biological Testing 1.Water**				
1	Total Coliform	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)
II	**Chemical Testing 1.Water**				
2	pH value	8.21 at 25^{0}C	7.91 at 25^{0}C	7.92 at 25^{0}C	7.87 at 25^{0}C
3	Colour	7	4	6	4
4	Dissolved Oxygen	6.7	6.3	6.5	6.3
5	Total Suspended Solid (as TSS)	BDL(DL-10)	BDL(DL-10)	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)	2.82	2.64	2.68	2.57
7	Chemical oxygen demand	9.38	7.51	16.29	14.31
8	Total Dissolved Solids (TDS)	1426	1397	1391	1258
9	Copper (as Cu)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
10	Chloride (as Cl)	56.28	49.37	42.91	37.26
11	Sulphate (as SO_4)	42.81	38.72	116.53	104.92
12	Nitrate (as NO_3)	12.7	11.6	13.81	11.64
13	Fluoride (as F)	0.46	0.38	0.57	0.51
14	Cyanide (as CN)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
	Chemical Testing 2. Residues In Water				
17	Iron (as Fe)	0.43	0.36	0.46	0.43
18	Cadmium (as Cd)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
19	Selenium (as Se)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
20	Arsenic (as As)	BDL(DL-0.05)	BDL(DL-0.05)	BDL(DL-0.05)	BDL(DL-0.05)
21	Lead (as Pb)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
22	Zinc (as Zn)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr^{+6})	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
24	Mercury (as Hg)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
25	Manganese (as Mn)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)

Annexure-8(b)

SURFACE WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
January 2024

Parameters		Locations			
		Sona River (Upstream)	Sona River (Downstream)	Karo River (Upstream)	Karo River (Downstream)
I	**Biological Testing 1.Water**				
1	Total Colifom	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)
II	**Chemical Testing 1.Water**				
2	pH value	8.21 at 25^{0}C	7.91 at 25^{0}C	7.92 at 25^{0}C	7.87 at 25^{0}C
3	Colour	7	4	6	4
4	Dissolved Oxygen	6.7	6.3	6.5	6.3
5	Total Suspended Solid (as TSS)	BDL(DL-10)	BDL(DL-10)	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)	2.82	2.64	2.68	2.57
7	Chemical oxygen demand	9.38	7.51	16.29	14.31
8	Total Dissolved Solids (TDS)	1426	1397	1391	1258
9	Copper (as Cu)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
10	Chloride (as Cl)	56.28	49.37	42.91	37.26
11	Sulphate (as SO_4)	42.81	38.72	116.53	104.92
12	Nitrate (as NO_3)	12.7	11.6	13.81	11.64
13	Fluoride (as F)	0.46	0.38	0.57	0.51
14	Cyanide (as CN)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
	Chemical Testing 2. Residues In Water				
17	Iron (as Fe)	0.43	0.36	0.46	0.43
18	Cadmium (as Cd)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
19	Selenium (as Se)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
20	Arsenic (as As)	BDL(DL-0.05)	BDL(DL-0.05)	BDL(DL-0.05)	BDL(DL-0.05)
21	Lead (as Pb)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
22	Zinc (as Zn)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr^{+6})	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)
24	Mercury (as Hg)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
25	Manganese (as Mn)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)	BDL(DL-0.1)

SURFACE WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE

February 2024

Parameters		Locations			
		Sona River (Upstream)	Sona River (Downstream)	Karo River (Upstream)	Karo River (Downstream)
I	**Biological Testing 1.Water**				
1	Total Colifom	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)
II	**Chemical Testing 1.Water**				
2	pH value	6.53 at 25^{0}C	6.68 at 25^{0}C	6.38 at 25^{0}C	6.52 at 25^{0}C
3	Colour	24	18	36	32
4	Dissolved Oxygen	6.7	6.3	6.8	6.4
5	Total Suspended Solid (as TSS)	32	28	24	16
6	BOD (3 days at 27°C)	2.73	2.64	2.71	2.64
7	Chemical oxygen demand	7.39	6.82	8.19	7.28
8	Total Dissolved Solids (TDS)	1364	1294	1382	1164
9	Copper (as Cu)	0.06	0.03	0.06	0.04
10	Chloride (as Cl)	137.26	129.58	116.52	97.38
11	Sulphate (as SO_4)	256.71	247.39	182.62	146.29
12	Nitrate (as NO_3)	36.52	28.46	28.46	24.73
13	Fluoride (as F)	0.64	0.57	0.64	0.58
14	Cyanide (as CN)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
	Chemical Testing 2. Residues In Water				
17	Iron (as Fe)	0.46	0.38	0.41	0.38
18	Cadmium (as Cd)	BDL(DL-0.002)	BDL(DL-0.002)	BDL(DL-0.002)	BDL(DL-0.002)
19	Selenium (as Se)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
20	Arsenic (as As)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
21	Lead (as Pb)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
22	Zinc (as Zn)	BDL(DL-0.02)	BDL(DL-0.02)	BDL(DL-0.02)	BDL(DL-0.02)
23	Hexa Chromium (as Cr^{+6})	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
24	Mercury (as Hg)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
25	Manganese (as Mn)	BDL(DL-0.02)	BDL(DL-0.02)	BDL(DL-0.02)	BDL(DL-0.02)

Annexure-8(b)

KALAMANG WEST IRON MINE
March 2024

	Parameters	Locations			
		Sona River (Upstream)	Sona River (Downstream)	Karo River (Upstream)	Karo River (Downstream)
I	**Biological Testing 1.Water**				
1	Total Colifom	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)
II	**Chemical Testing 1.Water**				
2	pH value	6.47 at 25^{0}C	6.53 at 25^{0}C	6.29 at 25^{0}C	6.47 at 25^{0}C
3	Colour	16	12	21	18
4	Dissolved Oxygen	6.7	6.4	6.8	6.2
5	Total Suspended Solid (as TSS)	26	24	32	26
6	BOD (3 days at 27°C)	2.61	2.53	2.41	2.38
7	Chemical oxygen demand	6.92	6.48	7.92	6.46
8	Total Dissolved Solids (TDS)	1264	1193	1417	1293
9	Copper (as Cu)	0.07	0.05	0.06	0.03
10	Chloride (as Cl)	121.46	116.59	121	114
11	Sulphate (as SO_4)	216.52	204.73	172	109
12	Nitrate (as NO_3)	28.46	21.92	18.2	16.4
13	Fluoride (as F)	0.53	0.47	0.52	0.46
14	Cyanide (as CN)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
	Chemical Testing 2. Residues In Water				
17	Iron (as Fe)	0.43	0.37	0.43	0.39
18	Cadmium (as Cd)	BDL(DL-0.002)	BDL(DL-0.002)	BDL(DL-0.002)	BDL(DL-0.002)
19	Selenium (as Se)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
20	Arsenic (as As)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
21	Lead (as Pb)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
22	Zinc (as Zn)	BDL(DL-0.02)	BDL(DL-0.02)	BDL(DL-0.02)	BDL(DL-0.02)
23	Hexa Chromium (as Cr^{+6})	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)	BDL(DL-0.01)
24	Mercury (as Hg)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
25	Manganese (as Mn)	BDL(DL-0.02)	BDL(DL-0.02)	BDL(DL-0.02)	BDL(DL-0.02)

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
October 2023

	Parameter	Guali Village	Kalamang Village	Sagasahi Village	Gandaipada Village	Sunindpur Village
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Absent	Absent	Absent	Absent	Absent
II	**Chemical Testing 1 .Water**					
2	Total Alkalinity (as $CaCO_3$)	191.46	181.64	187.94	168.19	176.38
3	Anionic surface active agents (as MBAS)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)
4	Colour	1	1	1	1	1
5	Cyanide (as CN)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)
6	Chloride (as Cl)	34.76	36.19	23.58	23.57	27.46
7	Calcium (as Ca)	46.29	51.37	53.64	48.61	52.68
8	Free residual chlorine	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)
9	Fluoride (as F)	0.27	0.31	0.18	0.27	0.38
10	Magnesium (as Mg)	13.68	11.64	12.63	12.51	12.97
11	Nitrate (as NO_3)	7.46	7.57	9.57	6.18	8.31
12	Oduor	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
13	pH	7.14 at 25°C	8.14 at 25°C	6.84 at 25°C	7.93 at 25°C	6.84 at 25°C
14	Phenolic compounds (as C6H5OH)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)
15	Sulphate (as SO_4)	18.21	18.32	16.43	17.42	19.24
16	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	452	462	461	452	439
18	Turbidity	0.6	0.4	0.3	0.6	0.3
19	Total hardness (as $CaCO_3$)	171.91	176.23	185.97	172.90	184.96
II	**Chemical Testing 2. Residues in Water**					
20	Arsenic (as As)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
21	Aluminum (as Al)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
22	Boron (as B)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
23	Copper (as Cu)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
24	Cadmium (as Cd)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)
25	Iron (as Fe)	0.42	0.21	0.21	0.28	0.36
26	Lead (as Pb)	BDL(DL - 0.001)	BDL(DL - 0.001)	BDL(DL - 0.001)	BDL(DL - 0.001)	BDL(DL - 0.001)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'.

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
October 2023

	Parameter	Guali Village	Kalamang Village	Sagasahi Village	Gandalpada Village	Sunindpur Village
27	Manganese (as Mn)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)
28	Mercury (as Hg)	BDL (DL- 0.001)	BDL (DL- 0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
29	Selenium (as Se)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
30	Total Chromium (as Cr)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
31	Zinc (as Zn)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
32	Polynuclear aromatic hydrocarbon (PAH)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
33	Mineral Oil	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
II	**Pesticide Residues Organochlorine**					
i	Alpha-HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ii	Beta HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iv	Delta- HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
v	Alachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vi	Aldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vii	Dieldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
viii	Butachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ix	p,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
x	o,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xi	p,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xii	o,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiii	o,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiv	p,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xv	Monocrotophos	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvi	Atrazine	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvii	Parathion Methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xviii	Paraoxon methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xix	Malathion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xx	Malaoxon	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xxi	Ethion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
November 2023

	Parameter	Guali Village	Kalamang Village	Sagasahi Village	Gandaipada Village	Sunindpur Village
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Absent	Absent	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	Total Alkalinity (as $CaCO_3$)	182.54	194.28	164.76	186.29	172.36
3	Anionic surface active agents (as MBAS)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)
4	Colour	1	1	1	1	1
5	Cyanide (as CN)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)
6	Chloride (as Cl)	36.91	31.97	26.52	26.53	28.43
7	Calcium (as Ca)	52.84	52.81	48.93	52.81	47.26
8	Free residual chlorine	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)
9	Fluoride (as F)	0.31	0.26	0.26	0.34	0.31
10	Magnesium (as Mg)	14.17	11.94	11.52	13.58	11.68
11	Nitrate (as NO_3)	9.36	8.51	8.76	7.81	7.93
12	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
13	pH	6.92 at 25°C	7.93 at 25°C	6.87 at 25°C	8.21 at 25°C	7.21 at 25°C
14	Phenolic compounds (as C6H5OH)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)
15	Sulphate (as SO_4)	16.43	16.43	14.53	21.94	32.68
16	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	472	457	459	473	462
18	Turbidity	0.4	0.3	0.2	0.7	0.4
19	Total hardness (as $CaCO_3$)	190.29	181.06	169.64	187.80	166.12
II	**Chemical Testing 2. Residues In Water**					
20	Arsenic (as As)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
21	Aluminium (as Al)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
22	Boron (as B)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
23	Copper (as Cu)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
24	Cadmium (as Cd)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)
25	Iron (as Fe)	0.37	0.34	0.46	0.41	0.37
26	Lead (as Pb)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
November 2023

	Parameter	Ganua Village (Mr. Keshar Patra)	Guruda Village (Nr. Club)	Guruda Village	Khondbond Village (Mr. Mothua Munda)	OMC Colony
27	Manganese (as Mn)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)
28	Mercury (as Hg)	BDL (DL- 0.001)	BDL (DL- 0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
29	Selenium (as Se)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
30	Total Chromium (as Cr)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
31	Zinc (as Zn)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
32	Polynuclear aromatic hydrocarbon (PAH)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
33	Mineral Oil	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
II	**Pesticide Residues Organochlorine**					
i	Alpha-HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ii	Beta HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iv	Delta- HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
v	Alachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vi	Aldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vii	Dieldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
viii	Butachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ix	p,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
x	o,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xi	p,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xii	o,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiii	o,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiv	p,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xv	Monocrotophos	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvi	Atrazine	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvii	Parathion Methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xviii	Paraoxon methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xix	Malathion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xx	Malaoxon	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xxi	Ethion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
December 2023

	Parameter	Guali Village	Kalamang Village	Sagasahi Village	Gandaipada Village	Sunindpur Village
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Absent	Absent	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	Total Alkalinity (as $CaCO_3$)	164.72	182.97	191.68	176.47	184.37
3	Anionic surface active agents (as MBAS)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)
4	Colour	1	1	1	1	1
5	Cyanide (as CN)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)
6	Chloride (as Cl)	41.96	28.76	31.76	28.93	31.93
7	Calcium (as Ca)	53.28	48.29	52.38	51.68	47.36
8	Free residual chlorine	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)
9	Fluoride (as F)	0.28	0.24	0.16	0.36	0.24
10	Magnesium (as Mg)	13.52	12.81	12.73	12.74	12.41
11	Nitrate (as NO_3)	8.76	7.93	7.18	6.52	6.71
12	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
13	pH	7.18 at 25°C	8.16 at 25°C	7.17 at 25°C	7.94 at 25°C	8.16 at 25°C
14	Phenolic compounds (as C6H5OH)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)
15	Sulphate (as SO_4)	15.42	18.24	16.24	23.81	26.43
16	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	463	462	462	481	453
18	Turbidity	0.6	0.4	0.3	0.6	0.3
19	Total hardness (as $CaCO_3$)	188.70	173.31	183.21	181.50	169.34
II	**Chemical Testing 2. Residues In Water**					
20	Arsenic (as As)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
21	Aluminium (as Al)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
22	Boron (as B)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
23	Copper (as Cu)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
24	Cadmium (as Cd)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)
25	Iron (as Fe)	0.26	0.27	0.37	0.37	0.52
26	Lead (as Pb)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
December 2023

	Parameter	Ganua Village (Mr. Keshar Patra)	Guruda Village (Nr. Club)	Guruda Village	Khondbond Village (Mr. Mothua Munda)	OMC Colony
27	Manganese (as Mn)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)
28	Mercury (as Hg)	BDL (DL- 0.001)	BDL (DL- 0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
29	Selenium (as Se)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
30	Total Chromium (as Cr)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
31	Zinc (as Zn)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
32	Polynuclear aromatic hydrocarbon (PAH)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
33	Mineral Oil	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
II	**Pesticide Residues Organochlorine**					
i	Alpha-HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ii	Beta HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iv	Delta- HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
v	Alachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vi	Aldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vii	Dieldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
viii	Butachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ix	p,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
x	o,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xi	p,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xii	o,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiii	o,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiv	p,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xv	Monocrotophos	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvi	Atrazine	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvii	Parathion Methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xviii	Paraoxon methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xix	Malathion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xx	Malaoxon	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xxi	Ethion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
January 2024

	Parameter	Guali Village	Kalamang Village	Sagasahi Village	Gandalpada Village	Sunindpur Village
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Absent	Absent	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	Total Alkalinity (as $CaCO_3$)	172.94	194.28	184.51	164.28	193.81
3	Anionic surface active agents (as MBAS)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)	BDL (DL – 0.01)
4	Colour	1	1	1	1	1
5	Cyanide (as CN)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)
6	Chloride (as Cl)	43.68	26.51	32.81	26.41	36.57
7	Calcium (as Ca)	51.57	47.67	53.16	52.87	51.29
8	Free residual chlorine	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)
9	Fluoride (as F)	0.26	0.26	0.21	0.34	0.17
10	Magnesium (as Mg)	12.58	13.94	11.57	12.87	11.52
11	Nitrate (as NO_3)	7.64	8.27	6.31	7.39	7.36
12	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
13	pH	6.72 at 25°C	7.94 at 25°C	6.92 at 25°C	8.14 at 25°C	8.21 at 25°C
14	Phenolic compounds (as C6H5OH)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)
15	Sulphate (as SO_4)	13.92	16.28	18.53	21.57	21.94
16	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	471	443	471	462	472
18	Turbidity	0.4	0.3	0.2	0.3	0.4
19	Total hardness (as $CaCO_3$)	180.59	176.42	180.42	185.03	175.54
II	**Chemical Testing 2. Residues in Water**					
20	Arsenic (as As)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
21	Aluminium (as Al)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
22	Boron (as B)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
23	Copper (as Cu)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
24	Cadmium (as Cd)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)
25	Iron (as Fe)	0.34	0.24	0.27	0.26	0.31
26	Lead (as Pb)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
January 2024

	Parameter	Ganua Village (Mr. Keshar Patra)	Guruda Village (Nr. Club)	Guruda Village	Khondbond Village (Mr. Mothua Munda)	OMC Colony
27	Manganese (as Mn)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)
28	Mercury (as Hg)	BDL (DL- 0.001)	BDL (DL- 0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
29	Selenium (as Se)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
30	Total Chromium (as Cr)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
31	Zinc (as Zn)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
32	Polynuclear aromatic hydrocarbon (PAH)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
33	Mineral Oil	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
II	**Pesticide Residues Organochlorine**					
i	Alpha-HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ii	Beta HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iv	Delta- HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
v	Alachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vi	Aldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vii	Dieldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
viii	Butachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ix	p,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
x	o,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xi	p,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xii	o,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiii	o,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiv	p,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xv	Monocrotophos	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvi	Atrazine	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvii	Parathion Methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xviii	Paraoxon methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xix	Malathion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xx	Malaoxon	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xxi	Ethion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
February 2024

	Parameter	Guali Village	Kalamang Village	Sagasahi Village	Gandalpada Village	Sunindpur Village
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Absent	Absent	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	Total Alkalinity (as $CaCO_3$)	141.23	164.76	182.57	192.81	164.53
3	Anionic surface active agents (as MBAS)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
4	Colour	1	1	1	1	1
5	Cyanide (as CN)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)
6	Chloride (as Cl)	36.52	28.46	18.39	34.56	27.93
7	Calcium (as Ca)	54.27	48.29	47.26	52.39	49.76
8	Free residual chlorine	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
9	Fluoride (as F)	0.16	0.18	0.21	0.47	BDL (DL – 0.1)
10	Magnesium (as Mg)	13.68	13.57	12.97	11.94	14.28
11	Nitrate (as NO_3)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)
12	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
13	pH	7.16 at 25°C	6.97 at 25°C	6.91 at 25°C	7.87 at 25°C	7.16 at 25°C
14	Phenolic compounds (as C6H5OH)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)
15	Sulphate (as SO_4)	14.78	16.24	16.52	21.46	14.73
16	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	472	472	471	461	463
18	Turbidity	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)
19	Total hardness (as $CaCO_3$)	191.86	176.45	171.41	180.01	183.04
II	**Chemical Testing 2. Residues in Water**					
20	Arsenic (as As)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
21	Aluminium (as Al)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
22	Boron (as B)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
23	Copper (as Cu)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
24	Cadmium (as Cd)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)
25	Iron (as Fe)	0.36	0.36	0.28	0.26	0.31
26	Lead (as Pb)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
February 2024

	Parameter	Ganua Village (Mr. Keshar Patra)	Guruda Village (Nr. Club)	Guruda Village	Khondbond Village (Mr. Mothua Munda)	OMC Colony
27	Manganese (as Mn)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)
28	Mercury (as Hg)	BDL (DL- 0.001)	BDL (DL- 0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
29	Selenium (as Se)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
30	Total Chromium (as Cr)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
31	Zinc (as Zn)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
32	Polynuclear aromatic hydrocarbon (PAH)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
33	Mineral Oil	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
II	**Pesticide Residues Organochlorine**					
i	Alpha-HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ii	Beta HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iv	Delta- HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
v	Alachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vi	Aldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vii	Dieldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
viii	Butachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ix	p,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
x	o,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xi	p,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xii	o,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiii	o,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiv	p,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xv	Monocrotophos	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvi	Atrazine	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvii	Parathion Methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xviii	Paraoxon methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xix	Malathion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xx	Malaoxon	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xxi	Ethion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
March 2024

	Parameter	Guali Village	Kalamang Village	Sagasahi Village	Gandalpada Village	Sunindpur Village
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Absent	Absent	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	Total Alkalinity (as $CaCO_3$)	153.64	172.64	176.94	164.29	147.39
3	Anionic surface active agents (as MBAS)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
4	Colour	1	1	1	1	1
5	Cyanide (as CN)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)	BDL (DL – 0.005)
6	Chloride (as Cl)	32.58	32.58	23.58	32.57	28.16
7	Calcium (as Ca)	48.72	52.46	51.39	51.93	52.64
8	Free residual chlorine	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
9	Fluoride (as F)	0.21	0.24	0.27	0.42	BDL (DL – 0.1)
10	Magnesium (as Mg)	12.58	9.76	11.64	13.58	13.91
11	Nitrate (as NO_3)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)	BDL(DL-2)
12	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
13	pH	6.92 at 25°C	7.21 at 25°C	6.87 at 25°C	7.91 at 25°C	7.21 at 25°C
14	Phenolic compounds (as C6H5OH)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)	BDL (DL – 0.001)
15	Sulphate (as SO_4)	13.81	18.43	17.32	23.57	16.52
16	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	461	439	482	472	467
18	Turbidity	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)	BDL (DL – 0.1)
19	Total hardness (as $CaCO_3$)	173.46	171.23	176.28	185.60	188.73
II	**Chemical Testing 2. Residues in Water**					
20	Arsenic (as As)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
21	Aluminium (as Al)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
22	Boron (as B)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
23	Copper (as Cu)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
24	Cadmium (as Cd)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)
25	Iron (as Fe)	0.27	0.31	0.31	0.31	0.27
26	Lead (as Pb)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)	BDL(DL- 0.001)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

GROUND WATER QUALITY REPORT (OCTOBER 2023 TO MARCH 2024)
KALAMANG WEST IRON MINE
March 2024

	Parameter	Ganua Village (Mr. Keshar Patra)	Guruda Village (Nr. Club)	Guruda Village	Khondbond Village (Mr. Mothua Munda)	OMC Colony
27	Manganese (as Mn)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)	BDL(DL-0.0005)
28	Mercury (as Hg)	BDL (DL- 0.001)	BDL (DL- 0.001)	BDL(DL-0.001)	BDL(DL-0.001)	BDL(DL-0.001)
29	Selenium (as Se)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
30	Total Chromium (as Cr)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)	BDL (DL - 0.1)
31	Zinc (as Zn)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
32	Polynuclear aromatic hydrocarbon (PAH)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)	BDL(DL-0.03)
33	Mineral Oil	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)	BDL (DL - 0.01)
II	**Pesticide Residues Organochlorine**					
i	Alpha-HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ii	Beta HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
iv	Delta- HCH	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
v	Alachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vi	Aldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
vii	Dieldrin	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
viii	Butachlor	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
ix	p,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
x	o,p'-DDE	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xi	p,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xii	o,p'-DDD	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiii	o,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xiv	p,p'- DDT	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xv	Monocrotophos	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvi	Atrazine	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xvii	Parathion Methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xviii	Paraoxon methyl	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xix	Malathion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xx	Malaoxon	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)
xxi	Ethion	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)	BDL (DL - 0.03)

BDL- Below detection limit DL-Indicates detection limit of instrument /method shall be considered as 'absent'

Annexure-8(d)

AMBIENT NOISE MONITORING REPORT						
Kalamang West Iron Mine of M/s Tata Steel Limited						
Period: October-23 to March-24						
Monitoring Locations	**Average Leq Results of Noise Level in dB (A)**					
	Oct 23	**Nov 23**	**Dec 23**	**Jan 24**	**Feb 24**	**Mar 24**
Mines Lease Area-I	68.2	64.9	68.2	67.3	68.1	67.2
Mines Lease Area-II	71.6	72.1	71.6	71.8	72.6	71.3
Guali Village	47.3	51.6	48.1	51.3	52.7	53.6
Kalamang Village	53.8	53.9	54.2	48.1	54.1	54.7
Sagasahi Village	49.2	52.7	47.6	51.9	48.3	47.2
Gandalpada Village	51.6	49.1	51.9	52.7	51.6	51.6
Sunindpur Village	52.1	48.6	52.8	49.3	47.9	48.3
NORMS	(6.00 AM - 9.00 PM) - Leq 75 dB(A) (9.00PM- 6.00 AM) - Leq 70 dB(A)					

N.R. St. No. 1339
Date 31-3-23

भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

INDIA NON JUDICIAL

ଓଡ଼ିଶା ओड़िशा ODISHA

N 094316

Before the Notary Public Barbil, Dist-Keonjhar, Pdisha.

AFFIDAVIT

I, Atul Kumar Bhatnagar, son of S.S Bhatnagar, aged53 years , resident of Bungalow no- 28, Top Camp, PO: Noamundi- 833217, Dist: Singbum (West), Jharkhandpresently holding the post of General Manager (OM&Q), Tata Steel Limited is authorized signatory on behalf of M/s Tata Steel Limited, KalamangWest (Northern part) Iron Ore Block for filing application/ affidavit in connection with Environment Clearance, Consent to Establish, Consent to Operate, Hazardous Waste Authorization, Bio Medical Waste Authorization,do hereby solemnly affirm and undertake the following:

1. That, Environment Clearance is obtained for Kalamang West (Northern Part) Iron Ore Block from State Environment Impact AssessmentAuthority(SEIAA), Orissavide SEIAA File No. 55807/89-MINB1/06-2022 dated 18.10.2022.

2. That, production is not started and as per EC dated 18.10.2022we will ensure De-silting of agricultural lands in buffer zone and beyond including nearby Nalas/rivers perennially periodically and perpetually caused due to wash up of minerals/OB/dumps shall be done as per SOP submitted.

That I, Atul Kumar Bhatnagar(Deponent) hereby read the above facts and submission and have understood the same and signing the undertaking on 31st day of March2023.

DEPONENT
General Manager
Ore Mines & Quarries
TATA STEEL

VERIFICATION

I,Atul Kumar Bhatnagarthe deponent do verify that the contents of this Affidavit are true to the best of my knowledge and belief

Verified on this 31st day of March 2023 at Barbil.

DEPONENT
General Manager
Ore Mines & Quarries
TATA STEEL

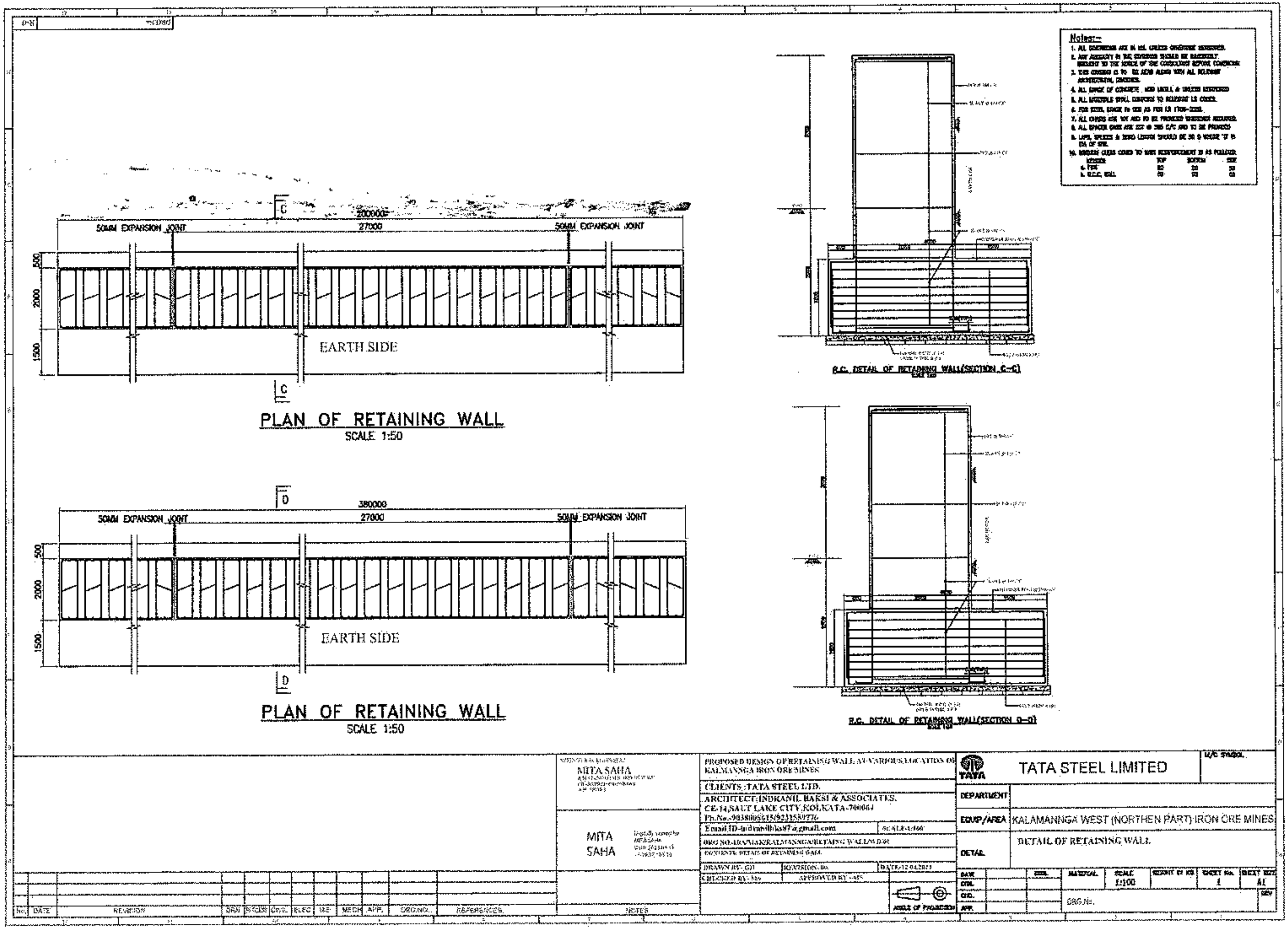
31-3-23.

Anoja Manjari Mishra
ADVOCATE & NOTARY
Regd. No. ON/37/2012
BARBIL Dist Keonjhar (ODISHA)

1180 27-3-23
110 All
TATA Steel Ltd, A.K. Bhatnagar.
Noamundi -(JH)

General Manager
Ore Mines & Quarries
TATA STEEL

Annexure-10



PLAN OF RETAINING WALL
SCALE 1:50
50MM EXPANSION JOINT
27000
EARTH SIDE
500
2000
1500
380000
R.C. DETAIL OF RETAINING WALL(SECTION C-C)
R.C. DETAIL OF RETAINING WALL(SECTION D-D)
Notes:-
PROPOSED DESIGN OF RETAINING WALL AT VARIOUS LOCATION OF KALAMANNGA IRON ORE MINES
CLIENTS : TATA STEEL LTD.
ARCHITECT:INDRANIL BAKSI & ASSOCIATES.
CE-14,SALT LAKE CITY,KOLKATA-700064
MITA SAHA
TATA STEEL LIMITED
DEPARTMENT
EQUP/AREA
KALAMANNGA WEST (NORTHEN PART) IRON ORE MINES
DETAIL
DETAIL OF RETAINING WALL
SCALE
1:100
SHEET No.
1
A1
DRG.No.
ANGLE OF PROJECTION
NOTES
REFERENCES
REVISION
DATE

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE)
& CHIEF WILDLIFE WARDEN, ODISHA
Government of Odisha, Forest, Environment & Climate Change Department
PRAKRUTI BHAWAN, PLOT NO.1459, SAHEED NAGAR, BHUBANESWAR- 751007
Phone: 0674-2602250, Website: www.wildlife.odisha.gov.in, Email: odishawildlife@gmail.com

No. 11356 / CWLW-FDWC-FD-0170-2021
Dated, Bhubaneswar the 30 Oct, 2023

To

The Chief (Kalmong & Gandhalpada Project)
M/s Tata Steel BSL Ltd. Mines Division
Joda, Keonjhar

Sub: Approval of Site Specific Wildlife Conservation Plan in respect of Kalmang West (Northern Part) Iron Ore Mines of M/S Tata Steel Ltd. under Bonai & Keonjhar Forest Division in Sundargarh & Keonjhar District

Sir,

I am directed to convey the approval of PCCF (WL) & CWLW, Odisha for the Site Specific Wildlife Conservation Plan at financial outlay of ₹834.168 lakh (Rupees eight crore thirty-four lakh sixteen thousand eight hundred) only as per the details of activities mentioned in Chapter-IV & VI of the Plan in compliance to the condition stipulated in the Environmental Clearance granted by MoEF&CC vide Letter dtd. 18.10.2022.

(i)	In project impact area in Bonai Division:	₹607.200 lakh
(ii	In project impact area in Keonjhar Division:	₹226.968 lakh
	Total:	₹834.168 lakh

A sum of ₹834.168 lakh (Rupees eight crore thirty-four lakh sixteen thousand eight hundred) only shall be deposited in State CAMPA fund only through e-portal (https://parivesh.nic.in) for implementation of various activities within the project impact area by the Forest Department through concerned DFOs.

2. Activities in the project area as per Chapter-IV of the Plan will be executed by the project proponent under the guidance of DFO, Bonai/ Keonjhar Forest Division, as the case may be.

3. The Plan period is five years and will be revisited by concerned DFOs at least one year before expiry of its implementation. The User Agency will bear the cost of such Plan on its approval. Further, the User Agency will bear additional cost, if any, towards enhancement of wage rate and escalation of price of materials at the time of implementation of this Plan. In case of any deviation, it will be dealt as per law for violations of Forest (Conservation) Act 1980, Environment (Protection) Act 1986 and Wildlife (Protection) Act 1972.

Yours faithfully

Encl: Copy of approved SSWLCP

30/10/2023
Conservator of Forests (ET)

P.T.O.

CWLW-FDWC-FD-0170-2021/6/2023

Memo. No. 11357 /dt. 30/10/2023

Copy forwarded for information and necessary action to the: -

1. OSD-cum-Special Secretary to Government of Odisha, FE&CC Department, Bhubaneswar with reference to that Deptt. Memo No.FE-DIV-FLD-0154-2021-20931/FE&CC dt 30.11.2021
2. PCCF (FD & NO, FC Act), O/o PCCF & HoFF, Odisha, Bhubaneswar with reference to FE&CC Deptt. Memo No.20931/FE&CC dt 30.11.2021
3. Regional Chief Conservator of Forests, Rourkela Circle with reference to his office Memo. No.3270 dt. 29.09.2023
4. Divisional Forest Officer, Bonai Division alongwith copy of the approved SSWLCP with reference to Memo. No.3271 dt 29.09.2023 of RCCF, Rourkela Circle
5. Divisional Forest Officer, Keonjhar Division alongwith copy of the approved SSWLCP with reference to Memo. No.3272 dt 29.09.2023 of RCCF, Rourkela Circle

30/10/2023

Conservator of Forests (ET)

UNDERTAKING

Ref. No.: MD/ENV/578/130/2023

Dated: 11.04.2023

TO WHOM IT MAY CONCERN

With reference to Environmental Clearance obtained for Kalamang West (Northern Part) Iron Ore Block from State Environment Impact Assessment Authority (SEIAA), Orissa vide SEIAA File No. 55807/89-MINB1/06-2022 dated 18.10.2022 (EC Identification no. EC22B001OR117596) stipulated standard condition no. B. VIII. (i), we undertake that we are committed for periodical occupational health check-up of the employee and the local people through an occupational health expert as per the detailed action plan.

Chief (Kalamang & Gandhalpada Project)

Tata Steel Limited

Chief (Kalamang &
Gandhalpada Project)
Tata Steel Limited

TATA STEEL LIMITED
Mines Division Joda Keonjhar Odisha 758 034 India
Tel 91 7440037036
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

Annexure-13

Expenditure Related to PH Commitments

Sr. No.	Sector	Description	Budget Committed (In Lakhs)	Actual Expenditure till Mar'24 (In Lakhs)
1	**Skill Development**	Development of skill development centre	20	10.63
2	**Education**	Provision of Smart Class facility	24	DMF Fund
3		School & Infrastructure upgradation (Nest-In structure) at Kalamang High school, Nuagaon UP School & Gandhalpada UP School	102	59.57
4		Construction of boundary wall at schools (100 RM each)	18	
5		Provision of drinking water facility in schools (Including DBW & OHT pipeline)	24	Included in Sr. No.13
6		Provision of coaching facilities for students	25	21.98
7		Provision of boarding/ accommodation facilities for teachers	50	
8		Provision of bus facility	70	24
9	**Tree plantation**	Development of fruit-bearing trees plot	105	3
10	**Agriculture**	Construction of ponds/ Repair of canals	40	48.84
11		Provision of lift-irrigation project	50	33.68
12		Development of spring projects	10	
13	**Drinking Water**	Provision of solar-powered drinking water project (including DBW & OHT pipeline)	110	268.60
14	**Infrastructure and welfare**	Provision of Solar lighting & illumination facility	30	96.11
15		Construction of Playground (Including boundary wall, stage, gate etc.)	20	98.98
16		Club house for Village Committee (Nest-In structure)	40	
17		Beautification of Temple/ Mandap	40	
18	**Swachh Bharat**	Community Toilet & dustbin distribution (Nest- In structure)	60	
19	**Health care**	Provision of Ambulance facility	30	63.53
20		Construction of feeder hospital	100	Land to be Identified
21		Provision of ultra-sound facility	25	27
		Total	**993**	**755.92**

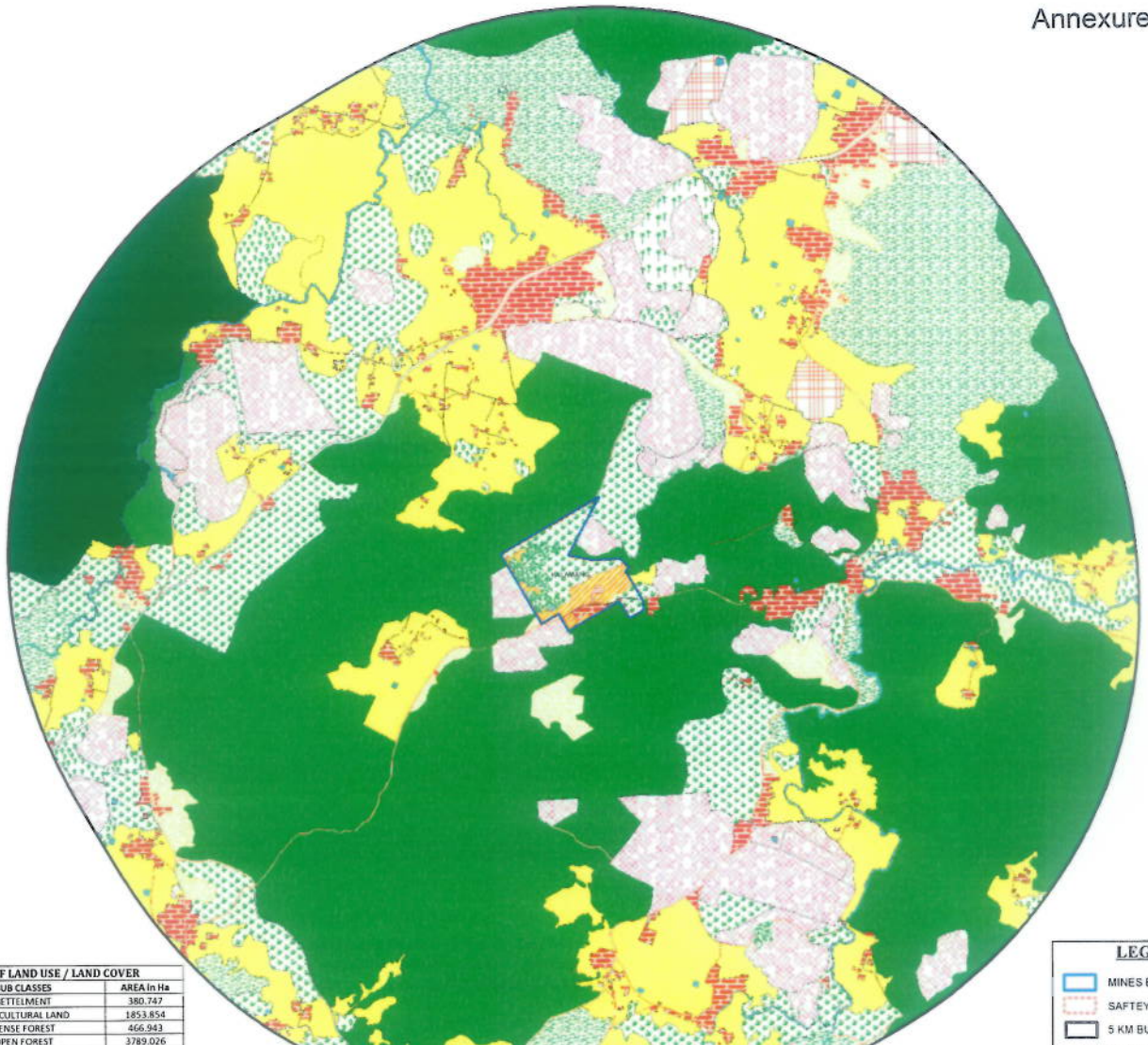
MAP SHOWING LAND USE /LAND COVER AREA OF KALAMANG WEST IRON ORE MINE OF M/s. TATA STEEL LIMITED

SCALE = 1:25,000

Kilometers

0 0.5 1 2 3

Annexure-14



AREA CLASSIFICATION OF LAND USE / LAND COVER		
MAJOR CLASSES	SUB CLASSES	AREA in Ha
BIULT UP LAND	SETTELMENT	380.747
AGRICULTURAL LAND	AGRICULTURAL LAND	1853.854
FOREST & VEGETATION	DENSE FOREST	466.943
	OPEN FOREST	3789.026
	SCRUB FOREST	853.754
	TREE COVER AREA	233.872
	DEGRADED FOREST	3.079
	PLANTATION AREA	51.903
WASTELAND	LAND WITH SCRUB	891.080
	LAND WITHOUT SCRUB	191.341
MINES & INDUSTRY	QUARRY	0.000
	BACKFILLING AREA	0.000
	STACKYARD	0.000
	DUMP	0.000
	BARREN ROCKY	23.888
	ABANDONED CRUSHER SITE	1.055
	HAUL ROAD	0.714
	DEGRADED FOREST	18.472
	INFRASTRUTRE,INDUSTRIAL AREA,ETC	44.884
	7.5 METER SAFETY ZONE ALONG WITH MINES BOUNDARY	3.863
WATERBODY	WATERBODY	68.421
OTHERS	ROAD	112.811
	OTHER MINING	1067.567
	CRUSHER	0.152
	PLANT	76.113
GRAND TOTAL		10133.538

LEGEND

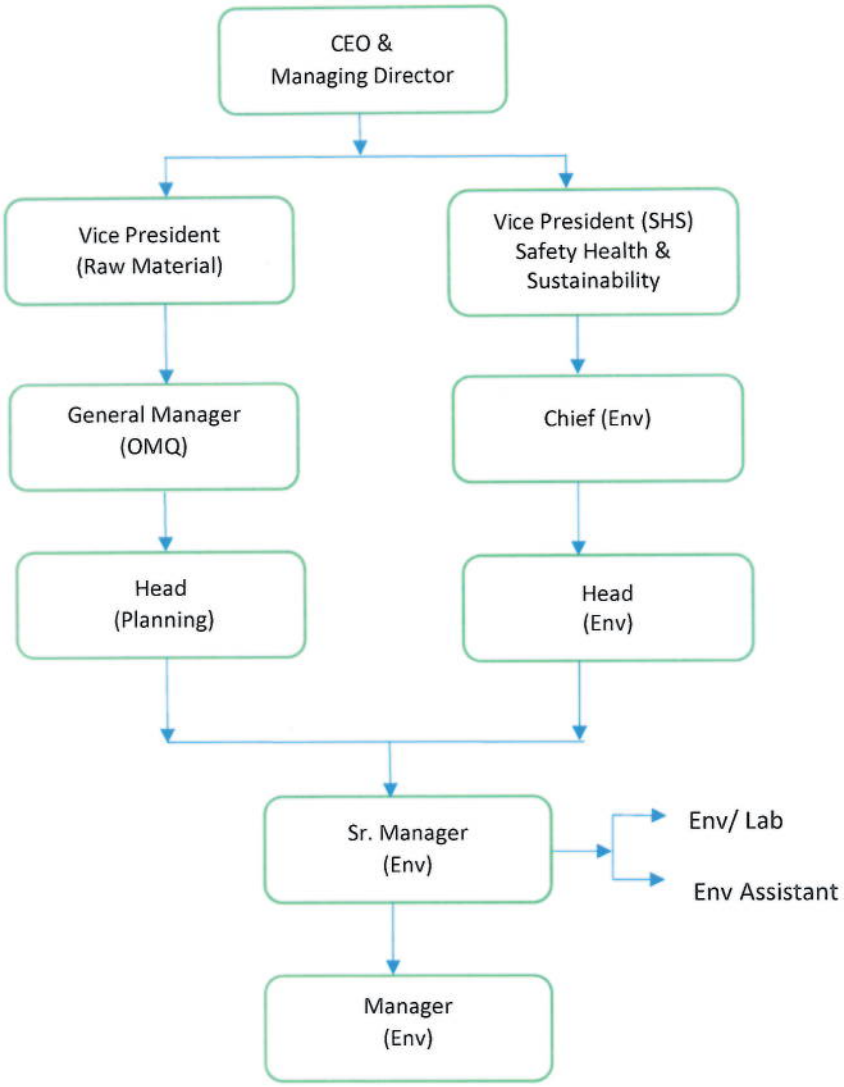
- MINES BOUNDARY
- SAFTEY ZONE (7.5 MTR)
- 5 KM BUFFER BOUNDARY

LAND USE TYPE

- AGRICULTURE LAND
- DENSE FOREST
- OPEN FOREST
- SCRUB FOREST
- TREE COVER AREA
- LAND WITH SCRUB
- LAND WITHOUT SCRUB
- SETTLEMENT
- PLANT
- KALAMANG MINES AREA
- OTHER MINING
- ABANDONED CRUSHER SITE
- HAUL ROAD
- ROAD
- WATER BODY

SOURCE:- CARTOSAT 3 MX 12968 52 9
CARTOSAT 3 MX 12968 51 9
DATE OF PASS:- 2.06.2022

Environment Management Organization Structure- Kalamang West Iron Ore Block



Your (Environment Clearance) application has been Submitted with following details	
Proposal No	SIA/OR/MIN/55807/2020
Compliance ID	28435972
Compliance Number(For Tracking)	EC/M/COMPLIANCE/28435972/2024
Reporting Year	2024
Reporting Period	01 Jun(01 Oct - 31 Mar)
Submission Date	28-05-2024
IRO Name	ARTATRANA MISHRA
IRO Email	jhk109@ifs.nic.in
State	ODISHA
IRO Office Address	Integrated Regional Offices, Bhubaneswar
Note:- SMS and E-Mail has been sent to ARTATRANA MISHRA, ODISHA with Notification to Project Proponent.	