सेल SAIL

स्टील अथॉरिटी ऑफ़ इंडिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
कोलियरीज डिवीज़न, चासनाला
COLLIERIES DIVISION, CHASNALLA

Ref: Mgr./Tasra/EC (Comp-Mine)/23/ 129 (B)

Date: 28.04.2023.

To,
The Additional Director(s),
EI Division, MOEF & CC
Paryavaran Bhawan, CGO Complex,
Lodhi Road, New Delhi – 110003

Sub: Status of Compliance to the Condition stipulated in the Environmental Clearance granted by MoEF for Tasra Coal Mining Project (4 MTPA), BSL_-Collierciies, SAIL (A Central Govt. of India) for the period OCT' 2022 to March' 2023.

Ref: EC granted vide Ref. no. J-11015/122/2007-IA-II(M) dated 13th October, 2009.

Dear Sir,

Please find enclosed herewith the updated six monthly compliance report for the period ending 31st March 2023 with respect to the condition stipulated in the Environment Clearance granted by MoEF & CC, New Delhi vide letter no. J-11015/122/2007-IA-II (M) dated 13th October, 2009 for Tasra Coal Mine Project of M/s Steel Authority of India Limited for kind perusal.

Hard copy of the report is enclosed.

Thanking you,

Yours faithfully

28/04/23

Asstt. General Manager (M) & Colliery Manager
Tasra OCP, BSL- Collieries.

Kr. Upendra Singh
Manager, Tasra Colliery
SAIL-Collieries Division

Encl: As above

Copy to:

1. The Additional Director(s),
   MOEF&CC (Govt. of India),
   Integrated Regional office
   2nd Floor, Headquater- Jharkhand State Housing Board,
   Harmu Chock , Ranchi Ranchi-834002
2. The member Secretary
   Central Pollution Control Board,
   Parivesh Bhawan, CBD-Cum Office complex,
   East Arjun Nagar, Delhi – 110032
3. The Member Secretary,
   JSPCB, Township Administration Building,
   Hec Complex, Dhurwa, Ranchi 834004.
4. The Regional Officer,
   Regional Office, JSPCB, Dhanbad

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Status of Compliance to the Condition stipulated in the Environmental Clearance granted by MoEF for Tasra Coal Mining Project (4 MTPA), BSL -Collieries, SAIL (Central Govt. of India) for the period OCT' 2022 to March' 2023.

(EC granted vide Ref. no. J-11015/122/2007-IA-II(M) dated 13th October, 2009)

(A) Specific Conditions:-

Cond. No.	Conditions Imposed	Compliance Status
(i)	The Environmental Clearance is restricted to opencast operations only. A separate application shall be submitted for environmental clearance for Underground Mining Project proposed below 260m below ground level.	Tasra Coal Mining Project is planned for opencast mining upto 260m below ground level. The life of the mine is 28 years including 2 years of construction i.e. development period. Reserves below 260m depth will be extracted by underground mining method for which a separate application will be submitted for grant of Environmental Clearance before underground mining operations are undertaken. Presently Interim Mining Operation on small scale has been resumed at Tasra opencast project since April'2021. **(Copy of granted EC is enclosed as Annexure-I).**
(ii)	An application for environmental clearance shall be made within 3 months for the establishment of Coal Washery of 3.5 MTPA Capacity proposed within the ML area.	Complied. Environmental Clearance for Tasra Pit Head Coking Coal Washery for 3.5 MTPA has been obtained and granted/obtained vide letter no. J-11015/365/2009-IA.II (M) pt dated 30.03.2017. **(Copy of granted EC is enclosed as Annexure-II)**
(iii)	Mining shall be carried out maintaining a minimum distance of 100m between the river Damodar and Quarry edge along northern boundary. The embankment to be constructed along the river Damodar adjoining quarry shall be based on peak flow and shall be at least 3m above HFL. The slope of the embankment shall be at least 2:1 towards the ML, compacted and stone pitching down towards the river and shall be stabilized with plantation. Material such as OB shall be tested for strength before using for construction of embankment.	Noted for compliance. Tasra Coal Mining Project has been planned maintaining a minimum distance of 100m between river Damodar and the Quarry edge. Presently current mine working is being done more than 100 m from Damodar river. Embankment will be constructed on northern bank of River Damaodar, adjoining to the quarry as per the conditions specified in the Environmental Clearance granted by MoEF. Technical specification for construction of embankment as stipulated in EC condition shall be strictly adhered to when the embankment construction is taken up. As per the approved Mining Plan, a minimum barrier of 100 m (including space for embankment) has been considered between the mine boundary and Damodar River.

		between the mine boundary and Damodar River.
(iv)	The plan for diversion and realignment of the Domohani Jore and Cilatu Jore and modification of the natural surface drainage and design of the diversion canal shall be following the natural topography of the region to be done in consultation and approval of the concerned State Flood and Irrigation Department, dimension and depth of the nala shall be finalized based on the peak flow of the water.	As per the mining schedule of Tasra OCP, the diversion and realignment of Domohani Jore and Cilatu Jore is planned beyond 10th Year commencement of the project operations. All diversion of jores will be carried out in consultation and approval of the concerned authorities. Design of diversion canal will be finalized based on the peak flow of the water.
(v)	Top soil shall be stacked properly with proper slope at earmarked site(s) and shall not be kept active and shall be used within a year of generation for reclamation and development of green belt.	Mining operation in Tasra OCP started in a very small patch from old quarry, previously worked by BCCL. Top soil is being collected since opening of mine and stacked in a separate stock pile near OB dump and shall be used for reclamation purpose and development of green belt. Top soil shall be also to be utilized for new plantation activities in the project area. **(Photographs are enclosed)**
(vi)	OB shall be stacked at earmarked external dump site within ML area of maximum height of 90 m of 3 benches of 30m each. A garland drain of adequate capacity, and toe wall along the OB dump shall be created to arrest the silt flow from the dumps. In addition to the garland drain, a separate 4-6m channel to serve as storm water drain shall also be created all along the mine based on peak data. Silt arrestor shall be constructed for both garland drain and storm water drain and the drain shall be regularly de-silted. Toe wall shall be constructed at the base of the dump shall be strengthened at critical patches with stones and compacted. Plantation using native species shall be developed between the dumps and River Damodar. For reclamation of dumps and quarry with plantation, no chemical fertilizer shall be used. The ultimate slope of the dump shall not exceed 28°. Reclamation of the OB Dumps of an area of 168.47 Ha with vegetation shall be completed by 10th Year. Monitoring and management of the reclaimed dump site shall continue until the vegetation becomes self-sustaining compliance status shall be submitted to MoEF and its Regional Office located at Bhubneshwar on yearly basis.	As per approved mining plan and EIA/EMP submitted to MoEF & CC, OB is being dumped at earmarked location within mining leased (ML) area. Interim Mining Operation on small scale has been resumed at Tasra OCP since April'2021. Presently the OB is dumped in old abandoned mine previously worked by M/S BCCL. Now level of OB dump is maintained ground level as such there is no surface run off. **(Photographs are enclosed)** However, The ultimate slope of the dump has been not exceeding 28°. Reclamation of the OB Dumps is under progress. In due course Toe wall shall be constructed around the OB dump to arrest the silt flow once height of OB dump rises above ground level, Garland drain will also be constructed all around the dump to arrest surface runoff of rain water during monsoon and to stabilize the inactive slope of OB Dump plantation will be carried out. Monitoring and management of the reclaimed dump site is being done. Compliance status will be submitted to MoEF and its regional office located at Ranchi as directed.

(vii)	Catch drain and siltation pond of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilized for watering the mining area, road, greenbelt development etc. The drains shall be regularly de-silted and maintained properly. Garland drains (size, gradient and length) and sump capacity shall be designed keeping safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mining site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.	Presently the OB is dumped in old abandoned mine previously worked by M/S BCCL. Now level of OB dump is maintained ground level as such there is no surface run off. **Photographs are enclosed**)Around some portions of the OB dump has been created that acted as siltation pond **Photographs are enclosed**)As the mining operation in Tasra OCP started from a very small patch, catch drains, garland drains, siltation pond, sump etc will be constructed in due course with the expansion of project area. However, at deep most area of mine i.e. water is being collected in mine sump. The Water have been diverted to the sedimentation dam/siltation pond to arrest the suspended solids through garland drains from around the mine. The water so collected will be utilized for water spraying in the mining area, roads for dust suppression, green belt development etc. The drains will be regularly de-silted and maintained properly. Garland drains and sump capacity will be designed keeping safety margins over and above the peak sudden rainfall and maximum discharge in the area adjoining the mining site. **(Photographs are enclosed)**
(viii)	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and situation shall be based on rainfall data.	Noted for compliance. While construction of the retaining wall, all technical parameters viz. peak rainfall of the area, stability of the wall etc shall be considered. Retaining wall along toe of OB dump with adequate dimension (1.5 meter x 2.0 meter) is shall be constructed. Presently the OB is dumped in old abandoned mine previously worked by M/S BCCL. Now level of OB dump is maintained ground level.
(ix)	The approach road shall be blacked topped. A three tire avenue plantation shall be developed along the main approach roads and haul roads. Entire mine transportation shall be by rail mode only. Mineral transportation from the mine to the railway siding shall be by closed belt conveyor only. The railway siding shall be provided with Silo rapid loading system.	As the mine is in initial development phases, temporary approach road is being maintained. Approach roads and haul roads are being maintained by mobile water sprinkling to ensure no dust generation, propagation take place. **(Photographs are enclosed)** Once the mine is fully developed, permanent approach road of requisite design shall be maintained. Subsequently three tire avenue plantation will be also developed along the main roads and haul roads. ROM coal will be transported to CHP end through haul road along southern pit limit and the crushed coal from CHP will be transported to the proposed Washery by closed belt conveyor. Further washed coal from the Washery to the Steel Plants will be transported by rail. The railway siding shall be provided with Silo rapid loading system.
(x)	Drills shall be wet operated only.	Complied. Wet drilling arrangement is being made for drilling operation.
(xi)	Controlled blasting shall be practiced with the use of delay detonators. The mitigate measures for control of ground vibration and to arrest the fly rocks and boulders shall be implemented.	Complied. Controlled blasting is being practiced as per DGMS norms to keep ground vibration under control and to prevent any flying fragment. Electronic detonator is being used in blasting operation. Blasting practice per round: Within the permissible limit

		Ave. Charge per hole= 6.48 to 8.33 kg Max. Charge per Hole= 8.33 Kg. P.F= 2.46 meter cube per Kg. PPV (mm/s) = 1.32(at a distance of 100 meter from blasting patch).
(xii)	Water sprinkling system shall be provided to check fugitive emissions from crushing operation, conveyor system, haulage roads, transfer points etc. Hopper of the coal crushing units and Washery unit shall be fitted with high efficiency bag filters and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operation, transfer point at railway siding.	There is regular Water sprinkling with the help of 2 nos. of mobile water tankers of 16 KL each to check fugitive emission from operation, approach roads, haulage roads, transfer points etc. Ensured tarpaulene covering over coal transportation trucks. **(Photographs are enclosed).** Hopper of the Coal crushing units and washery unit will be fitted with high efficiency dust extraction system with bag filters and mist spray. Water sprinkling system will be installed and operated effectively at all times of operation to check fugitive emission. **(Photographs are enclosed)**
(xiii)	No ground water (bore well) shall be used for mining operations. Additional water if any required for the project shall be used from recycled water or from mine discharge water or rain water collected in rain water harvesting pits within the project area	No ground water (bore well) is being used for mining operations. Required water for dust suppression is being met from sump of existing mine pit. Collected Rainwater from mine sump has been discharged through pump and passed to near pond of village for the purpose of bathing and etc.
(xiv)	Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and construction of new Piezometers. The monitoring of quantity shall be done four times a year in pre monsoon (May), Monsoon (August), post monsoon (November) and winter (January)seasons and for the quality in may Data thus collected shall be located to MoEF an d to the Central Pollution Control Board quarterly within one month of Monitoring. Rain water structures shall be erected in the core and buffer zone in case monitoring indicates a decline in water table.	Noted for compliance. At present our mining activity is limited to old abandoned quarry previously worked by BCCL. As such there is no depletion of ground water resources.
(xv)	The project authorities shall meet water requirement of nearby villages in case of village well goes dry due to dewatering of mine.	SAIL has initiated efforts to meet the water requirements of nearby villages and this is being complied regularly. 1.Drinking water is being supplied by covered water tanker to project affected villages. 2. Repaired of 15 no of hand pumps and 03 no of submersible pumps to ensure provision of drinking water in and around Tasra project affected villages. All the pumps have been made operational. **Refer Annexure – III &IV.**
(xvi)	Sewage treatment plant of adequate capacity shall be installed in the colony. ETP shall also be provided for workshop and CHP wastewater. Treated wastewater meeting prescribed norms only shall be recycled for mining operations to the extent possible and permitted to be discharged to	Noted for compliance. Presently construction of R&R colony has not been taken up due to pending of appointment of MDO. Construction of R&R colony is under the scope of work of MDO. STP will adequate capacity shall be taken up once construction of R&R is taken up. As mining is carried out in very small scale only effluent

<table>
<tr><td></td><td>the natural water courses only if it meets the prescribed standards.</td><td>produced is mine water which is being used for water sprinkling and plantation etc.</td></tr>
<tr><td>(xvii)</td><td>Total area that shall be brought under afforestation at the time of mine closure shall not be less than 444.49 Ha. which includes reclaimed topsoil dump area external OB dump (168.47 ha.), backfilled area (276.02 ha.) along Mine Lease boundary, embankment, undisturbed area, along roads and infrastructure, green belt and in township outside the lease by planning native species in consultation with the local DFO/ Agriculture Dept. The density of the tree shall be around 2500 plant/Ha.</td><td>Noted for compliance.
After completion of mining operations Mine closure will be done as per approved Mine Closure Plan.
Plantation will be carried out in consultation with local DFO/Agriculture Department.
Some Plantations with consultation of local DFO have been done near the edge of Damodar river within the project boundary of mine.
(Photographs are enclosed)</td></tr>
<tr><td>(xviii)</td><td>A progressive Mine Closure Plan shall be implemented by reclamation of 276.02 ha, of the total quarry area of 371.33ha, which shall be backfilled and afforested by planting native plants species in consultation with the local DFO/ Agriculture Department. The density of the plants shall be around 2500 plants per ha. The balance 95.33 ha of de-coaled quarry area being converted into a water reservoir shall be gently sloped and the upper benches of the reservoir shall be terraced and stabilized with plantation. Only native species shall be used for plantation.</td><td>Noted for compliance.

Complied accordingly as per approved Mine Closure Plan.
Status of Progressive Mine Closure Plan:
Tripartite agreement was made between SAIL , Office Coal Controller Kolkota, and IDBI Bank on 15.09.2017 (Copy of Agreement enclosed as Annexure- V).
As per agreement made on 15.09.2017 we have deposited six installments for mining closure cost :-
<table>
<tr><th>Year</th><th>Deposited in escrow A/C(In Rs)</th></tr>
<tr><td>2017-2018</td><td>263.67 Lakh</td></tr>
<tr><td>2018-2019</td><td>276.85 Lakh</td></tr>
<tr><td>2019-2020</td><td>290.70 Lakh</td></tr>
<tr><td>2020-2021</td><td>305.23 Lakh</td></tr>
<tr><td>2021-2022</td><td>320.49 Lakh</td></tr>
<tr><td>2022-2023</td><td>336.52 Lakh</td></tr>
</table></td></tr>
<tr><td>(xix)</td><td>Beside carrying out regular periodic heath check-up of their workers, 10% of workers identified from workforce engaged in active mining operation shall be subjected to health check-up for occupational diseases and hearing impairment if any, through an agency as NIOH, Ahmadabad within a period of 1 year and the results reported to this ministry and to DGMS.</td><td>A. Issue of PPE to work person engaged in active mine for the year 2022-2023 at Tasra OCP:

Contractual: Shoe(50), Helmet(50), Ear Plug (60)
Departmental: Shoe(20), Helmet(25), Ear Plug (37)

B. IME & PME (Periodic health check-up) of work person engaged in active mine for the year 2022-2023:

IME: Contractual= 13 , Departmental= 00
PME: Contractual= 04 , Departmental = 05

C. Basis Training/Refresher Training of work person engaged in active mine for the year 2022-2023:

Basic Training: Contractual= 13 Departmental= 00

Refresher Training: Contractual= 4 Departmental=00

Workers are provided with PPE device and time to time and training on safety and health aspects were provided. Qualified occupational health Doctor with the provision of Occupational Health Centre is being provided near the mine area.</td></tr>
</table>

(xx)	An amount of Rs. 600.60/- lakhs as capital cost and Rs. 35/- lakhs towards annual recurring cost has been earmarked for environmental protection measures. The details of which shall be uploaded on the company web site every year.	Noted for compliance. An amount of Rs. 600.60/- lakhs as capital cost has been earmarked for environment protection measures. Provision of Rs. 35/- lakhs will be made towards annual recurring cost as directed.
(xxi)	A detailed R&R plan for the life of the project comprising land losers, homestead losers, and landless including tribal to be displaced from the project area shall be prepared and implemented in stipulated time-frame. A master plan for the R&R colony and specific plan for Phase – I consisting of 1642 PAF's shall be prepared within two months from the date of environmental clearance along with time schedule for completion of activities including construction of R&R colony and completion of various works for civic amenities in the colony. R&R shall include setting of an ITI for training & skill development amongst the persons to be employed and those not being absorbed for vocational training for alternate livelihood, particularly stimulation training for various skills, which may be for indirect employment. Annuities for the Vulnerable persons being displaces shall also be included in R&R person affected by double/triple displacement shall be compensated as per norms. R&R for Phase – I shall be completed within a year of grant of environmental clearance. A sub-committee comprising of 3 Experts of Appraisal Committee shall monitor the compliance of implement-tation of Phase-I of R&R and beyond if required.	A detailed R&R plan has been prepared for the life of the project, comprising land losers, homestead losers, and land and homestead losers, and land less including tribal to be displaced from the project area in line with Govt. policies and the same has been approved by the SAIL board. A master plan for the R&R colony and specific plan for the phase –I consisting of 1642 PAF has been prepared and the same will be implemented in the due course after land acquisition. Process is initiated upon appointment of MDO. R&R activities related to the project including establishment of R&R colony shall be taken up as per the R&R Plan approved by concerned Authority. MECON or any other consultant of repute shall be entrusted to prepare fresh DPR and Master plan for construction of R&R colony as per provisions of LARR'Act-2013 under appointment of MDO.
(xxii)	Peripheral village of Parasbania, Chattabad, Orbetta, Kurtand, SindriBasti, Manohartand, Chasnalla basti, Manpur, Jharna, Bogla, and Chandankyari shall be taken for socio economic activity under CSR, for which a sum of Rs. 65/- Crores shall be earmarked for capital cost and Rs. 4/- Crore as revenue cost over the life of the project. The proponent shall continue VDC for monitoring the implementation of CSR. In addition the Sub-Committee of EAC shall also monitored if required.	Noted for compliance. VDC will be constituted as directed.

(xxiii)	The project authority shall carry out a detailed pre-mining socio-economic survey based on the UNDP Human Development Report and quality of life parameters and monitor the socio-economic status once every three years and maintain record thereof and report in their annual report, the socio-economic report of R&R and CSR Activities. The details of which shall be uploaded on the company's web site every year. A post of GM to exclusively look after R&R & CSR shall be created.	Noted for compliance. PDIL i.e. Project Development India Limited, a Central Govt. PSU and by Abhiyan Samiti a Dhanbad based NGO in the year 2008 and 2009 respectively, i.e. prior to start of mining operation. Again Socio economic survey was carried out by M/s MECON in 2017. Further socio-economic survey will be carried out based on the UNDP Human Development Report and quality life parameters to monitor the socio-economic status. Record of CSR activities taken up is being maintained: 1. Coordinated with Sindri Central Sport Association in organizing 19th Junior Jharkhand State Basket Championship at Sindri under CSR scheme . A BSL colliery was cosponsored for this event. 2. Water is supplied for domestic use in and around Tasra mine area by water tanker. 3. Volleyball distributed under CSR scheme distributed to the youths of Project affected area of Tasra OCP to promote sports and build trust and confidence among village youths. 4. Program of stitching and embroidery for villagers under CSR scheme is going on. 5. Blankets distribution under CSR scheme to the poor, disabled and old people of Project affected area of Tasra OCP. 6. Organized eye camp in coordination with Rotary club under CSR scheme at Tasra project area, Gaushala, Sindri. 7. Repaired of 15 no of hand pumps and 03 no of submersible pumps to ensure provision of Drinking water in and around Tasra project affected villages. All the pumps have been made operational. **(Photographs are enclosed)** **CSR Cell at Project Level:** Name: Sri S. S. Singh, Designation: GM (P&A) CSR is appointed for CSR activities for project level & Shri Vidya Bhusan Pandey, DGM (Mining) & convener Apex Committee, CSR w.r.t to CSR matters. Vide Office Order No. CD/P&A/OD-EE/OO/22-23/168 DATED 20.08.2022. Shri Manish Ramlal Bhatia Sr.Manager (Personnel-Legal cell), CSR responsibility for monitoring and Implementation of CSR Activities. Vide Office Order No. CD/P&A/OD-OO/22-23/229 DATED 01.11.2022.
(xxiv)	For monitoring land use pattern and post mining land use, a time series of land use maps based on satellite imagery (1:5000) of the core and buffer zone from the start of the project until end of the mine life shall be prepared once in three year from any one particular season which is consistent in the time series and the report submitted to MoEF and its regional office	Satellite imagery of the core and buffer zone has been done before pre-mining activity i.e. on 2007 and land use map based on the satellite imagery has been prepared and submitted to MoEF. Further land use maps will be prepared. **Refer Annexure - VI**

	at Bhubneshwar.	
(xxv)	A final mine closure plan along with details of Corpus Fund shall be submitted to the MoEF, 5 year in advance of the final mine closure for approval.	A Final Mine Closure Plan along with details of Corpus Fund will be submitted to MoEF, 5 year in advance of the final Mine Closure for approval as directed.

General Conditions:-

Cond. No.	Conditions Imposed	Compliance Status
(i)	No change in technology and scope of work shall be made without prior approval of the Ministry of Environment and Forest	Complied.
(ii)	No change in the calendar plan including quantum of mineral coal and waste being produced shall be made.	Complied. Quantum of mineral coal and waste dumping will be kept within the planned quantities as per approved mining plan.
(iii)	Four ambient quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring SPM, RSPM, So2 and NOx. Locations of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr in SPM and RSPM etc., shall be carried out at-least once in 6 months	SAIL-CD approached CSIR-CIMFR, Dhanbad for environmental parameters monitoring work of Tasra project 2022-23. The project has established two core Zones and two buffer zones. Core Zone – Tasra, Rohrabhandh Buffer Zone- BIT, Sindri, GM Office Tasra Sampling and analysis of PM10, PM2.5, SO2 and NOx have been carried out in the month of Oct. 2022. Concentration of SO2 and NO2 are found within the limit of 80ug/m^3 as per guide line of NAAQS, 2009 in both core and buffer Zone Sampling. Monitoring of Environmental parameters is being carried out by CIMFR, Dhanbad. **Enclosed as Annexure-VII**
(iv)	Data on ambient air quality (SPM, RSPM, So2 and NOx and heavy metals such as Hg, As, Ni, Cr etc.) and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the E (P) Rules, 1986 shall be furnished as part of compliance.	Complied. Monitoring of Environmental parameters is being carried out by CIMFR, Dhanbad. **Enclosed as Annexure-VII**
(v)	Adequate measures shall be taken for control of noise level below 85 dBA in the work environment. Workers engaged in blasting operation, operation of HEMM etc. shall be provided with ear plugs/muffs.	Complied. Monitoring of Environmental parameters is being carried out by CIMFR, Dhanbad. **Enclosed as Annexure-VII** Noise level was being maintained below 85dBA and person engaged in drilling and blasting operation is provided with ear muffs. The noise limit was within prescribed limit when the mine is in operation.
(vi)	Industrial waste water (workshop and waste water from the mine) shall be properly collected treated so as to confirm to the standards including for heavy metals, before discharge prescribed under GSR+22 (E) dated 19 May, 1993 and 31st December, 1993 or as amended from time to time. Oil	Noted for compliance. Effluent treatment Plant with the provision of Oil and Grease Trap with sedimentation pit for treatment of workshop effluent was under construction. However owing to termination of Contract of MDO the construction of the same could not be completed.

	and grease trap shall be installed before discharge of workshop effluents.	Presently mining operation in Tasra OCP is being carried out through external agency and is limited to a very small scale. All mining machineries are engaged by the outsourcing agency i.e. Five (05) numbers of dumpers, two (02) numbers of Shovels, one (01) number Drill Machine and one (01) number Dozer are engaged for excavation. However, Tasra Open Cast Project is planned for Peak rated Capacity of 4 MTPA and is proposed to be developed through Mine Developer Cum Operator (MDO) route. Global Tender for appointment of MDO has been floated by SAIL and is under process. Till small scale mining is continued, a small ETP as proposed will suffice the requirement and construction ETP for oil and grease trap is being done.
(vii)	Vehicular emission shall be kept under control and regularly monitored. Vehicles used for transportation of the mineral shall be covered with tarpaulins and optimally loaded.	Complied.
(viii)	Monitoring of environment quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analyzed through a laboratory recognized under EP Rules, 1986.	Complied. The report duly monitored by an NABL Accredited/ISO9001:2008 and OHSAS 18001:2007 certified lab M/s CIMFR, Dhanabd
(ix)	Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational Health Surveillance Programme of the worker shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if required.	Complied. On resumption of Mining Operation Persons working in dusty areas shall be provided protective respiratory devices and also provided with adequate training and information on safety and health aspects. Occupational Health Surveillance Programme of the worker shall be undertaken periodically to observe any contractions due to exposure of dust and to take corrective measures, if required.
(x)	Separate Environmental Management Cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Separate Environmental Management Department has been set up and headed by DGM (Environment) who reports directly to the Head of the Mine. At Project level Environmental Management Cell:- Sri H. L Gupta, GM(P&D, Environment) Vide Office Order No. CD(K)/P&A/OD-ORG/19-20/67 Dated 28.05.2019. Sri Aditya Kumar Singh, DGM(Environment) Vide Office Order No. CD(K)/P&A/OD-EE/19-20/238 DATED 12.12.2019 In addition to this, SAIL is having a separate Corporate Environment Management Division (EMD) at Kolkata under the control of Executive Director, who facilitates in environmental management of all SAIL units.
(xi)	The fund earmarked for environmental protection measures shall be kept in	Noted for compliance.

	separate account and should not be diverted for other purpose. Year-wise expenditure should be reported to the Ministry and its regional office located at Bhubneshwar.	
(xii)	The project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned, within 7 day of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at website of the Ministry of Environment and Forest at http://www.envfor.nic.in	Complied. Advertisement was issued in two local newspaper widely circulated around the project.
(xiii)	A copy of the clearance letter shall be marked to concerned Panchyat/ Zila Parishad, Municipal Corporation or Urban Local Body and local NGO, if any, from whom suggestion/ representation has been received while processing the proposal. A copy of the clearance letter also to be displayed on the company's website.	Compliance has been done as per the EC condition. A copy of clearance letter has also been displayed on the company's web site.
(xiv)	A copy of clearance letter shall be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Centre and Collector Office/Tehsildar Office for 30 days.	Compliance has been done as per the EC condition.
(xv)	The Clearance letter shall be uploaded on the Company's website. The compliance status of stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in the public domain. The monitoring data of environmental quality parameters (air, water, noise and soil) and critical poll-utants such as SPM, RPM, SO2, NOx (ambient and stack if any) and critical sectorial parameters shall be displayed at the entrance of the project premises and mine office and in corporate office and on the company's website.	Noted for compliance. The Environmental Clearance has been uploaded on the company's website. The compliance status of stipulated EC conditions shall also be uploaded on the company's website and updated at least once in every six months after submission of the report to the concerned Authorities. The environmental monitoring data shall also be displayed at the entrance of the project premises and mines office and in corporate office and on the company's website. **The monitoring data of environmental quality parameters is enclosed as Annexure- VII**
(xvi)	The project proponent shall submit six monthly reports on the status compliance of the environmental clearance conditions (both in hard copy and e-mail) to the respective Regional Office of the MoEF, the respective Zonal Office of CPCB and the SPCB.	Being complied
(xvii)	The Regional Officials of the Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities shall extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite	Full Co-operation will be extended by SAIL to State and Central Govt. Authorities as required.

	data information monitoring report.	
(xviii)	The environmental statement for each financial year ending 31st September Form V is mandate to be submitted by the Project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Act, 1986 as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF by e-mail.	On resumption of Mining Operation at Tasra OCP the Environmental Statement for each financial year shall be submitted to the concerned State Pollution Control Board and shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF by e-mail.

Note:

Mining activities has been suspended at Tasra OCP since 01.04.2018. It may be mentioned that Mining Operation at Tasra Open Cast Project was carried out through Mine Developer & Operator. Land acquisition, Resettlement & Rehabilitation of Project affected People, mining operation and all other activities including Environmental monitoring was under the scope of MDO. M/s Lanco Infratech Limited (LITL) was appointed as MDO for Tasra Open cast Project for the entire life of the mine i.e. 28 years. Owing to insolvency issues, National Company Law Tribunal directed for liquidation of M/s LITL. Subsequently, Contract Agreement with M/s LITL was terminated by SAIL. As such all activities at Tasra OCP was suspended. However SAIL is in the process of floating global tender for Selection of New MDO for development of Tasra Open Cast Project.

However owing to delay in appointment of MDO, interim Mining Operation on small scale has been resumed at Tasra OCP since April'2021.

[FORM –V]

(See rule 14)

Environment Statement for the financial year ending the 31st March 2023 for Tasra opencast Project-SAIL

PART-A

i) Name and address of the owner/occupier of the industry operation or process.
Sri Amrendu Praksh, Director I/C, BSL-Collieries, BSL- Bokaro, SAIL, Bokaro, Jharkhand-

ii) Industry category : Primary: **COAL MINES** (STC Code)
: Secondary: **PRIMARY** (SIC Code)

iii) Production capacity – Units: **OPENCAST(COAL): 4 MTPA**
(In the financial year 2022-23 only 3, 02512 tonne coal has been produced as the mine is still in development stage due to pending Land Acquisition)

Over burden (OB): 1031565.92 Cube meter (Approx)

iv) Year of establishment: **2009.**

v) Date of the last environmental statement submitted: 31st March 2022

PART-B

Water and River Material Consumption

(1) Water consumption m^3/d:

Process	:	No process is involved in excavation of coal.
Cooling	:	Nil
Domestic	:	Nil (Town ship is yet to be developed)

Name of Products	Process water consumption per unit of product output	
	During the previous financial Year	during the current financial Year
	(1)	(2)
(1) **COAL**	**N/A**	**N/A**

ii) Raw Material Consumption

*Name of raw materials	Name of products	Consumption of raw Material per unit of output	
		During the Previous financial year (21-22)	During the current financial year (22-23)
1. H S DIESEL	**COAL**	**0.39 litre/tonne**	**0.42 litre/tonne**
	&		
2. EXPLOSIVES	**OVER BURDEN**	**0.13kg/tonne**	**0.15kg/tonne**

*Industry may use codes if disclosing details of raw material would violate contractual obligations, other wise all industries have to name the raw materials used.

PART-C

Pollution discharged to environment/unit of output (Parameter as specified in the consent issued)

1) Pollutants	Quantity of pollutants discharged (mass /day)	Concentration of pollutants in discharges(mass/volume)	Percentage of variation from prescribed standards with reasons
a) Water b) Air	AMBIENT AIR QUALITY AND WATER ANALYSIS REPORTS ENCLOSED AS ANNEXURE-I		

PART- D

Hazardous Wastes

(As specified under Hazardous Waste Management and Handling Rules, 1989)

Hazardous Wastes	**Total Quantity (Kg)**	
	During the previous Financial Year	During the current Financial Year
a) From Process b) From Pollution control facilities	**NO HAZARDOUS WASTES ARE GENERATED.**	

PART- E

Solid Wastes

	Total Quantity	
	During the previous Financial year (21-22)	during the current financial year (22-23)
a) From process	----------**NOT APPLICABLE**----------	
b) From pollution control facility	----------**NOT APPLICABLE**----------	
c) (1) quantity recycled or re-utilised within the unit (2)Sold (3)Disposed	Total solid waste generated is being dumped in old abandoned pit in the project area, previously worked by BCCL.	

*SOLID WASTES COMPRISES BROKEN OVERLYING ROCKS OF COAL SEAMS i.e. OVER BURDEN.

PART-F

Please specify the characterisation (in terms of composition of quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes:

NO HAZARDOUS WASTES ARE GENERATED.

HOWEVER, SOLID WASTE IN THE FORM OF BROKEN OVERLYING ROCKS OF COAL (i.e. OVER BURDEN) ARE GENERATED FROM OPEN CAST MINES. SOLID WASTES ARE DISPOSED OFF IN THE DE-COALED AREA (ABOUT 90%) AND REMAINING 10% IS DISPOSED OFF IN THE OVER BURDEN DUMP YARDS.

PART-G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production:

1. Water sprinkling is being done in the quarry area, haul roads, dump yards, loading/unloading areas, weigh bridges, office and surrounding locality to suppress the dust and its generation.
2. HEMMs are under regular maintenance for control of noise. Proper and controlled blasting techniques are undertaken to minimise blast induced ground vibration & noise.
3. Transportation is being done in covered trucks only.

PART-II

Additional measures / investment proposal for environmental protection including abatement of pollution, prevention of pollution:

WATER TANKER IS ENGAGED FOR 365 DAYS FOR DAILY SPRINKLING OF WATER ON PUBLIC ROADS AND ADJOINING LOCALITY OF TASRA OPEN CAST PROJECT.

PART-I

Any other particulars for improving the quality of the environment:

WORLD ENVIRONMENT DAY WAS CELEBRATED ON 5TH JUNE 23 FOR SPREADING ENVIRONMENTAL AWARENESS AMONGST THE POPULACE SURROUNDING TASRA OPEN CAST PROJECT.

Annexure- I

सत्यमेव जयते

Ministry of Environment & Forests (MOEF)

No.J-11015/122/2007-IA.II(M)

Paryavaran Bhawan,
C.G.O.Complex,
New Delhi -110510.

ms.coal-menf@nic.in

To

Dated: 13th October 2009

Shri U.P. Singh
Executive Director (Collieries),
M/s Steel Authority of India Ltd.,
Tasra Coal Mining Project,
IISCO Coal Complex,
P.O. Chasnala, Dist. Dhanbad – 828135

Sub: Tasra Coal Mining Project (4 MTPA) of M/s Steel Authority of India Ltd, located in village Tasra, Kandra, Domgarh, Rohrabandh, Het Kandra, Chakchitahi and Chasnalla, in Jharia Coalfields, Dist. Dhanbad, Jharkhand - Environmental Clearance – reg.

Sir,

This has reference to letter No. ED (C)/400 dated 03.02.2007 with application for Terms of Reference (TOR) for Tasra Opencast Coalmine Project of 1 million tonnes per annum (MTPA) for which TOR was granted on 28.03.2007 and your subsequent revised application dated 30.04.2008 for TOR a rated capacity of 4 MTPA without change in project area and letters dated 21.05.2009, 12.07.2009, and 14.09.2009 on the above-mentioned subject. The Ministry of Environment & Forests has considered your revised application. It is noted that the project is for **opening a new ocoal mine – Tasra Opencast Coal mine Project of 4 million tonnes per annum (MTPA) rated capacity** for its five linked Steel Plants. The total project area is 860.59 ha of which 540 ha is lease area. Of the total project area, 423.07 ha is Govt./PSU land and 437.52 ha is private land comprising of agricultural land, barren land and setllements. No forestland is involved. There are no National Parks, Wildlife Sanctuary, Biosphere Reserves found in the 15 km buffer zone. There is no endangered flora/fauna reported in the study area. The drainage is controlled by River Damodar flowing at a distance of 100m from the project boundary. Two Jores (streams) Domohani and Cilatu flow through the core zone and join River Damodar. Ground elevation varies from 126m RL – 149m RL and the HFL of River Damodar is 132 m MSL. It is proposed to modify the natural drainage, which is towards River Damodar, by diversion of the two Jores and realign the two Jores and rejoin River Damodar in the southern boundary of the lease and by construction of an embankment along River Damodar. The project also envisages diversion of Dhanbad-Sindri Road in the later phase of the project. Of the total project area, 371.33 ha is quarry area, 168.47 ha is for external OB dump, 280.79 ha is for infrastructure, periphery and coal washery proposed within the ML, 40 ha is for R&R site and township. The project involves R&R of 7 villages – Tasra (304), Kandra (2088), Domgarh (2140), Rohrabandh (4124), Het Kandra (1584), Chakchitahi (868) and Chasnalla (2712). Phase-I of R&R to be completed within a year consists of 1642 PAFs from the villages of Domgarh (535), Roharbandh (1031), and Tasra (76) to excavate 540 ha of area. A separate R&R colony is being established in the village Parasbania.

Mining will be opencast by mechanised method involving shovel-dumper and involves drilling and blasting. **Rated capacity of the mine is 4 MTPA of prime and medium coking coal.**

Mineral transportation of coal from the proposed washery within the premises of the mine to linked Steel Plant and middling to linked TPP would be by rail. Railway siding would be provided with Rapid Loading System. Ultimate working depth of the mine would be 260m below ground level (bgl). Water table in the study area during pre-monsoon is in a range of 5.65-7.45 m and in a range of 2.98-4.07 during post-monsoon. Peak water requirement is 880 m3/d, which would be met from mine sump water. Of the total water requirement, 600 m3/d is for mining including proposed washery (300 m3/d) and 280 m3/d is for township. An estimated 423.90 Mm3 of OB will be generated over the life of mine (28 years) of which 89.46 Mm3 would be dumped externally in one external OB dump of a max. height of 90m. Backfilling would begin from 6th year onwards and the balance 334.44 Mm3 of OB backfilled into decoaled voids. Life of mine at the rated capacity of 4 MTPA is 28 years. Public Hearing was held on 09.09.2007 for 1 MTPA project and on 18.03.2009 for 4 MTPA project. The Ministry of Coal has approved the Mining Plan for 4 MTPA on 24.06.2009. **Capital cost of the project is Rs. 981.63 crores.**

2. The Ministry of Environment & Forests hereby accords environmental clearance for the above-mentioned **Tasra Opencast Coal mine Project** of **M/s Steel Authority of India Limited of a production capacity of 4 MTPA in a total project area of 860.59 ha** under the provisions of the Environmental Impact Assessment Notification, 2006 and subsequent amendments thereto and under MOEF Circulars there under subject to the compliance of the terms and conditions mentioned below:

A. Specific Conditions

(i) The environmental clearance is restricted to opencast operations only. A separate application shall be submitted for environmental clearance for underground mining project proposed below 260m bgl.

(ii) An application for environmental clearance shall be made within 3 months for the establishment of a coal washery of 3.5 MTPA capacity proposed within the ML area.

(iii) Mining shall be carried out maintaining a minimum distance of 100m between the river Damodar and quarry edge along the northern boundary. The Embankment to be constructed along the River Damodar adjoining the quarry shall be based on peak flow data and shall be at least 3m above the HFL. The slope of the embankment shall at least 2:1 towards the ML, compacted and stone pitching done towards the river and shall be stabilised with plantation. Materials such as OB shall be tested for strength before using for construction of embankment.

(iv) The plan for diversion and realignment of the Domohani Jore and Cilatu Jore and modification of the natural surface drainage and design of the diversion canal shall be following the natural topography of the region to be done in consultation and approval of the concerned State Flood and irrigation Department. Dimension and depth of the nala shall be finalised based on the peak flow of the water.

(v) Topsoil shall be stacked properly with proper slope at earmarked site(s) and shall not be kept active and shall be used within a year of generation for reclamation and development of green belt.

(vi) OB shall be stacked at earmarked external OB dumpsite within ML area of a maximum height of 90m of 3 benches of 0m each. A garland drain of adequate capacity, and toe wall along the OB dumps shall be created to arrest the silt flow form the dumps. In addition to the garland drain, a separate 4-6m channel to serve as storm water drain shall also be created all along the mine based on peak flow data. Silt arrestors shall be constructed for both garland drain and storm water drain and the drains shall be regularly desilted. Toe wall shall be constructed at the base of the dumps. The dumps shall be strengthened at critical patches with stones and compacted. Plantation using native species shall be developed between the dump and River Damodar. For reclamation of dumps and quarry with

plantation, no chemical fertilisers shall be used. The ultimate slope of the dump shall not exceed 28°. Reclamation of the OB dump of an area of 168.47 ha with vegetation shall be completed by 10th year. Monitoring and management of reclaimed dumpsite shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional office located at Bhubaneshwar on a yearly basis.

(vii) Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilised for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly.

Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity shall also provided adequate retention period to allow proper settling of silt material.

(viii) Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.

(ix) The main approach roads shall be black topped. A 3-tier avenue plantation shall be developed along the main approach roads and haul roads. Entire mineral transportation shall be by rail mode only. Mineral transportation from the mine to the Railway siding shall be by closed belt conveyor only. The railway siding shall be provided with Silo Rapid Loading System.

(x) Drills shall be wet operated only.

(xi) Controlled blasting shall be practiced with use of delay detonators. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.

(xii) Water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc. Hoppers of the coal crushing unit and washery unit shall be fitted with high efficiency bag filters and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points and at Railway Siding.

(xiii) No groundwater (bore well) shall be used for mining operations. Additional water if any required for the project shall be used from recycled water or mine discharge water or rainwater collected in rainwater harvesting pits within the project area.

(xiv) Regular monitoring of groundwater level and quality shall be carried out by establishing a network of exiting wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected shall be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring. Rainwater structures shall be erected in the core and buffer zone, in case monitoring indicates a decline in water table.

(xv) The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.

(xvi) Sewage treatment plant of adequate capacity shall be installed in the colony. ETP shall also be provided for workshop and CHP wastewater. Treated wastewater meeting prescribed norms only shall be recycled for mining operations to the extent possible and permitted to be discharged in to the natural water courses only if it meets the prescribed standards.

(xvii) The total area that shall be brought under afforestation at the time of mine closure shall not be less than 444.49 ha which includes reclaimed topsoil soil dump area, external OB dump (168.47 ha), backfilled area (276.02 ha), along ML boundary, embankment and undisturbed area, along roads and infrastructure, green belt, and in township outside the lease by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha.

(xviii) A Progressive Mine Closure Plan shall be implemented by reclamation of 276.02 ha, of the total quarry area of 371.33 ha, which shall be backfilled and afforested by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the plants shall be around 2500 plants per ha. The balance 95.31 ha of decoaled quarry area being converted into a water reservoir shall be gently sloped and the the upper benches of the reservoir shall be terraced and stabilised with plantation. Only native species hall be used for plantation.

(xix) Besides carrying out regular periodic health check up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check up for occupational diseases and hearing impairment, if any, through an agency such as NIOH, Ahmedabad within a period of one year and the results reported to this Ministry and to DGMS.

(xx) An amount of Rs 600.60 lakhs as capital costs and Rs 35 lakhs towards annual recurring costs has been earmarked for environmental protection measures, the details of which shall be uploaded on the company's website every year.

(xxi) A detailed R&R Plan for the life of the project comprising land losers, homestead losers and land and homestead losers, and landless including tribals to be displaced from the project area shall be prepared and implemented in a stipulated time-frame. A Master Plan for the R&R Colony and a specific plan for Phase-I consisting of 1642 PAFs shall be prepared within 2 months from date of environmental clearance along with a time schedule for completion of activities including construction of R&R colony and completion of various works for civic amenities in the colony. R&R shall include setting up of an ITI for training and skill development amongst the persons to be employed and those not being absorbed for vocational training for alternate livelihood, particularly simulation training for various skills, which may be for indirect employment. Annuities for the vulnerable persons being displaced shall also be included in R&R. Persons affected by double/triple displacement shall be compensated as per norms. R&R for Phase-I shall be completed within a year of grant of environmental clearance.

A Sub-Committee comprising of 3 experts of the Expert Appraisal Committee shall monitor the compliance of implementation of Phase-I of the R&R and beyond, if required.

(xxii) Peripheral villages of Parasbani, Chattabad, Orbetta, Kultar, Sindri Basti, Manohar Tand Basti, Chasnalla Basti, Manpur, Jharna, Bogla, and Chandaniyari shall be taken for socio-economic activities under CSR, for which a sum of Rs 65 crores shall be earmarked as capital costs and Rs 4 crores as revenue costs over the life of the project. The proponent shall constitute VDC for monitoring the implementation of CSR. In addition, the sub-committee of EAC shall also monitor CSR, if required.

(xxiii) The project authorities shall carry out a detailed pre-mining socio-economic survey based on the UNDP Human Development Report and Quality of Life parameters and monitor the socio-economic status once every three years and maintain records thereof and report in their Annual Report, the socio-economic impact of R&R and CSR activities, the details of which shall be uploaded on the company's website every year. A post of GM to exclusively look after R&R and CSR shall be created.

(xxiv) For monitoring land use pattern and for post mining land use, a time series of landuse maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone,

from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its Regional office at Bhubaneshwar.

(xxv) A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

B. General Conditions

(i) No change in technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.

(ii) No change in the calendar plan including quantum of mineral coal and waste being produced shall be made.

(iii) Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring SPM, RSPM, SO2 and NOx. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, in SPM and RSPM etc. shall be carried out at least once in six months.

(iv) Data on ambient air quality (SPM, RSPM, SO2 and NOx and heavy metals such as Hg, As, Ni, Cr, etc) and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneshwar and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EP Rules, 1986 shall be furnished as part of the compliance report.

(v) Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.

(vi) Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, and treated so as to conform to the standards including for heavy metals before discharge prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluents.

(vii) Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transportation of the mineral shall be covered with tarpaulins and optimally loaded.

(viii) Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EP Rules, 1986.

(ix) Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.

Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed.

(x) A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.

(xi) The funds earmarked for environmental protection measures shall e kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneshwar.

(xii) The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at http://envfor.nic.in

(xiii) A copy of the environmental clearance letter shall be marked to concerned Panchayat/Zila Parishad, Municipal Corporation or Urban Local Body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on the company's website.

(xiv) A copy of the clearance letter shall be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.

(xv) The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in the public domain. The monitoring data of environmental quality parameters (air, water, noise and soil) and critical pollutants such as SPM, RPM, SO_2 and NO_x (ambient and stack if any) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mines office and in corporate office and on the company's website.

(xvi) The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the MOEF, the respective Zonal offices of CPCB and the SPCB.

(xvii) The Regional Office of this Ministry located at Bhubaneshwar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.

(xviii) The environmental statement for each financial year ending 31st March in Form-V is mandated to be submitted by the project proponent tot the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MOEF by E-mail.

3. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

4. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environment (Protection) Act, 1986.

5. 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. The proponent shall ensure to undertake and provide for the costs incurred

for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.

(Dr.T.Chandini)
Director

Copy to:

1. Secretary, Ministry of Coal, New Delhi.
2. Secretary, Department of Environment & Forests, Government of Jharkand, Secretariat, Ranchi.
3. Chief Conservator of Forests, Regional office (EZ), Ministry of Environment & Forests, A-31, Chandrashekarpur, Bhubaneshwar – 751023.
4. Chairman, Jharkand State Pollution Control Board, T.A. Division Building (Ground Floor), H.E.C., Dhurwa, Ranchi – 834004.
5. Chairman, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi -110032.
6. Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi.
7. District Collector, Dhanbad, Government of Jharkhand.
8. Monitoring File 9. Guard File 10. Record File

ANNEXURE- II

स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
कोलियरीज डिवीजन, चासनाला
धनबाद -828135

संदर्भ : प्रबंधक/तासरा/पर्यावरण स्वीकृति/17/58 दिनांक : 04.04.2017

आम - सूचना

तासरा पीट हेड कोल वाशरी निर्माण हेतू वन एवं पर्यावरण मंत्रालय, भारत सरकार नई -दिल्ली के द्वारा पर्यावरणीय स्वीकृति प्रदान की गई है, जिसकी विस्तृत विवरण झारखण्ड राज्य प्रदुषण नियंत्रण पर्षद एवं वन एवं पर्यावरण मंत्रालय के वेब साइट https://envfor.nic.in पर उपलब्ध है।

विश्वास भाजन, कुमार उपेन्द्र सिंह
प्रबंधक (तासरा खुली खान परियोजना)

हर किसी की जिंदगी से जुड़ा हुआ है सेल

No.J-11015/ 365/2009-IA.II(M) pt.
Government of India
Ministry of Environment, Forest and Climate Change
IA-II (Coal Mining) Division

Indira Paryavaran Bhawan,
Jorbagh Road, N Delhi-3
Dated: 30th March, 2017

To,

Shri N S Prasad
GM I/c (W&T), Steel Authority of India Limited (SAIL)
Office of the Executive Director, Collieries Division,
2nd Floor, 97 Park Street,
Kolkata (West Bengal)

E-mail: edsailcdkol@gmail.com, sailcmg@gmail.com, rmddel@gmail.com

Sub: Pit Head Coking Coal Washery of 3.5 MTPA of M/s Steel Authority of India Ltd. in an area of 20 ha located in Tasra Coal Block of Jharia Coalfields, District Dhanbad (Jharkhand) - Environmental Clearance - reg.

Sir,

This is with reference to your online proposal No. IA/JH/CMIN/8735/2012 dated 19.02.2016 vide letter No. GM/25-Pc/464 dated 18.02.2016 and subsequent letters dated 07.03.2016, 09.03.2016, 28.04.2016, 04.05.2016, 11.05.2016, 05.09.2016, 03.01.2017, 16.02.2017, and 09.03.2017on the above-mentioned subject.

2. The Ministry of Environment, Forest & Climate Change has considered the application. It is noted that the proposal is for grant of environmental clearance to Pit Head Coking Coal Washery of 3.5 MTPA of M/s Steel Authority of India Ltd (SAIL) in an area of 20 ha located in Tasra Coal Block of Jharia Coalfields, District Dhanbad (Jharkhand).

3. The proposal was considered by the Expert Appraisal Committee (EAC) in the Ministry for Thermal & Coal Mining Projects in its 53rd meeting held on 17-18 March, 2016, 55th meeting on 11-13 May, 2016 and 4th meeting of the reconstituted EAC held on 30-31 January, 2017 The details of the project, as per the documents submitted by the project proponent, and also as informed during the meeting, are as under:-

(i) The project was accorded TOR vide letter No.J-11015/365/2009-IA.II (M) dated 25th February, 2013. Approval for extension of validity of TOR up to 24.02.2016 was issued vide letter dated on 27th July 2015.
(ii) It is a two product washery, having heavy media separation and water only cyclones.
(iii) The latitude and longitude of the project are 23° 40' 01.33"; 23° 39' 54.16" N and 86° 27' 02.67": 86° 27' 48.29" E respectively.
(iv) Joint Venture: There is no joint venture.
(v) Coal Linkage : Raw coal requirement will be about 3.5 MTPA. Coal will be sourced from Tasra open cast project of SAIL. The raw coal quality varies from Washery Grade-II to Washery Grade-IV, mainly being Washery Grade-III & IV.
(vi) Employment generated/to be generated: 166 Persons

(vii) Benefits of the project: The proposed project will result in improvement of infrastructure as well as up-liftment of social structure in the area. The people residing in the nearby areas will be benefited directly and indirectly. It is anticipated that the proposed washery plant will provide benefits for the locals.
(viii) Land requirement for the project is 20 ha. of which 18 ha is for the washery and 2 ha for the railway siding.
(ix) Total estimated water requirement is 1740 m3/day.
(x) The seasonal data for ambient air quality has been documented and all results at all stations are within prescribed limits.
(xi) The life of the proposed washery has been considered as 23 years after its commissioning. A total period of 18 months has been considered for construction and commissioning of Tasra washery including trial operation and Performance Guarantee Tests (PGT).
(xii) Transportation: Coal transportation in pit by covered conveyor from in pit to pit head coa handling plant, Surface to Siding by covered conveyor belt to Pre-weigh Bin and loading at siding by Rail.
(xiii) There is no R & R involved. There are no PAFs.
(xiv) Cost: The estimated total initial capital investment for washery under departmental option has been estimated at Rs.171.83 crore and the same under outsourcing option has been estimated as Rs.30.77crore (As per PFR of 2009). R&R Cost - Nil. Environmental Management Cost Rs. 130 Lakhs, Recurring Cost will be about Rs.32.0 Lakhs per annum.
(xv) Water body: Domohani jore and Cilatu are the two seasonal jores flowing in the east and west side of the project area.
(xvi) Wildlife issues: There are no national parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
(xvii) Forestry issues: There is no forest area involved.
(xviii) Green Belt over an area of 3.2 ha.
(xix) There are no court cases/violation pending with the project proponent.
(xx) Public Hearing was held on 30th January, 2016 at P.O. Motinagar, District Dhanbad. The issues raised in the public hearing include employment to the local residents, constitution of committee to solve the problem of former employee of Bihar super Phosphate Factory. arrangement for supply of safe drinking water in nearby villagers, apprehension for the negative impact of washery on agricultural crops of the area, formation of committee to look the welfare scheme of education, to organize medial camp and utilization of CSR fund for needy persons.

4. The EAC, after detailed deliberations on the proposal in its 4th meeting on 30-31 January, 2017 recommended the project for grant of Environmental Clearance. The Ministry of Environment, Forest and Climate Change hereby accords Environmental Clearance to **Pit Head Coking Coal Washery of 3.5 MTPA of M/s Steel Authority of India Ltd in an area of 20 ha located in Tasra Coal Block of Jharia Coalfields, District Dhanbad (Jharkhand)** under the provisions of the Environment Impact Assessment Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the terms and conditions and environmental safeguards mentioned below:

A. Specific Conditions:

(i) The technology for washery shall be as per the project report submitted and presented to the Expert Appraisal Committee.
(ii) The technology so chosen for the washery should conform to 'Zero Liquid Discharge'.
(iii) Long Distance Belt Conveyor (LDBC) system for transportation of raw coal from Tasra Coal

Pit to the proposed washery covering a length of 2 km, with water sprinkling arrangements at all transfer points, shall be installed.

(iv) Thick green belt of 30-45 m width to be provided around the washery to mitigate/check the dust pollution. A 3-tier avenue plantation should also be developed along vacant areas, storage yards, loading/transfer points, and also along internal roads/main approach roads.

(v) Transport of washed coal and middling shall be ensured by rail with wagon loading through silo.

(vi) Disposal of washery rejects shall be in accordance with the extant policy and guidelines, and environment friendly.

(vii) Waste Water shall be effectively treated and recycled completely, either for washery or maintenance of green belt around the plant.

(viii) The assurances given during the Public Hearing and as per the Action Plan formulated by the project proponent should be implemented

(ix) Hoppers of the coal crushing unit and washery shall be fitted with high efficiency bag filters or mist spray water sprinkling system and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of closed belt conveyor systems and from transportation roads.

(x) All approach roads shall be black topped and internal roads shall be concreted. The roads shall be regularly cleaned with mechanical sweepers.

(xi) Records of quantum and ash content of raw coal being washed, and clean coal and coal rejects produced from every batch of washing shall be maintained and details thereof be made available to Ministry whenever directed.

(xii) No groundwater shall be used for the Plant Operations. Any additional water requirement envisaged shall be obtained by recycle/reuse of treated effluent and from rainwater harvesting measures.

(xiii) Socio-economic and welfare measures for the local communities for the adjoining villages shall be implemented under CSR. Activities under CSR activities to be undertaken for the adjoining villages shall be identified in consultation with the local authorities, the details of status of implementation of CSR and expenditure thereon which should be annually updated on the company website.

(xiv) Heavy metal content in raw coal, and washed coal shall be analyzed once in a year and records maintained thereof.

B. General Conditions

(i) No change in technology and scope of working shall be made without prior approval of the Ministry of Environment, Forests and Climate Change.

(ii) Data on ambient air quality (PM_{10}, $PM_{2.5}$, SO_2 and NO_x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to Regional Office of the Ministry and to the State Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EPA rules, 1986 shall be furnished as part of compliance report once in a year.

(iii) Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in noisy areas like crushers, pumps, conveyors, bath, cyclones , etc shall be provided with ear plugs/muffs.

(iv) Industrial waste water shall be properly collected and treated in sedimentation ponds and treated water shall be recycled in washing circuit and other usages. No effluent shall be discharge to surface water bodies.

(v) Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.

(vi) Monitoring of effluent quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, 1986.

(vii) Personnel (Departmental, Outsourced and casual if any) working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.

(viii) Occupational Health Surveillance Programme of all workers (Departmental, Outsourced and casual if any) shall be undertaken periodically to observe any ill effect due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.

(ix) A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.

(x) The funds earmarked for environmental protection measures shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.

(xi) The project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the Ministry of Environment, Forests & Climate Change at http://envfor.nic.in.

(xii) A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.

(xiii) An Electronic copy of the environmental clearance letter shall be forwarded to State Pollution Control Board, Regional Office of the Ministry, District Industry Sector and Collector's Office/Tehsildar's Office for its display in public domain for 30 days.

(xiv) The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM_{10}, $PM_{2.5}$, SO_2 and NO_x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises.

(xv) The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry and the SPCB.

(xvi) The Regional Office of this Ministry located in the Region shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.

(xvii) The environmental statement for each financial year ending 31 March in For –V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF&CC by e-mail.

5. The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, and also during presentation to the EAC. Also, all the commitments on the issues raised during public hearing shall be implemented in letter and spirit by the project proponent.

6. The proponent is required to obtain all necessary clearances/approvals required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

7. The proponent shall setup an Environment Cell with responsibility and accountability to ensure implementation of all the EC Conditions.

8. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

9. 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 and any other orders passed by the Hon'ble Supreme Court of India/High Courts and any other Court of Law relating to the subject matter. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the washery operations.

10. 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.

30/3/2017

(S. K. Srivastava)
Scientist E

Copy to:

1. The Secretary, Ministry of Coal, Shastri Bhawan, New Delhi
2. The Secretary, Department of Environment & Forests, Gov.of Jharkhand, Secretariat, Ranchi.
3. The Additional Principal Chief Conservator of Forests, Regional office (ECZ), Ministry of Environment & Forests, Bungalow No. A-2, Shyamali Colony, Ranchi – 834002
4. The Member-Secretary, Jharkhand SPCB, TA Building, HEC Complex, PO Dhurwa, Ranchi
5. The Member-Secretary, CPCB, CBD-cum-Office Complex, East Arjun Nagar, Delhi - 32
6. The Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi
7. The Advisor, Coal India Limited, SCOPE Minar, Core-I, 4t Floor, Vikas Marg, Laxmi Nagar, N Delhi
8. The District Collector, **Dhanbad**, Government of Jharkhand
9. Monitoring File 10. Guard File 11. Record File. 12. Notice Board

30/3/2017

(S. K. Srivastava)
Scientist E

ANNEXURE-III

स्टील अथॉरिटी ऑफ इंडिया लिमिटेड
Steel Authority of India Ltd.
पंजीकृत कार्यालय : इस्पात भवन
Regd.Office: ISPAT BHAWAN
लोदी रोड / Lodi Road
नई दिल्ली -११०००३
New Delhi - 110003
www.sail.co.in

कोलियरी - प्रभाग
Collieries Division
केंद्रीकृत कोलियरी ठेका प्रकोष्ठ
Centralised Collieries Contract Cell
1, स्टेडियम रोड, कुल्टी - 713343
1, Stadium Road, Kulti - 713343
फोन/ Tel : 0341 - 2515143
ई-मेल/e-mail: ispcollieries.contract@gmail.com

कार्यादेश
WORK ORDER

1	आदेश सन्दर्भ एवं दिनांक Order Ref. & dt.	CD/CC/WO/2022-23/06 Dt. 07.04.2022
2	संवेदक का नाम : Name of Contractor :	M/s. MAA TARA ENTERPRISES
3	संवेदक का पता : Address of Contractor :	At - Chasnalla, P.O Chasnalla, Dist. Dhanbad - 828135 (Jharkhand)
4	फोन/ई-मेल Phone / e-mail	7319812091 / maataraenterprises72@rediffmail.com, asitmondal.424@gmail.com
5	संदर्भ बैंक खाता सं. : Ref. Bank A/C. No.	1866472154, Central Bank of India, Chasnalla Branch.
6	संदर्भ पैन कार्ड सं. : Ref. PAN Card No.	AIXPG9014D
7	जी एस टी एन GSTIN	20AIXPG9014D1ZH
8	फर्म की स्थिति : Status of Firm :	PROPRIETARY
9	कार्य का शीर्षक : Job title :	Providing Water Tanker for Domestic Use in and around Tasra Mine Area, SAIL-Collieries Division.
10	कार्य की राशी (रूपये में) : Value of Job(Rs) :	Rs. 4,96,243/- (Rupees Four Lakh Ninety Six Thousand Two Hundred Forty Three Only) Inclusive of all taxes and duties including GST.
11	वैधता अवधि Validity period	365 (Three Hundred Sixty Five) Working Days.
12	संदर्भ एनआईटी सं. एवं दि. : Ref. NIT no.& dt. :	CD/CC/NIT/LTE/2021-22/114 Dt. 09.03.2022
13	संदर्भ नोटशीट सं. : Ref. N/S no.:	Mgr/Tasra/NS/2022/5 Dt. 08.02.2022
14	निविदा की विधि : Mode of Tendering :	LIMITED TENDER ENQUIRY (LTE)
15	Mode of Price discovery	Reverse Auction

16 सामान्य :
General :

i The date of commencement of work shall be recorded from the actual date of commencement of work or tenth day from date of issue of order whichever is earlier.

ii The General Terms & Conditions, Special Terms & Conditions including Scope of Work & Schedule of Rates as laid down in the NIT/Enquiry ref. mentioned above shall be binding on you.

iii For jobs carried out at Company's site, as per Terms & Conditions of Contract, the Contractor shall submit proper & valid Labour licence & Group Insurance, if required, as per directions of the Head of Executing department. The above mentioned document shall be submitted to the Head of Department executing the job.

iv Attested copy of valid Trade Licence may be submitted to the HOD of Executing department, if required.

Security Deposit :

v Rs. 14,900/- (Rupees Fourteen Thousand Nine Hundred only) has been submitted as Security Deposit equivalent to 3% of the total value of work order vide Money receipt no. B2204-0011 Dt. 07.04.2022, at Finance Deptt. Chasnalla.

Keshab Chandra
07/04/2022

vi Commencement & Completion date must be communicated immediately to the Engineer/Manager,by the contractor (for jobs carried out in Company's site).

vii Arrangement of tool & tackles and other safety measures including deployment of statutory personnel are contractor's responsibility.

17 **Statutory compliance with respect to 12% PF and 7% pension contribution in CMPF is to be ensured.**

18 Bills in quadruplicate should be submitted to the Head of department for verification & forwarded to DGM (F&A) Chasnalla, for payment.

19 **Payment Schedule :**

a) 30-days for payment of each running Bill along with the requisite documents.

b) 60 days for payment of final Bill after completion of all the tests and other formalities as per terms & conditions of the contract.

c) Payment may be made on the submission of Running bill / Final Bill.

20 **N.B.: Please note that you will be required to comply the provisions in the new GST law.**

Enclosed : Schedule of Rates / Special Terms & Conditions/ Scope of Work / General Terms & Conditions

भवदीय,
Yours faithfully,

Keshab Chandra
सहायक महाप्रबंधक (ठेका-प्रकोष्ठ)
AGM (CC)
केंद्रीकृत कोलियरी ठेका-प्रकोष्ठ
Centralised Collieries Contract Cell
07/04/2022

Copy to :

- **CGM (R&T)**
- **DGM (Min) - T**
- **DGM (F&A), Chasnalla**
- **AGM (Min) - T**

दर की अनुसूची / Schedule of Rates

कार्यादेश सन्दर्भ एवं दिनांक / Work Order No: CD/CC/WO/2022-23/06 Dt. 07.04.2022

कार्य का शीर्षक / Job title : Providing Water Tanker for Domestic Use in and around Tasra Mine Area, SAIL-Collieries Division.

Sl. No.	Job Description	Qty.	Unit	Rate including GST (Rs.)	Amount including GST (Rs.)
1	Providing water tanker for supplying water for domestic use in and around Tasra mine area as mentioned in the Scope of work.	365	Working days	1359.57	496243.05
				Total Rs.	496243.05
				Say	496243.00

Rs. 4,96,243/- (Rupees Four Lakh Ninety Six Thousand Two Hundred Forty Three Only) Inclusive of all taxes and duties including GST.

Keshab Chandra

सहायक महाप्रबंधक (ठेका-प्रकोष्ठ)
AGM (CC) 07/04/2022
केंद्रीकृत कोलियरी ठेका-प्रकोष्ठ
Centralised Collieries Contract Cell

ANNEXURE-IV

Steel Authority of India Ltd.
Regd.Office: ISPAT BHAWAN
Lodi Road
New Delhi - 110003
Website: www.sail.co.in

BSL - Collieries Division
Centralised Collieries Contract Cell
B – 1 Bungalow, CCWO Colony
Saraidhela, Dhanbad, Jharkhand – 828 127
e-mail: ispcollieries.contract@gmail.com

कार्यादेश
WORK ORDER

1	आदेश सन्दर्भ एवं दिनांक Order Ref. & dt.	CD/CC/WO/2022-23/93 Dt. 03.01.2023
2	संवेदक का नाम : Name of Contractor :	M/s. PARMESHWAR ENTERPRISES
3	संवेदक का पता : Address of Contractor :	Village Rohrabandh, P.O. Motinagar, Dist - Dhanbad - 828120 (Jharkhand)
4	फोन/ई-मेल Phone / E-mail	8987645415/ 6203953381/mandalparmeshwar273@gmail.com
5	संदर्भ बैंक खाता सं. : Ref. Bank A/C. No.	06111011001291, Panjab National Bank, Katras Road, Dhanbad
6	संदर्भ पैन कार्ड सं. : Ref. PAN Card No.	AIDPM6705H
7	जी एस टी एन GSTIN	20AIDPM6705H2ZM
8	फर्म की स्थिति : Status of Firm :	PROPRIETARY
9	कार्य का शीर्षक : Job title :	Rate Contract for Overhauling of Existing Submersible Pumps, Repair of Hand Pumps and Associated Ancillary Jobs in and around the villages of Tasra, Rohrabandh and Upper Kandra near Tasra OCP of SAIL - Collieries Division.
10	कार्य की राशी (रूपये में) : Value of Job(Rs) :	FINANCIAL LIMIT of Rs. 8,98,483.57/- (Rupees Eight Lakh Ninety Eight Thousand Four Hundred Eighty Three and Paise Fifty Seven only) inclusive of all taxes and duties INCLUDING GST.
11	वैधता अवधि Validity period	24 (Twenty Four) Months
12	संदर्भ एनआईटी सं. एवं दि. : Ref. NIT no.& dt. :	CD/CC/NIT/LTE/2022-23/93 Dt. 29.11.2022
13	संदर्भ नोटशीट सं. : Ref. N/S no.:	AGM/TASRA/NS/22/09 Dt.29.08.2022
14	निविदा की विधि : Mode of Tendering :	Limited Tender Enquiry
15	Mode of Price discovery	Price Bid Opening

16 सामान्य :
General :

i The contractor shall start work immediately after issue of work order as per Clause no. (xviii) of Scope of Work.

ii The General Terms & Conditions, Special Terms & Conditions including Scope of Work & Schedule of Rates as laid down in the NIT/Enquiry ref. mentioned above shall be binding on you.

iii For jobs carried out at Company's site, as per Terms & Conditions of Contract, the Contractor shall submit proper & valid Labour licence & Group Insurance, if required, as per directions of the Head of Executing department. The above mentioned document shall be submitted to the Head of Department executing the job.

iv Attested copy of valid Trade Licence may be submitted to the HOD of Executing department.

Security Money:

v Amount of Rs. 26,960/- (Rupees Twenty Six Thousand Nine Hundred Sixty only) has been submitted as Security Deposit equivalent to 3% of the total value of work order vide Money Receipt No. **B2212-0042 Dt. 28.12.2022** at Finance Department, Chasnalla.

vi Commencement & Completion date must be communicated immediately to the Engineer/Manager,by the contractor (for jobs carried out in Company's site).

vii Arrangement of tool & tackles and other safety measures including deployment of statutory personnel are contractor's responsibility.

03/01/2023

17 **Statutory compliance with respect to 12% PF and 7% pension contribution in CMPF / 12% in EPF, as apllicable, is to be ensured.**

18 Bills in quadruplicate should be submitted to the Head of department for verification & forwarded to DGM (F & A), CD Chasnalla for payment.

19 **Payment Schedule :**

a) 30-days for payment of each running Bill along with the requisite documents.

b) 60 days for payment of final Bill after completion of all the tests and other formalities as per terms and conditions of the contract.

c) Payment may be made on the submission of Running bill / Final Bill as per Clause no. (xviii) of Scope of Work

20 **GST - Please note that you will be required to comply the provisions in the GST law.**

Enclosed : Schedule of Rates / Special Terms & Conditions / Scope of Work/ General Terms and Conditions.

भवदीय,
Yours faithfully,
Zinnatha
03/01/2023
प्रबंधक (ठेका-प्रकोष्ठ)
MANAGER (CC)
केंद्रीकृत कोलियरी ठेका-प्रकोष्ठ
Centralised Collieries Contract Cell

Copy to :
- **CGM (R&T)**
- **DGM (F&A), CD**
- **AGM (Min.), Colliery Manager (Tasra)**
- **AGM (E) / Colly. Engineer (T)**

दर की अनुसूची / Schedule of Rates

कार्यादेश सन्दर्भ एवं दिनांक / Work Order No: CD/CC/WO/2022-23/93 Dt. 03.01.2023

कार्य का शीर्षक / Job title: Rate Contract for Overhauling of Existing Submersible Pumps, Repair of Hand Pumps and Associated Ancillary Jobs in and around the villages of Tasra, Rohrabandh and Upper Kandra near Tasra OCP of SAIL - Collieries Division.

Sl. NO.	Description	Unit	Rate/unit with GST (Rs)
	A. Repairing of Hand pumps		
1	Providing PVC Pipe of 1¼ " Dia. Make Phenolex/Utkarsh/Prince Gold.	M	240.75
2	Supplying Threaded rod for hand pump having size 12mmϕ	M	211.38
3	Replacing damaged Hand pump Cylinder (Brass)	Pc	1303.54
4	Providing Nut with bolt (Size ½"X2")	Pc	11.74
5	Replacing damaged body of hand pump (Complete).	Pc	37.58
6	Providing Chain Nut Bolt 8mm/12mm	Pc	17.62
7	Providing Ball bearing (no. 6204) Make: SKF/NGB/Havells	Pc	305.33
8	Providing Bearing Pin	Pc	58.72
9	Providing Bucket plunger washer	Pc	23.49
10	Replacing damaged Cylinder Cap	Pc	211.38
11	Replacing broken and rusted 12mm Rod Socket	Pc	23.49
12	Replacing damaged and rusted Short Rod (45cm)	Pc	82.21
13	Replacing PVC Socket 2"x1¼"	Pc	52.85
14	Providing Plunger for hand pump	Pc	117.44
15	Providing Sheat Valve	Pc	176.15
16	Providing Paki washer	Pc	23.49
17	Supplying Upper nut for hand pump	Pc	176.15
18	Repairing of hand pump by supplying adequate no. of manpower (excluding material). Material cost will be paid as above. **Note: - During repairing, if any extra items required and which is not specified as above then contractor has to procure from his own cost.**	Each hand pump	2348.72
19	Yearly Maintenance of hand pump. This includes labour cost & material Cost.	Each hand pump	9394.88
	B. Repairing of Submersible pumps		
20	Flushing & removing of sludge in old Bore hole upto a depth of 270ft.	M	258.36
21	UPVC Pipe 2" dia. **Make: Prince/Water flow of 80 Schedule.**	M	317.08
22	Rewinding of 5HP motor of submersible pump including materials. This includes hoisting and lowering of submersible pump.	Each	14327.19
23	Rewinding of 2HP motor of submersible pump including all materials. This includes withdrawing and lowering of submersible pump in the bore hole.	Each	6141.90

Bandhu
03/01/2023

Sl. NO.	Description	Unit	Rate/unit with GST (Rs)
24	Supplying UPVC Pipe 1¼ " dia. **Make: Prince/Phenolex/Water flow of 80 Schedule.**	M	**281.85**
25	Replacing existing damaged submersible pump (2hp). **Make: Crompton/ Havells/Kirloskar (with 2 Year warranty)**	No.	**29358.99**
26	Supplying and fixing three core (4mm size) copper wire for submersible pump.	M	**305.33**
27	1¼"X 10' UPVC pipe for raising. **Make: Prince / water flow of 80 Schedule.**	Pc	**3170.77**
28	Supplying and fixing complete set of Panel Box, (including socket, plastic rope) for submersible pump for 2HP.	Complete set	**3851.90**
29	Replacement of Shaft of submersible pump (2HP)	Pc	**2689.28**
30	Providing & fixing Coupling of submersible pump	Pc	**352.31**
31	Providing & fixing Sleeve for submersible pump	Pc	**364.05**
32	Providing& fixing 12mm ϕ plastic rope	M	**37.58**
33	Supplying& fixing 1¼"ϕ Adapter bhati	Pc	**387.54**
34	Supplying & fixing 1¼" G I Elbow	pc	**135.06**
35	Supplying& fixing 2" G I Elbow	pc	**135.06**
36	Supplying & fixing 2" G I Tee	pc	**170.29**
37	Supplying& fixing 2" dia GI pipe	M	**510.85**
38	Supplying& fixing ½" dia GI pipe	M	**140.92**
39	Supplying & fixing 2"X½" dia G I R/Tee	M	**52.85**
40	Supplying& fixing GI nipple 1"x12"	pc	**82.21**
41	Supplying Kachcha rubber	Pc	**70.46**
42	Supplying Toption tape	Pc	**23.49**
43	Supplying Gate valve (Size 2")	Each	**1150.87**
44	Replacement of damaged Water tank having capacity 1000ltrs at site **Make: Sintex / Super Plast / Phenolex / Prince Gold.**	Each	**7515.90**

Note: i) Make of G I pipe/socket/nipple/Tee/valve will be TATA/Nizon/Jindal/Bansal.
Ii) Make of All PVc pipe shall be Phenoles/Utkarsh/Prince Gold.

FINANCIAL LIMIT of Rs. 8,98,483.57/- (Rupees Eight Lakh Ninety Eight Thousand Four Hundred Eighty Three and Paise Fifty Seven only) Inclusive of all taxes and duties INCLUDING GST.

Srimanta
03/01/2023

प्रबंधक (ठेका-प्रकोष्ठ)
MANAGER (CC)
केंद्रीकृत कोलियरी ठेका-प्रकोष्ठ
Centralised Collieries Contract Cell

Transaction Inquiry

A/c. ID	**1256102000004046**	**CCY/SOL ID**	**INR/1256**
A/c. Name	**MINE CLOSURE ESCROW A/C (TASRA COAL PROJECT)**		
General Ledger Subhead Code	10200	Balance	3,37,65,745.52 Cr
Opening Balance	0.00 Cr	Closing Balance	3,37,65,745.52 Cr
Float Balance	0.00 Cr	Funds in Clearing	0.00 Cr
Available Amt.	3,37,65,745.52 Cr	Effective Available Amt.	3,37,65,745.52 Cr
Customer Status	GEN GENERAL	A/c. Opening Date	18-09-2017
A/c. Status	A Active	A/c. Status Date	18-09-2017
Purge Date	17-09-2017		
Address	STEEL AUTHORITY OF INDIA COLLIERIES DIVISION CHASNALA DIST DHANBAD		
City	DBD DHANBAD	State	JH JHARKHAND
Country	IN INDIA	Postal Code	828135
Phone Type	COMMPH1	Telex No.	
Phone No.	+00		
Email ID Type			
Email ID			

General Ledger Date	Value Date	Instrument No.	Withdrawal Amt.	Deposit Amt.	Balance	Narrative
16-11-2022	16-11-2022			3,37,65,745.52 Cr	3,37,65,745.52 Cr	1256107000004527 : Closure Proceeds
31-03-2022	31-03-2022		2,00,00,000.00 Dr		0.00 Cr	FD BOOKED
31-03-2022	30-03-2022		1,20,49,150.00 Dr		2,00,00,000.00 Cr	FD BOOKED
30-03-2022	30-03-2022			2,00,00,000.00 Cr	3,20,49,150.00 Cr	SBINR12022033075529060 STEEL AUTHORITY OF INDIA LT
30-03-2022	30-03-2022			1,20,49,150.00 Cr	1,20,49,150.00 Cr	SBINR12022033075528954 STEEL AUTHORITY OF INDIA LT
31-03-2021	30-03-2021		2,00,00,000.00 Dr		0.00 Cr	FD BOOKED
31-03-2021	31-03-2021		1,05,23,000.00 Dr		2,00,00,000.00 Cr	FD BOOKED
31-03-2021	25-03-2020		1,00,00,000.00 Dr		3,05,23,000.00 Cr	FD BOOKED
31-03-2021	24-03-2020		1,90,70,000.00 Dr		4,05,23,000.00 Cr	FD BOOKED
31-03-2021	31-03-2019		1,00,00,000.00 Dr		5,95,93,000.00 Cr	FD BOOKED
31-03-2021	30-03-2019		1,76,85,000.00 Dr		6,95,93,000.00 Cr	FD BOOKED
30-03-2021	30-03-2021			2,00,00,000.00 Cr	8,72,78,000.00 Cr	SBINR12021033018481803 STEEL AUTHORITY OF INDIA LT
30-03-2021	30-03-2021			1,05,23,000.00 Cr	6,72,78,000.00 Cr	SBINR12021033018486445 STEEL AUTHORITY OF INDIA LT
24-03-2020	24-03-2020			1,00,00,000.00 Cr	5,67,55,000.00 Cr	RTGS/SBINR12020032400071356/STEEL AUTHORITY OF IND
24-03-2020	24-03-2020			1,90,70,000.00 Cr	4,67,55,000.00 Cr	RTGS/SBINR12020032400071330/STEEL AUTHORITY OF IND
30-03-2019	30-03-2019			1,76,85,000.00 Cr	2,76,85,000.00 Cr	RTGS/SBINR12019033000002178/STEEL AUTHORITY OF IN
30-03-2019	30-03-2019			1,00,00,000.00 Cr	1,00,00,000.00 Cr	RTGS/SBINR12019033000004143/STEEL AUTHORITY OF IN

MONITORING REPORT

Monitoring of air quality, noise and analysis of water samples at different points of Tasra OCP, SAIL-Collieries Division

(MONSOON SEASON)
(JULY, 2022 TO SEPTEMBER, 2022)

Sponsored By

सेल SAIL

Tasra Colliery Division
Steel Aouthity of India Ltd.
Chasnala - 828135, Dhanbad

Prepared By

WATER RESOURCE MANAGMENT GROUP
CSIR-CENTRAL INSTITUTE OF MINING & FUEL RESEARCH
(*Council of Scientific & Industrial Research*)
BARWA ROAD, DHANBAD - 826 015

(2022)

Report

On

Monitoring of air quality, noise and analysis of water samples at different points of Tasra OCP,SAIL-Collieries Division

(MONSOON SEASON)
(JULY, 2022 TO SEPTEMBER, 2022)

Project No.: SSP/622/2021-22

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This report is meant for the internal use of your organisation only and it should not be published in full or part by your organisation. It should not be communicated/circulated to outside parties except the concerned government department. However, CSIR-CIMFR reserves the right to publish the results of research for the benefit of the industry. The conclusions and recomendations are based on the results of investigations. It is helped that the recomendations will be implemented to make mining operation eco-friendly.

Since the day-to-day mining operations and implementation of controlling measures are not under the control of CSIR-CIMFR, the research team will not be held responsible for violation of statuatory norms.

Signature of Project Proponent

26/12/2022

(Gautam Ch. Mondal)
Sr. Principal Scientist
Project Leader

26/12/22

(Abhay Kr. Singh)
Chief Scientist & HORG
Project Coordinator

CSIR-CIMFR Authorised Signatories

26/12/2022

(D. Kumbhakar)
Chief Scientist & HoS
Project Planning and Monitoring & E-Service

26/12/2022

(R. V. K. Singh)
Chief Scientist & HORG
Project Planning and Industry Interface

PROJECT PERSONNEL

Project Co-coordinator

Dr. Abhay Kr. Singh

Project Leader

Dr. Gautam Ch. Mondal

Team Members

Dr. D. B. Singh

Dr. P. Das

Dr. M. R.Mondal

Mr. Ranjit S. Rangari

INDEX

1.0 INTRODUCTION

Coal is the prime source of energy in India and backbone of the industrial growth of the country. Coal accounts for 55% of the country's energy need and is likely to continue as the major source of primary energy. This is mainly because of adequate coal reserve as compared to the limited reserve of petroleum and natural gas, eco-conservation restriction on hydroelectric project, geo-political perception of nuclear power and overall economy. India is world's third largest producer of coal (585 Mt.) after China (2831 Mt.) and USA (849 Mt.) and possesses some of the largest global coal reserves. However, quantitatively India possesses only 6% of the global proven coal reserve against 16% of world's population. Expectedly demand of coal in India is likely to go up in future at a faster rate than what it is presently in order to match the future economic development of the country as coal based power generation has been identified as the main source of energy. Exploitation of any natural resource including coal has the potential for producing adverse environmental effects. Mining affects all components of the environment and these impacts may be of permanent or temporary, beneficial or harmful, repairable or irreparable and reversible or irreversible in nature.

Coking coal is scarce in India. International coking coal price is speedily increasing with growing demand. The setting up of thermal power plants and steel industries in recent years with increasing domestic demand marked a spurt in the demand of power and steel grade coal from the coalfields of Jharkhand, which is one of the major coal producing state of the country. Steel Authority of India (SAIL) is the largest corporate entity and steel makers in the country. Its five integrated steel plants at Bhilai, Durgapur, Rourkela, Bokaro & Burnpur have a total capacity of 14.6 MT of crude steel per annum. SAIL has 9 iron ore, 5 lime stone, 3 dolomite and 3 coal mines. Presently SAIL has three operating coal mines namely Chasnalla, Jitpur and Ramnagar are producing coal for captive use in the steel plants. ISP-SAIL started two new projects at – Tasra in Jharia caolfield and Raidih-Mahatadih coking coal block of Raniganj coalfield to meet the demand of coking coal to different steel plants of the SAIL.

SAIL-ISP, approached CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR) for environmental monitoring work of Tasra OCP project and to suggest suitable remedial measures, so that coal mining can be carried out with eco-friendly and sustainable manner. Present report discussed the environmental status of air, water and noise quality during the August 2022 monitoring period in and around the Tasra Coal Mine Project.

2.0 Tasra Coal Block

Tasara Block is located in the eastern most part of Jharia Coalfield, adjacent to Chasnala colliery (**Fig. 1**). It is 26 km south of the Dhanbad town and bounded by BIT, Sindri in the north, Damodar river in the south, FCI in the east and Chasnala colliery in the west. The Dhanbad-Sindri road posses in the north-side of the block and the nearest railway station is the Sindri, 4 km north of the block. It covers an area of 4.5 km^2 and bounded by Latitude 23^{0}38'25" to 23^{0}39' 58"N and Longitude 86^{0}27'12" to 86^{0}29'15"E. It is included in the survey topo sheet no. 73 I/6.

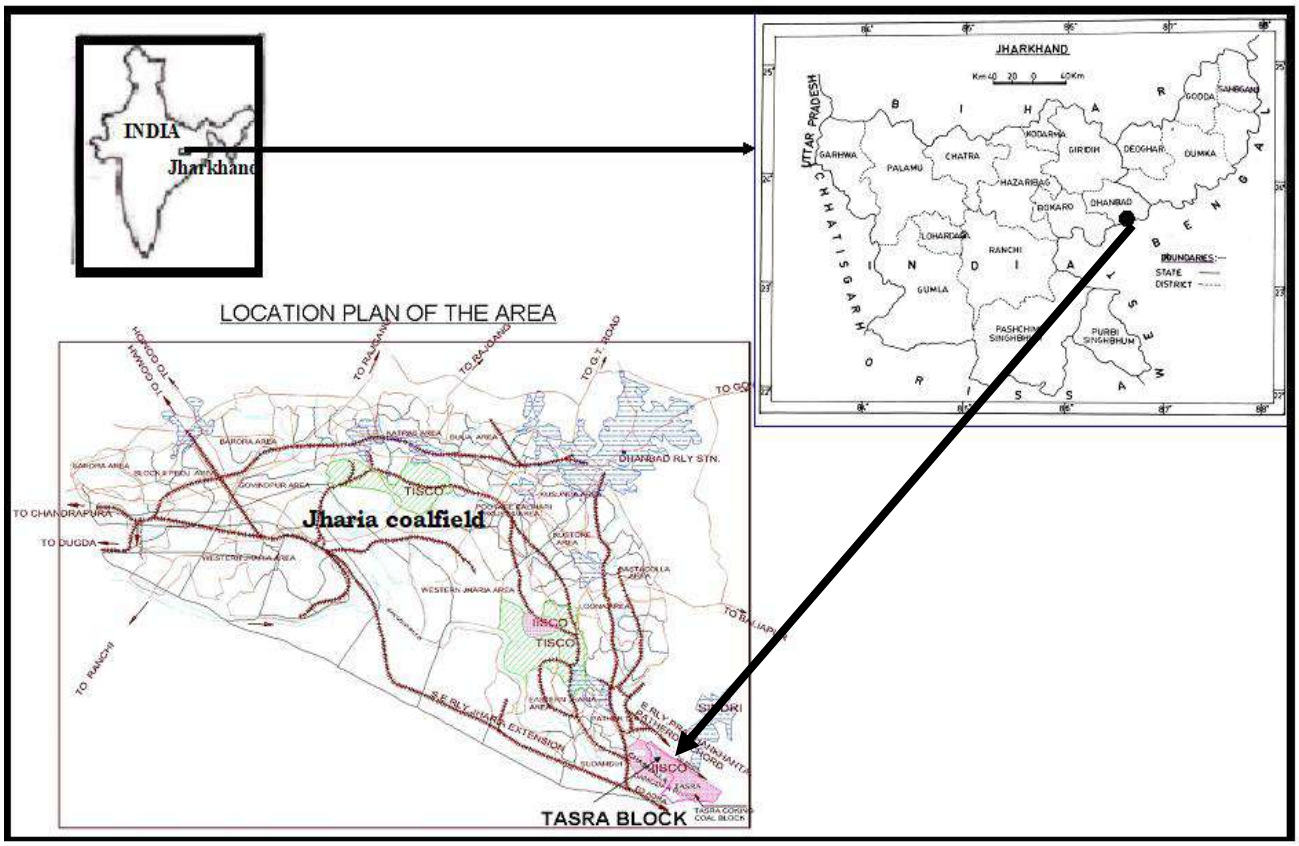

Fig. 1: Location Map of Tasra Coal OCP

The area has a flat to gently undulating topography with a general southerly slope towards Damodar River, which flows west to east beyond the southern boundary of the block (**Fig. 2**). The drainage of the area is controlled by the two jores draining in Damodar river viz., Domohani jore and Cilatu (also called Chetu) jore. The Domohani jore has been diverted into Cilatu jore in the central part of the block in order to facilitate mining activity in Chasnalla colliery. The highest ground elevation is about 149 m and the lowest elevation has been observed to be about 126m. The tributary streams are mostly seasonal and dry up during non-monsoon months.

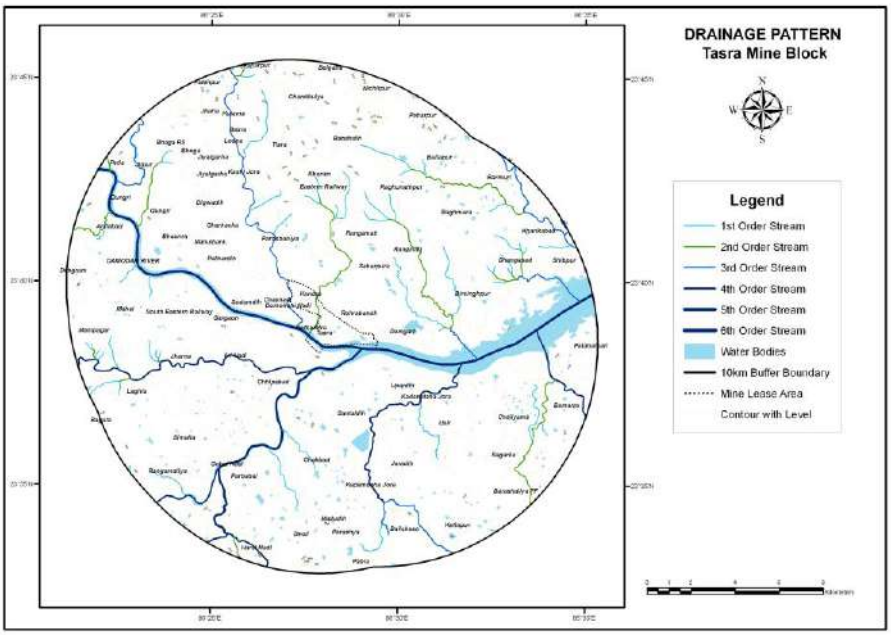

Fig. 2: Drainage map of Tasra Coal mine block

The study area is predominantly occupied by the rocks of the Barren Measure and Barakars Formation The Barakar are economically the most important member of the member of the Gondwana Group as they contain a number of thick and good seams. The general stratigraphic sequence is as in **Table 1**.

Table 1: Stratigraphy of Tasra Coal Block

Group	Formation	Geological Age
Damuda Group	Raniganj Formation	Upper Permian
	Barren Measure	Middle Permian
	Barakar Formation	Lower Permian
	Talchir Formation	Upper Carboniferous

Total 37 number of coal seams recognized within the block along with their splits and coal seam horizons. Out of the of the 37 seams, 16 seams can be outright considered to be not workable because of low thickness. Seams which have workable true thickness in majority of boreholes are: IBOT, I-MID, II, L-3/III, L-4, IV-BOT, IV-TOP-B, L-7, VI, VII, IX/X, XI/XII, XIV. Besides some other seams can be considered for working after studying other factors like reserves, quality, vertical, devolatilisation etc. These are L-2,L-5,IV-TOP-A, V, VI-A and VIII-A. Shallow occurrence of a large number of seams favor for exploitation by opencast method. It has been proposed to operate the mine as a single pit. The mine operation will be started from east side of the deposit. In the first five years of mine operations, the pit will touch the bottom and then the mine face will progress towards west along strike. Initially the overburden would be placed in old abandoned quarry and the rest as an external dumps on the surface. From 6th Year onward overburden material will be utilized in backfilling. Drilling and blasting has been envisaged for mining coal. Shovel–Dumper combination will be employed to exploit the coal and overburden. Mining up to 260 m depth will be done by Open Cast and beyond 260m Underground Mining method.

3.0 Scope of the Work

The scope of the study includes detailed characterisation of exiting status of environment in the study area with respect to various environmental components, viz. air, noise and water.

4.0 Air Quality Monitoring

Air pollution includes one or more contaminants (pollutants), in the outdoor atmosphere in such quantities and of such duration that may be injurious to human, plant or animal life. Once these contaminants enter in the atmosphere, either in gaseous form or as particulate matter, these cannot escape and keep circulating and deteriorating the air quality. Air pollution effects encompass those that are health related as well as those associated with damage to property or which cause decreases in atmospheric aesthetic feature. Examples

of air pollution effects on human health include eye irritation, headaches and aggravation of respiratory problems. Plants and crops have been subjected to the undesirable consequences of air pollution, including abnormal growth pattern, leaf decolouration and death. Dispersion of air pollutants from the source depends on micro-meteorological parameters of the area.

Coal transportation, OB removal, drilling, blasting, haul road and movements of mining equipments will be the major sources of air pollution in the present coal mining area. Generally, dust generation will be of major concern during mining operation. NO_2 will be liberated in the time of blasting and during the movement of mining machineries. This coal contains very less sulphur (<0.72%) and as such the concentration of SO_2. In general Indian coal having very low sulphur content except for Tertiary coals of Assam and Meghalaya.

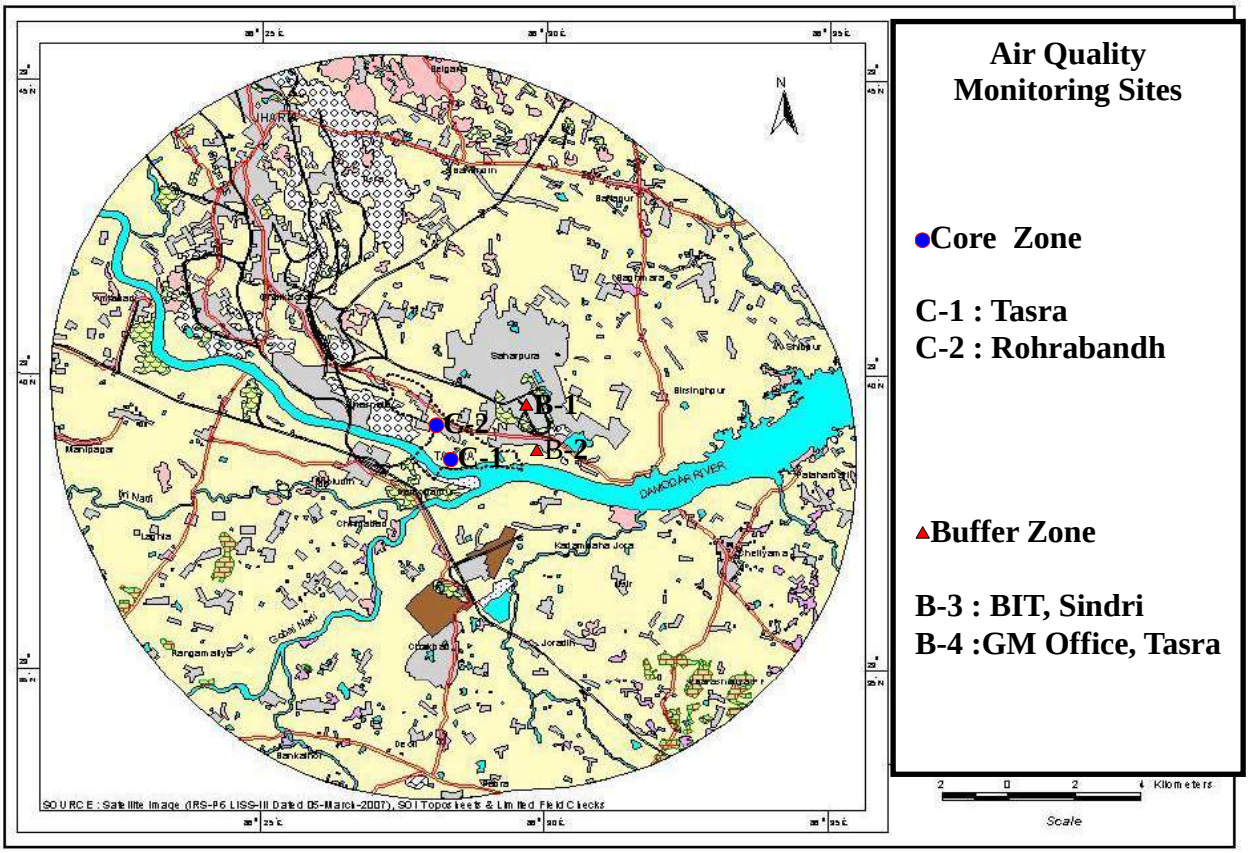

Fig. 3: Air quality monitoring stations

To know the air quality of the area, different air quality-monitoring stations have been fixed in the core and buffer zones (**Fig. 3**). Sampling and

analysis of PM_{10}, $PM_{2.5}$, SO_2 and NOx have been carried out in the month of August 2022 representing Monsoon season. The details of the study including results are discussed below.

4.1 Sampling and Analysis

Total four sampling stations have been selected for air quality monitoring on the basis of wind direction and other meteorological parameters (**Fig. 3**). Two air sampling locations have been identified in core zone and two in the buffer zones. Details of sampling stations along with the source of air pollution are given in **Table 2**. The parameters monitored are Respirable Particulate Matters (PM_{10}, $PM_{2.5}$), Sulphur Dioxide (SO_2) and Nitrogen Oxides (NO_2). Methods and instrument used for air pollutant analysis are given in **Table 3.**

Table 2: Details of Sampling Locations

Station Code	Location	Source of Air Pollution
CORE ZONE		
C-1	Tasra	Mining activity, Kachha road and vehicular movement.
C-2	Rohrabandh	Household coal burning and vehicular movement, etc.
BUFFER ZONE		
B-1	BIT, Sindri	Vehicular movement, natural activity, etc.
B-2	GM Office, Tasra	Vehicular movement, natural activity, etc.

Table 3: Methodology and Instrument Used for Air Quality Analysis

Parameters	Method	Instrument
$PM_{2.5}$	IS-5182 (Part 23):2006 Gravimetric Method	Fine Particulate Sampler
PM_{10}	IS-5182 (Part 23):2006 Gravimetric Method	Fine Particulate Sampler
SO_2	IS-5182 (Part 2):2001 (Improved West & Gaeke Method)	Fine Particulate Sampler with gaseous attachment
NO_x	IS-5182 (Part 6):2006 (Jacob & Hochheiser modified Method)	Fine Particulate Sampler with gaseous attachment

4.2 Results and Discussions

Ambient air quality for the core and buffer zone are presented in **Table 4** for the August 2022 monitoring period. The concentration of PM_{10} and $PM_{2.5}$ in the core zone ranges from 42.9 μg/m^3 to 56.4 μg/m^3 and 30.1 μg/m^3 to 44.5 μg/m^3 respectively. The major source of the PM_{10} and $PM_{2.5}$ are vehicular transportation, excavation, loading, unloading and dumping of waste and coal and other domestic activities in the area. SO_2 and NO_2 concentration is approximately comparable to the core zone and major sources are the emission of gases from domestic uses of coal, generator sets and vehicles. The measured concentration of PM_{10} and $PM_{2.5}$ are below the prescribed limit around all sampling sites.

In the buffer zone, PM_{10} and $PM_{2.5}$ ranges from 47.7 μg/m^3 to 53.4 μg/m^3 and 33.6 μg/m^3 to 38.3 μg/m^3 respectively. The PM_{10} and $PM_{2.5}$ values are below the recommended limit around all the monitoring sites. Concentration of SO_2 and NO_2 are found well below the limit of 80 μg/m^3 as per the guideline of NAAQS, 2009 in both core and buffer zone sampling.

Table 4: Ambient Air Quality Report for Tasra Opencast Coal Mine

Sampling Code	Sampling Location	Date of Sampling	Parameters (μg/m3)			
			$PM_{2.5}$	**PM_{10}**	**SO_2**	**NO_2**
Core Zone						
C-1	Tasra Village	04/08/2022	30.4	45.7	12.6	16.7
		05/08/2022	44.5	56.4	10.1	19.0
C-2	Rohraband Village	06/08/2022	30.1	47.1	12.3	17.0
		07/08/2022	30.4	42.9	11.1	18.9
Buffer Zone						
B-1	Near to Arya Samaj	06/08/2022	33.6	53.4	13.5	19.7
		07/08/2022	34.9	48.0	12.2	17.7
B-2	GM Office, Tasra	04/08/2022	38.3	48.8	10.8	15.1
		05/08/2022	34.7	47.7	14.2	21.9
Standards as per NAAQS-2009			**60**	**100**	**80**	**80**

5.0 Water Quality Monitoring

5.1 Sampling and Analysis

To assess the impact of mining on water quality, seven water samples have been collected from different water sources (**Fig. 4**). This comprises of three groundwater, two mine water effluent and two river water samples **(Table 5)**.

Table 5: Details of Water Quality Monitoring Stations

S.N.	Location	Remarks
Drinking Water (Ground water)		
W-1	Tasra Village	Core Zone
W-2	BIT, Sindri	Buffer Zone
W-3	Rohraband Village	Buffer Zone
Surface Water		
S-1	Damodar River (Upstream)	Buffer Zone
S-2	Damodar River (Downstream)	Buffer Zone
Effluent Water		
E-1	Tasra Old mine pit	Core Zone
E-2	Chasnala mine pit	Buffer Zone

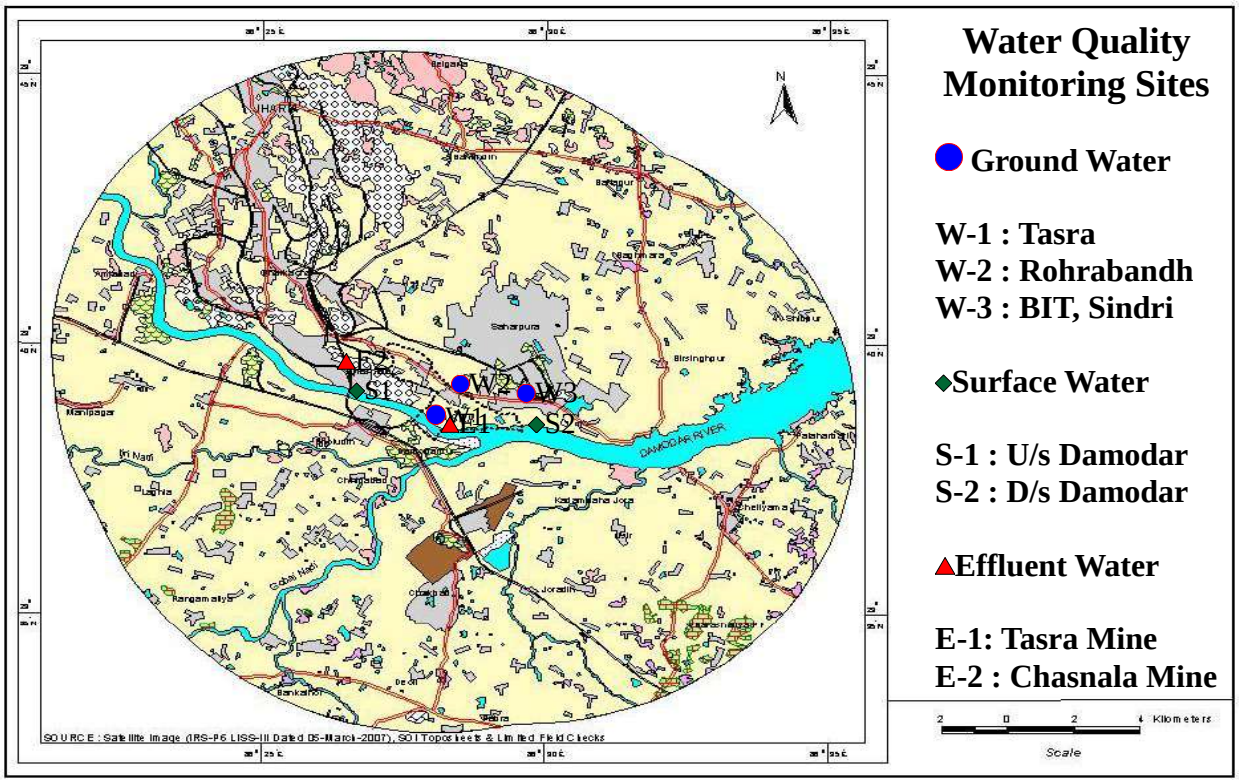

Fig. 4: Water Sampling Locations

The water samples have been collected in the month of August 2022, representing the monsoon season and analysed as per standards method. The water samples were collected in one-liter narrow-mouthed pre-washed polyethylene bottles. For heavy metal analysis, 100 ml of samples were acidified with HNO_3 and preserved separately. Temperature, electrical conductivity (EC) and pH values were measured in the field using a portable conductivity and pH meter. The other parameters are measured in the geochemical laboratory at CSIR-CIMFR, Dhanbad following the standard methods prescribed in APHA (2017).

Total Dissolved Solids (TDS) are the total amount of mobile charged ions, including minerals, salts or metals dissolved in a given volume of water and expressed in parts per million (ppm) unit. TDS of water samples were measured by gravimetric method. The process for determining the mass of TDS in a water sample involves evaporation of water and weighing of the remnant solid residue left after evaporation. Turbidity is a measure of the degree to which the water loses its transparency due to the presence of suspended particulates. It is the amount of cloudiness in the water which can be caused by presence of (i) silt, clay or mud (ii) bacteria and other germs or (iii) chemical precipitates. Turbidity was measured in pre-filtered sample by the turbidity meter (EUTECH TN-100), also called nephelometer. Before taking reading turbidity meter was calibrated against the standards of 800, 100, 20, 0.02 NTU. In the laboratory, the water samples were filtered through 0.45 µm Millipore membrane filters to separate suspended particles. The total hardness of the water was measured by the EDTA trimetric method.

Major anions (F, NO_3 and SO_4,) were analysed on UV-VIS spectrophotometer. Concentration of fluoride was measured by SPANDS method while chloride is determined by argentrometric titration method. Sulphate ion concentration was measured by turbidimetric method and nitrate concentration by UV-VIS following APHA method. Atomic absorption spectroscopy (Varian 208 FS – AAS), technique was used for determination of dissolved cations (Ca, Mg,

Na and K). The AAS technique makes use of absorption spectrometry to assess the concentration of an analyte in a sample. Some selected heavy metals in the collected samples were analyzed by (Varian 208 FS – AAS) & Perkin-Elmer ICP-MS (Model Elan DRCe). Inductively coupled plasma-mass-spectrometry is a technique which has a capability to determine low-concentrations and ultra-low-concentrations of elements such as elements of concentration in ppb and ppt.

5.2 Results and Discussions

The physico-chemical characteristics of the analysed drinking, surface and mine effluent water is presented in **Table 6 to 8** along with the prescribed standards.

The hydro-chemical parameters of the groundwater of the study area were compared with the prescribed limit of Indian Standard for drinking water (BIS 2012) to assess the suitability for drinking and public health purposes (**Table 6**). The analytical results show that most of the analysed parameters are well within desirable limits and water is potable for drinking uses. pH of the analysed groundwater are found well within the safe limit of 6.5-8.5, prescribed for drinking water by BIS (2012). The turbidity is one of the important physical parameters for water quality defining the presence of suspended solids in water, which causes the muddy or turbid appearance of water body. The consumption of high turbid water may cause a health risk as excessive turbidity can protect pathogenic microorganisms from effects of disinfectants and also stimulate the growth of bacteria during storage. In the study area the turbidity in the groundwater are found below the recommended value of 5 NTU. The total dissolve solids (TDS) value is also found lower than the permissible limit in the absence of alternate sources of 2000 mg/l. Total hardness (TH) value is found lower than the permissible limit in the absence of alternate sources i.e 600 mg/l. In all of the samples, the concentration of SO_4 and F are also found well within the permissible limit for drinking uses. The concentration of Ca is found lower than the permissible limit in the absence of alternate sources i.e 200 mg/l. The concentration of Mg is also found lower than the permissible limit in

the absence of alternate sources i.e 100 mg/l. at Rohraband sample. Heavy metal analysis in the groundwater samples indicated that all the analyzed heavy metals like As, Cd, Cr, Pb, Zn and Mn are found either below the detection limit or less than the acceptable limit for drinking water. The concentration of Fe is found below the detection limit for drinking water in all the analysed samples also.

The analytical results of physico-chemical analysis of surface water samples collected from upstream and downstream of Damodar River has been given in **Table 7**. To assess the quality of the surface water resource the results has been compared with the prescribed surface water standards IS-2296 for Class 'C' water (tolerance limit for stream water used drinking water sources with conventional treatment followed by disinfection). It can be seen that pH of the water is slightly alkaline in nature and found well within the prescribed limit. In general, the total dissolved values and other analysed parameters are found well within the threshold values. Concentration of sulphate varies between 82 and 149 mg L^{-1} and is well below the prescribed value of 400 mg L^{-1} (IS-2296). The level of TDS and DO in the river water were found within threshold limit in comparison to IS:2296, surface waters Class-C. The concentrations of the analysed heavy metals in the surface water resource are also found within the prescribed limits. It shows that the surface water of the area is fit for its designated use as a drinking water source with conventional treatment followed by disinfection. The calculated value of sodium adsorption ration (SAR) shows that the water is low saline and low alkali water (0.84 - 0.87) and can be used for irrigation in most soils and crops with little danger of the development of harmful levels of exchangeable sodium. The percent sodium (%Na) is varying from 27.6 to 29.3 and also found below the 60% recommended limit for irrigation uses.

Mine water samples discharged from Tasra and Chasnala coal mines were collected to assess the effluent water quality. The analytical results were compared with the inland surface water quality standard as per the IS-2490

and presented in **Table 8**. The mine water of the area is found to be alkaline in nature and measured pH was well within the prescribed limit of 5.5 to 9.0 as per IS:2490. Total Dissolved Solid Concentration (TDS) in the discharged mine water were also found much below the recommended limit of 2100 mg L^{-1} for inland surface water as per IS:2490. The suspended sediment are found less than the permissible limit of 100 mg L^{-1}. Concentration of heavy metals in the mine water of the area were also found well within the permissible limit as per IS:2490. The concentrations of the oil & grease are found 1.02 mg/l and 1.15 mg/l in Tasra and Chasnala mine water respectively and well within the threshold value of 10 mg/l. The concentration of phenol is found below the detection limit and is well within the threshold value of 1.0 mg/l.

Table 6: Drinking Water Quality of the Study Area

Area: Core Zone/Buffer Zone	**Season: Monsoon**
Project: Tasra Coal Mine	**Date of Sampling: 05.08.2022**

S.N.	Parameters	Station Code			IS : 10500:2012	
		W-1 (Tasra)	W-2 (BIT, Sindri)	W-3 (Rohraband)	Acceptable Limit	Permissible Limit
1.	Colour, Hazen units	<5	<5	<5	5	15
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Turbidity NTU Max	<0.01	4.78	4.21	1	5
5.	Total Dissolved Solids mg/l, Max	609	485	852	500	2000
6.	pH Value	7.16	6.65	6.96	6. 5 to 8. 5	-
7.	Total Hardness (as $CaCO_3$) mg/l, Max	288	264	420	200	600
8.	Calcium (as Ca) mg/l, Max	101	69	104	75	200
9.	Magnesium (as Mg) mg/l, Max	8.8	22	39	30	100
10.	Copper (as Cu) mg/l, Max	0.002	0.003	<0.001	0.05	1.5
11.	Iron (as Fe) mg/l, Max	0.002	0.228	0.001	0.3	NR
12.	Manganese (as Mn) mg/l, Max	<0.001	0.022	<0.001	0.1	0.3
13.	Chlorides (as Cl) mg/l, Max	48	38	90	250	1000
14.	Sulphate (as SO_4) mg/l, Max	82	146	149	200	400
15.	Nitrate (as NO_3)	12.6	3.83	16.2	45	NR
16.	Fluoride (as F) mg/l)	1.46	0.96	1.34	1.0	1.5
17.	Phenolic Compounds (as C_6H_5OH) mg/l, Max	ND	ND	ND	0.001	0.002
18.	Mercury (as Hg) mg/l, Max	<0.001	<0.001	<0.001	0.001	NR
19.	Cadmium (as Cd) mg/l, Max	<0.001	<0.001	<0.001	0.01	NR
20.	Selenium(as Se mg/l, Max	<0.001	<0.001	<0.001	0.01	NR
21.	Arsenic (as As) mg/l, Max	<0.001	<0.001	<0.001	0.01	0.05
22.	Cyanide (as Cn) mg/l, Max	<0.001	<0.001	<0.001	0.05	NR
23.	Lead (As Pb) mg/l, Max	0.006	0.025	<0.001	0.05	NR
24.	Zinc (as Zn) mg/l, Max	0.026	0.024	0.022	5.0	15
25.	Arionic detergents (as MBAS), mg/l, Max	ND	ND	ND	0.2	1.0
26.	Chromium (as Cr^{6++}) mg/l, Max	0.006	0.017	0.005	0.05	NR
27.	Mineral Oil mg/l, Max	ND	ND	ND	0.01	NR
28.	Residual, free chlorine, mg/l, Min	0.08	0.06	0.09	0.2	1.0

Elemental concentration : mg/l, ND=Not Detected, *NR: No relaxation*

Table 7: Surface Water Quality of the Study Area

Area: Core Zone/Buffer Zone	**Season: Monsoon**
Project: Tasra Coal Mine	**Date of Sampling: 05.08.2022**
Name of the Sampling Station:	
SW-1 – Damodar River U/S of mine site	***SW-2 – Damodar River D/S of mine site***

Sl. No.	**Parameters**	**Station Code**		**(IS: 2296)* Surface Waters Class "C" Tolerance Limits**
		SW-1 (U/S)	**SW-2 (D/S)**	
1.	Colour, Hazen units, Max	<5	<5	300
2.	Odour	#	#	#
3.	pH	7.57	7.44	6.5-8.5
4.	Dissolved Oxygen, mg/l, Min.	6.64	7.45	4
5.	BOD (3days at 27^{o}C), mg/l, Max	4.03	1.81	3
6.	Total Dissolved Solid, mg/l, Max	292	279	1500
7.	Oil & Grease, mg/l, Max	<0.1	<0.1	0.1
8.	Total Hardness (as $CaCO_3$), mg/l, Max	156	152	NS
9.	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.001	<0.001	0.005
10.	Chloride (as Cl^-), mg/l, Max	22	22	600
11.	Sulphates (as SO_4^{--}), mg/l, Max	80	76	400
12.	Nitrate (as NO_3), mg/l, Max	9.36	8.38	50
13.	Fluorides (as F), mg/l, Max	0.80	0.78	1.5
14.	Calcium (as Ca), mg/l, Max	33.64	28.60	NS
15.	Magnesium (as Mg), mg/l, Max	17.50	19.59	NS
16.	Sodium (as Na), mg/l, Max	24.1	24.6	NS
17.	Potassium (as K), mg/l, Max	5.6	7.3	NS
18.	Copper (as Cu), mg/l, Max	0.001	0.001	1.5
19.	Iron (as Fe), mg/l, Max	<0.001	<0.001	50
20.	Manganese (as Mn), mg/l, Max	<0.001	<0.001	NS
21.	Zinc (as Zn), mg/l, Max	0.015	0.020	15
22.	Arsenic (as AS), mg/l, Max	<0.001	<0.001	0.2
23.	Cadmium (as Cd), mg/l, Max	<0.001	<0.001	0.01
24.	Lead (as Pb), mg/l, Max	0.005	<0.001	0.1
25.	Hexavalent Chromium (as Cr^{6+}), mg/l, Max	<0.001	<0.001	0.05
26.	Selenium (as Se), mg/l, Max	<0.001	<0.001	0.05
27.	Percent Sodium (%)	27.6	29.3	NS
28.	Sodium Absorption Ratio	0.84	0.87	NS

All parameters are expressed in mg/l, except pH. # : *Unobjectionable, **NS:** Not Specified,*
**** : Class "C"-** Drinking water source with conventional treatment followed by disinfection.*

Table 8: Effluent Water (Mine water) Quality

Area: Core Zone/Buffer Zone	**Season: Monsoon**
Project: Tasra Coal Mine	**Date of Sampling: 05.08.2022**
Name of the Sampling Station:	
EW-1 – Tasra Mine Water	***EW-2 – Chasnala Mine Water***

S.N.	Parameter	EW-1 (Tasra)	EW-2 (Chasnala)	Effluent water IS:2490
1.	pH value	7.16	7.86	5.5 to 9.0
2.	Colour, Hazen units, Max	Colorless (<5)	Colorless (<5)	5
3.	Odour*	Agreeable	Agreeable	Annexure-1
4.	Conductivity, µS/cm	461	1082	NS
5.	Turbidity (NTU)	1.59	0.12	NS
6.	Total Dissolved Solids mg/l	304	714	2100
7.	Suspended solids mg/l, max.	3.72	1.92	100
8.	Dissolved Oxygen (DO)	7.65	7.45	NS
9.	Oil and grease, mg/l max.	1.02	1.15	10
10.	Phenolic compounds (as C_6H_5OH), mg/l max.	<0.01	<0.01	1.0

NS=Not Specified

* All efforts should be made to remove colour and unpleasant odour as far as practicable (Annexure-l)

6.0 Noise Level Monitoring

Sound is produced due to the vibration of bodies or air molecules and is transmitted as a longitudinal wave motion. Sound wave is characterised by the amplitude of pressure changes, their frequency, and the velocity of propagation. It is therefore a form of mechanical energy. Intensity of sound at a point in space is defined by the rate of flow per unit area, measured in watts per m^3. Intensity is proportional to the mean square of the sound pressure. Sound intensity of practical interest covers a very large range and is therefore measured on a logarithmic scale. The relative intensity level of one sound with respect to another is defined as 10 times the logarithm (to the base of 10) of the ratio of their intensities. Levels defined in this way are expressed in decibels (dB).

Noise is undesirable and unpleasant sound produced by the vibration of bodies or molecules of the medium and propagates as a pressure perturbation.

It disturbs people's work, sleep and communication. Its damages hearing and evokes other physiological reactions. It also disturbs the habitat of animals and birds in the surroundings. Mining is the third largest industry in terms of employment and the recent trends of mechanization has changed the working environment to noisy environment leading to higher sound levels.

Noise will be produced during mining at different levels by different equipments in the open cast mine are summarized in the **Table 9.**

Table 9: Noise Generating Mining Equipment

S. N.	Equipment / Operation	Noise level dB(A)
1.	Feeder breaker	82-100
2.	Dumpers	100-115
3.	Shovels	80-107
4.	Dozers	84-107
5.	Front End loader	83-101
6.	Electric motors, gear drivers, hopers, drilling & main pump	85-95
7.	Belt conveyer	90-92
8.	Drill	110-115

The main objective of noise monitoring in the study area is to assess the present ambient noise levels in proposed project site & buffer zone due to regular activities and vehicular movement. A preliminary reconnaissance survey has been undertaken to identify the major noise generating sources in the proposed mining area. Ambient noise level study at Tasra Opencast Coal Mine was carried out in core as well as buffer zone. Two noise level monitoring location in core zone followed by four noise level monitoring locations in buffer zone were fixed-up as given in **Table 10.**

Table 10: Details of Ambient Noise Monitoring Stations

S.N.	Location Code	Location Name/ Description	Present Land use
Core Zone			
1.	N-1	Tasra Mine site	Industrial area
2.	N-2	Weigh Bridge	Industrial area

S.N.	Location Code	Location Name/ Description	Present Land use
Buffer Zone			
3.	N-3	Rohrabandh	Commercial cum Residential Area
4.	N-4	BIT Sindri	Residential Area
5.	N-5	GM Office, Tasra	Commercial cum Residential Area
6.	N-6	Near Arya Samaj	Commercial cum Residential Area

Sound level study is carried by using Mip-oy Integrated Sound Level Meter Meeting IEC-179A measuring average peak and Low values in Day and Night time.

6.1 Results and Discussion

Results are shown in **Table 11** for ambient noise levels of core and buffer zones during Monsoon season. The average peak values at the buffer zone area are found well below the residential areas standard values of 55 & 45 dB (A) for Day & Night respectively. In core zone maximum noise levels and average noise levels are also well within the prescribed limit of 75 & 70 dB (A) for Day & Night respectively.

Table 11: Noise Level in Core and Buffer Zone of the Study Area

Date of Sampling		**Noise level dB(A) average**					
04.08.2022 to 08.08.2022		**Day Time (6.00AM to 10.00PM)**			**Night Time (10.00PM to 6.00AM)**		
Stn. Code	***Location***	**Min.**	**Max.**	**Average**	**Min.**	**Max.**	**Average**
Core Zone							
N-1	Tasra (Near Mine Site)	27.5	64.2	50.0	27.2	53.4	45.0
N-2	Weigh Bridge	26.9	60.7	52.7	26.6	55.6	49.8
Standards as per CPCB		**75**			**70**		
Buffer Zone							
N-3	Rohrabandh	27.6	56.7	50.2	27.2	50.3	43.7
N-4	BIT, Sindri	27.3	62.5	52.3	25.6	55.6	44.8
N-5	GM Office, Tasra	28.5	60.1	53.5	25.4	55.6	43.9
N-6	Near Arya Samaj	27.5	60.4	51.8	27.2	55.3	44.2
Standards as per CPCB		**55**			**45**		

7.0 Conclusion and Recomendations

On the basis of the data generated it has been found that the environmental scenario in mining area of Tasra OCP with respect to air, water and noise are well within the permissible limits.

For the best practice of coal mining in future, Environmental Management System should always be considered with following measures:

- ❖Spraying of water on the haul roads, weigh bridge, loading and unloading point of coal and over burden including office premises for controlling the dust to its minimum level.
- ❖Regular maintenance of the all types of vehicles.
- ❖Mine water collection in settling tank before its discharge and reuse.

The mine management has to implement these measures to make mining operation eco-friendly in Tasra OCP of M/s Steel Authority of India Ltd, Dhanbad, Jharkhand.

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