

Ref.: /DCMP/F&E/ES/06/ 819

Date: 30.11.2022

To

Dy. Director General of Forest (Central),
Govt. of India,
Ministry of Environment, Forests and Climate Change,
Integrated Regional Office,
A-3 Chandrashekharpur,
Bhubaneswar-751023, Odisha

Subject: Dulanga Opencast Coal Mining Project (7 MTPA in an area of 785.37Ha.; Latitude 21° 50'40" N to 22° 01'30" N and Longitude 83° 42' 06" E to 83° 53' 43" E, of M/s National Thermal Power Corporation Ltd. (NTPC), Ib Valley Coalfields, Dist: Sundargarh, Odisha - **Submission of Half Yearly Report on the status of compliance of the stipulated Environmental Clearance conditions.**

Ref.: MoEFCC Environmental Clearance Letter Number- J-11015/1140/2007-IA.II (M) dated 03rd March, 2014, J-11015/1140/2007-IA.II (M) dated 9th February, 2016 and J-11015/1140/2007-IA-II (M) dated 8th August, 2018.

Dear Sir,

With reference to the above, we are submitting herewith the Half Yearly Report on the status of compliance of the stipulated Environmental Clearance conditions including results of monitored data **for the period from April 2022 to September 2022** with reference to the above mentioned EC Order issued by the Ministry of Environment, Forests and Climate Change, Govt. of India, for your kind information and necessary record please.

The softcopy of the same is being mailed to the email id: roez.bsr-mef@nic.in

Thanking You.

Yours Faithfully,



(Neeraj Jalota)

General Manager & Head of Project

Encl.: As above

Copy to:

- The Central Pollution Control Board,**
Zonal Office, Southern Conclave, Block -502, 5th & 6th Floors,
1582 Rajdanga Main Road, Kolkata – 700107
- The Member Secretary,**
State Pollution Control Board, Odisha,
A/118, Nilakantha Nagar, Unit – VIII, Bhubaneswar – 751012

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दुलंगा कोल माइनिंग प्रोजेक्ट, द्वितीय तल, मेघ मल्लहार, मिशन रोड, सुन्दरगढ़-770001 (ओडिशा), दूरभाष : 06622-275501(कार्यालय), फैक्स : 06622-275178
Dulanga Coal Mining Project, 2nd Floor, Megh Mallahar, Mission Road, Sundargarh-770001 (Odisha), Phone : 06622-275501 (O), Fax : 06622-275178

पंजीकृत कार्यालय : एन टी पी सी भवन, स्कोप कॉम्प्लेक्स, 7 इन्स्टीट्यूशनल एरिया, लोधी रोड, नई दिल्ली - 110 003

कार्पोरेट पहचान नम्बर : L40101DL1975GOI007966, टेलीफोन नं. : 011-24387333, फैक्स नं. : 011-24361018, ईमेल : ntpccc@ntpc.co.in, वेबसाइट : www.ntpc.co.in

Registered Office : NTPC Bhawan, Scope Complex, 7 Institutional Area, Lodhi Road, New Delhi - 110 003

Corporate Identification No. : L40101DL1975GOI007966. Telephone No. : 011-24387333. Fax No. : 011-24361018 E-mail : ntpccc@ntpc.co.in Web Site : www.ntpc.co.in

**DULANGA COAL MINING PROJECT (7.0 MTPA)
SIX MONTHLY COMPLIANCE STATUSES OF ENVIRONMENTAL CLEARANCE
CONDITIONS (PERIOD: April 2022 to September 2022)**

Name of the Project: Dulanga Opencast Coal Mining Project (7MTPA) in an area of 785.37 ha = (803.71 ha - 18.34 ha = 785.37 ha); Latitude 21⁰50'40"N to 22⁰01'30' N and Longitude 83⁰42'06"E to 83⁰53'43"E) of M/s NTPC Limited, Ib Valley Coalfields, Dist. Sundargarh, Odisha.

Introduction:

The said project is an Opencast Coal Mining Project with rated production capacity of 7.0 Million Tonne per Annum as per EC granted, is located in Sundargarh District, Odisha. The proposed project of NTPC Limited has been planned to cater the coal requirement of Darlipali Thermal Power Plant of NTPC Limited. The project has also obtained Consent to Establish (NOC) from Odisha State Pollution Control Board vide consent order no. 23564/Ind-II-NOC dated 27-11-2012 and Stage-II Forest Clearance from MoEF &CC (FC Division), GOI vide letter: F. No.8-23/2013 –FC dated 23rd December, 2015.

This project has been granted environmental clearance by the Ministry of Environment, Forests & Climate Change (MoEF&CC) the then Ministry of Environment & Forest, (MOEF), Govt. of India, New Delhi, vide letter no. J-11015/1140/2007-IA.II (M) dated 03rd March, 2014 and subsequently amended vide letter no. J-11015/1140/2007-IA.II (M) dated 09th February, 2016. Further, the said EC has again been amended vide letter no. J-11015/1140/2007-IA-II (M) dated 8th August, 2018.

Present Status of the Project:

The Mining Operations have commenced from this block w.e.f. 28/02/2018 and had produced 52,92,094 Tonnes of Coal in the last financial year 2021-2022.

29,22,970.00 Tonnes of Coal produced till end of Sep-22 in Financial Year 2022-23

Submission of Six-monthly Compliance Status Report of Environmental Clearance Conditions:

This report is being submitted as per the condition stipulated in the Environmental Clearance Order. The point-wise six monthly compliance status of environmental clearance conditions of MoEF&CC Letter No. J-11015/1140/2007-IA.II (M) dated 03rd March, 2014 in respect of Dulanga Coal Mining Project for the period **from April 2022 to September 2022** is furnished hereunder.

Point wise Compliance Report of Specific Conditions specified in Environmental Clearance Order is as given below

Sl. No	Specific Conditions	Compliance Status
(i)	The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.	The rated peak production capacity of the mine as per the EC granted and as per approved Mining Plan is 7.0 MTPA. During the period from 1 st April, 2022 to 30 th September, 2022 the total production of coal is 29,22,970 Tonnes against the EC/CTO prescribed production limit of 7.0 MMT.
(ii)	The Forest Clearance has been granted for 304.75 ha (273.68 ha within the Dulanga Coal Block and 31.07 ha of forest land outside the Coal Block including 4.94 ha of forest land coming within the safety zone in Dulanga Coal Mining Project) vide letter no. 8-23/2013-FC dated 10.01.2014. FC for balance 18.34 ha has not been granted. No mining activity shall be carried out in forest land for which FC has not been granted.	The Stage-I Forest Clearance (FC) has been accorded by MoEFCC for 304.75 ha (originally applied 323.09 ha.) of forest land (273.68 hectares within the Dulanga coal block and 31.07 hectares of forest land outside the coal block) including 4.94 hectares of forest land coming within safety zone in Dulanga coal mining project vide letter dated 10 th January 2014. Forest Clearance for the balance 18.34Ha was not granted by MoEF&CC and hence no mining activity will be carried out in that 18.34 Ha of forest area; rather the area will be afforested by the State Forest Department from funds already deposited by NTPC with ad-hoc CAMPA.
(iii)	OB dump along the western side of an area of 244 ha would be brought to almost ground level for post-mining land use by re-handling of an estimated 112 Mm ³ of OB during 5 years after end of mine life (EOL). However, the dump along the east would be about 30m above ground level.	This has been incorporated in the Mine Closure Plan and shall be ensured at the time of mine closure.
(iv)	An estimated 112 Mm ³ of OB is proposed to be re-handled from the eastern and western OB dumps.	To be complied.

(v)	<p>It was stated that an area of 286.74 ha within the ML (which includes an area of 226.23 ha of quarry area) and an area of 179.72 ha outside the ML would be developed with plantation.</p>	<p>Plantation in quarry area will be done after mining and internal dumping is over in phases, based on availability of area.</p> <p>However, Plantation and Grassing Activities has been carried out over non-active Overburden Dump which spread over about 1.5 Ha of area with total 6120 no's of sapling over the Dump and 1200 kg of Stylo Hamata seeds all along the slope of non-active dump.</p> <p>Additionally, Plantation and Grassing, activities have been carried out over the Top Soil. About 400 nos of sapling over 1.27 Ha of area with 1200 kg of Stylo Hamata seeds all along the slope of Top Soil Dump.</p> <p>Till the end of September 2022, total numbers 10,157 of sapling has been planted during last monsoon period.</p> <p>Photos of Plantation activities carried out in different region enclosed as Annexure - I.</p> <p>We have already identified 320 Ha of area in Garjanpahad RF for carrying out bamboo plantation to improve wildlife (Elephant) Habitat. This has been envisaged in our approved Site Specific Wildlife Conservation Plan under activities to be implemented by DFO, Sundargarh. The entire funds for implementation of approved Site Specific Wildlife Conservation Plan in buffer zone by DFO, Sundargarh have been deposited with adhoc CAMPA.</p>
(vi)	<p>No fly ash from the linked TPPs shall be used in backfilling of the void without undertaking an environmental feasibility study and without prior approval of this Ministry under EIA Notification, 2006.</p>	<p>Noted.</p>
(vii)	<p>Option-3 be adopted, as committed by the proponent, as the most feasible option for diversion of Garia Nala, Baidhara Nala and Nala B and its realignment, whereby the plan for</p>	<p>Permission obtained from Dept. of Water Resources, Govt. Of Odisha for diversion of Garia Nalla and its tributaries (Baidhar Nallah and Nallah-B) flowing within the coal block boundary of Dulanga Coal Mining Project vide</p>

	their diversion to be taken up during the 8th and 10th year.	letter dated.23.08.2021.
(viii)	The fluoride in the groundwater both in dug wells and by installing peizometers in the study area at appropriate locations be monitored.	Fluoride in the groundwater from dug wells are being monitored at eight different locations on Core and Buffer areas by an NABL Accredited laboratory. Peizometers being installed in the study area at different locations for monitoring of groundwater. The analysis report of fluoride in groundwater collected from the different locations within the study area for the period from the month of April 2022 to September 2022 is annexed. Annexure - II.
(ix)	Transport of coal to Darlipali TPS located at a distance of about 10km shall be by MGR.	Coal transportation to Darlipalli Super Thermal Power Plant through MGR started from 04/01/2020. Coal transportation takes place through MGR only.
(x)	An integrated calendar plan of production including the details re-handling separately in external and internal dumps should be furnished to MOEF for record.	An integrated calendar plan of production including the details of re-handling separately in external and internal dumps has been furnished to MoEF&CC vide letter no. 0100/DLCMP/FD/ES/02/0814 dated 25/08/2014.
(xi)	Temporary OB dumps which require re-handling should be stabilized with grass and shrubs.	Currently we have two active O.B dumps which will be stabilized by proper Dozing and Grading. Non-Active Part of OB dump has been stabilized with Grassing and Sapling Plant over the Dump. Photo has been attached as Annexure-III.
(xii)	Data available with the Rajiv Gandhi National Drinking Water Mission, Department of Rural Development be studied and recommendations therein for removal / treatment of fluorides, TDS, etc, in drinking water be followed for providing safe drinking water to R&R colony and to	Noted. UV Water purifiers have been provided to dwelling units of R&R Colony for ensuring safe drinking water.

	the nearby villages.	
(xiii)	Mining shall be carried out as per statute at a safe distance from Garia Nala and its diversion canal and the diverted Baidhara nala and nala'B' Nala flowing within the lease boundary. The bund/embankment to be constructed along diverted canal of Garia nala shall be designed taking into account the highest flood level, based on past data, so as to guard against mine inundation.	Mining is being carried out as per statute at a safe distance from Garia Nala and its diversion canal and the diverted Baidhara nala and nala'B' Nala flowing within the lease boundary. The design of the embankment shall be constructed as per the approved designed of competent authority i.e. Water Resource Department Presently working has been carried out with the safety distance of 40m from Garia Nalla.
(xiv)	Topsoil shall be stacked properly within the ML with proper slope at earmarked site of 3.84 ha and shall be concurrently used for reclamation and development of green belt within a year of its generation.	Topsoil is being stacked within ML with proper slope at earmarked site. 3,71,700.65 m3 of topsoil has been stacked at the earmarked site as on 30/09/2022. During 2021-22 total 1.27 Ha of Topsoil Dump has been stabilized with grassing activities (Scientific Name-Stylo Hamata). Photograph has been attached as Annexure - IV .
(xv)	A temporary external OB dump in an area of 106.62 ha and of 60m height for the initial period of 2.5 years shall be created for dumping 38.5 Mm3 of OB, which would be reclaimed with plantation and after 2.5 to 3 year. There would be no external OB dumping from 5th year onwards. The temporary OB dumps which require re-handling shall be stabilized with grass and shrubs.	In line with the Forest Clearance accorded by MoEF&CC, 18.34 Ha. of forest land initially involved in dump area has been left out and thereafter the revised dump area has been reduced to 86.0 Ha for accommodating 28.5 Million Cubic Meter of OB as per mining plan. The temporary OB dumps will be planted with grass and shrubs to avoid erosion and dust pollution.
(xvi)	Area brought under afforestation shall be not less than 466.46 ha which includes 286.74 ha within the ML and 179.72 ha outside the ML would be reclaimed with plantation, which includes 351.23 ha of reclaimed quarry, 106.50 ha of reclaimed external OB dump, 3.84 ha	The stipulation shall be followed. Plantation in quarry area will be done after mining and internal dumping is over in phases based on availability of area. 320 Ha in Garjanpahad RF Outside ML area has been earmarked for carrying out bamboo plantation to improve wildlife

	<p>of topsoil dump, 2.75 ha of coal stockyard, 2.14 ha of surface water reservoir and an area of 83.74 ha undisturbed shall be developed into green belt within the first 3 years.</p>	<p>(elephant) habitat as envisaged in approved Site-Specific Wildlife Conservation Plan under activities to be implemented by DFO, Sundargarh.</p> <p>The entire funds for implementation of above plan in buffer zone by DFO, Sundargarh have been deposited with adhoc CAMPA.</p> <p>Till end of September 2022, total of 9388 numbers of saplings have been planted during 2022-23.</p>
(xvii)	<p>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 utilized for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly.</p>	<p>Catch drains and siltation ponds of appropriate size are constructed to arrest silt and sediment flows from soil, OB and mineral dumps. Garland drain is so designed that it will discharge the rainwater to settling pond.</p> <p>The Khapurikachhar, Khuntijharia and Beldihi OB dump yard garland drains are so designed that it will discharge the rainwater to Garia nala through overflow of Sedimentation Pond.</p> <p>To reduce the mine working/ OB dump, catchment water drain / Garland drain has been made. Sedimentation pond/ settling pond has been constructed or De-Silted.</p> <ul style="list-style-type: none"> ➤ About 2840m of garland drain with width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along the OB dump-1B with proper settling pond before discharge of rainwater to Garia Nalla. ➤ About 1620m of garland drain with width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along the OB dump-1A with proper settling pond has been constructed before discharge of rainwater to Garia Nalla. ➤ About 2350m of garland drain having width varies from 1.5m to 2m and depth varies

		<p>from 1.5m to 2m has been constructed along the up-dip side of mine and discharge to sedimentation pond before discharge to Garia Nalla and prevent outside water to rush inside.</p> <ul style="list-style-type: none"> ➤ Adequate embankment has been provided along the Garia Nalla. ➤ About 2578m of garland drain having width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along Khuntijharia OB dump and discharge to sedimentation pond before discharge to Garia Nalla. ➤ About 860m of garland drain having width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along Beldihi OB dump and discharge to sedimentation pond before discharge to Garia Nalla.
(xviii)	The entire transportation of 21,210 TPD of coal from the mine to the linked Darlipali Super Thermal Power plant shall be by MGR only with wagon loading by Silo. Transportation of coal by road is not permitted.	<p>Coal transportation to Darlipalli through MGR started on 04.01.2020. Coal transportation take place through MGR Only.</p> <p>Coal transport may be carried out on requirement basis as per the recent circular no-E(P)Amendment Rule ,2022 vide MoEF & CC Gazette Notifiaction-S.O. 1561(E) dated-21.05.2020 and OM Ref. F.No. J-13012/91/2008-IA.11(T).</p>
(xix)	An STP shall be provided for the township/ colony to treat the domestic effluents to prescribed standards and for their reuse in project activities.	For offices septic tank followed by soak pit has been provided. Construction has been made as per BIS specification.
(xx)	Area brought under afforestation shall be not less than 466.46 ha which includes 286.74 ha within the ML and 179.72 ha outside the ML would be reclaimed with plantation, which includes 351.23 ha of reclaimed quarry, 106.50 ha of reclaimed external OB dump, 3.84 ha of topsoil dump, 2.75 ha of coal	Noted and shall be complied with.

	<p>stockyard, 2.14 ha of surface water reservoir and an area of 83.74 ha undisturbed shall be developed into green belt within the first 3 years.</p>	
(xxi)	<p>A Project specific Wildlife Conservation Plan prepared for Rs 73 lakhs as capital costs and Rs.61 lakhs (annual) for the project for conservation of wild fauna including Elephant, Sloth Bear and a number of Schedule-II fauna found in the study area and for conservation of their habitat shall be implemented in consultation with the Forest and Wildlife Departments of the State Government. The Plan shall include creation of a passageway (undisturbed area through the block as a passage for the free movement of the elephants and for wild animals which may venture into the coal mine areas) at all stages of the mine operation in conjunction with the neighboring mines which come up in the area to allow movement of these fauna through the project area. The passageway shall be forested with species from the natural habitat to provide connectivity to enable them to reach the neighboring forests unhindered. Solar fencing would be done along the quarry which would be shifted as the mine develops. Grasslands shall be developed as part of Habitat Restoration in the study area and tree and plant species such as bamboo which constitute the natural diet of the elephants and plant species suitable for bears shall be developed as part of mine reclamation and eco-regeneration of the study area regularly visited by the elephants. At the post mining stage, the mine shall be restored as a habitat for the wildlife found in the</p>	<p>The Site specific Wildlife Conservation Plan as approved by the Chief Wildlife Warden, Odisha vide letter no. 9597/1WL(C) SSP-270/2012 dated 03/12/2013 is under implementation.</p> <p>Funds for implementation of the same in the buffer zone by the State Forest Department has already been deposited in Ad-hoc CAMPA account vide UTR No. SBIN714073448793 dated 14/03/2014 for Rs.4,49,70,000/-.</p> <p>The stipulated conditions shall be complied with.</p>

	pre-mining stage. The WL Plan shall include the use of sirens to alert the animals during MGR movement, sensitizing the rail drivers and minimizing speed during such crossings shall also be implemented.	
(xxii)	The project authorities shall also participate in a Regional Conservation Plan as and when prepared in the future by the State Govt. for the conservation of flora-fauna found in the region as a whole.	Funds for the Regional Wildlife Conservation Plan have already been deposited in Ad-hoc CAMPA as per the revised rate fixed by the State Govt. @ Rs. 43,000/- per Ha for the total leasehold area vide UTR No. SBIN714073453867 dated 14/03/2014 for Rs.3,27,84,060/-.
(xxiii)	The progress made on the implementation of the Wildlife Conservation Plan shall be monitored by creation of a Committee which includes experts in ecology and wildlife. The status of budgetary provision of capital and revenue expenditure on the various activities under the Project specific and Regional WL Conservation Plan and the status of the Plans shall be regularly reported to the MOEF RO, Bhubaneswar and also uploaded on the company website.	Approved Site Specific Wildlife Conservation Plan already envisions for an executive committee under the chairmanship of DFO, Sundargarh with Mine manager, RO Hemgir, RO Gopalpur, 3 VSS Presidents and mine worker representatives in effective implementation of the site specific wildlife conservation plan. This is under formation. Additionally, we have Dr Nirakar Bhol I/C Head of the Department, COLLEGE OF FORESTRY, OUAT, BHUBANESWAR an external expert in the field of ecology and wildlife as a part of our WLCP implementation committee.
(xxiv)	Third Party monitoring of implementation of WL Conservation Plan shall be carried out and for monitoring the utilization of funds earmarked for implementation of the WL Plan.	Dr Nirakar Bhol I/C Head of the Department, COLLEGE OF FORESTRY, OUAT, BHUBANESWAR has been appointed for third party monitoring of implementation of WL Conservation Plan.
(xxv)	A detailed R&R Plan shall be formulated for the 417 PAPs and 309 homestead losers as per R&R Policy of the State Govt. and shall be completed within December 2014; R&R shall include specific income generation schemes, skill development and capacity building, etc. The details of status of	A detailed R&R Plan for the project affected families of Dulanga Coal Mining Project has been approved by the District Magistrate & Collector, Sundargarh with a total financial outlay of Rs. 112 Crores. The plan is being implemented accordingly for all eligible PAPs in phases.

	implementation and expenditure on the various activities under the R&R Action Plan for the total budget of R&R shall be uploaded on the company website.	Expenditure incurred up to Sept 2022 : 1. R & R Colony Construction : Rs 97 Crores 2. R & R benefits (Incl Annuity) : Rs 154.47 Cr (Rs 100.28 Cr for R&R + Rs 54.19 Cr for Annuity)
(xxvi)	CSR Plan with a total budgetary provision of Rs 15.92 crores (capital) and 7.34 crore/annum recurring cost) shall be implemented for the life of the project. The details of village-wise activities undertaken for the amount of Rs 67.69 lakhs already spent on CSR shall be uploaded on the company website and further, details of village-wise activities for provision of Rs 30-40 Cr for CSR for the first 5 years and Rs5/T of coal as recurring expenditure shall also be provided in the annual report and the compliance report furnished to MOEF RO, Bhubaneswar.	The budgetary provision of Rs. 15.92 crores (Capital) and 7.34 crore/ annum (recurring cost) pertains to the Environment Management Plan for the project and shall be implemented during mining operations for the life of the project. NTPC Dulanga Coal Mining Project has spent a total of approx. Rs 0.5 Cr under different heads like health, education, infrastructure, drinking water, capacity building/ skill development during Apr 2022 to Sept 2022.
(xxvii)	A detailed R&R Plan shall be formulated in consultation with the various stakeholders as per prevalent R&R Policies and would cover R&R for individuals and for the displaced community as a whole.	R&R plan for the individuals and for the displaced community as a whole has been prepared in-line with the National R&R Policy & the OPRR Policy and the same has been duly approved of by the District Magistrate & Collector, Sundargarh.
(xxviii)	Various activities under R&R Plan should be completed within time-schedule. The detailed R&R and CSR Action Plans be prepared and implemented.	Detailed R&R plan has already been prepared, approved of and is being implemented in phases.
(xxix)	An amount of 67.69 lakhs has been already spent on CSR and further, a provision of Rs 30-40 crores shall be earmarked for CSR for the first 5 years and 5/T of coal as recurring expenditure adjusted to the annual inflation rate.	Noted and being adhered to. NTPC Dulanga Coal Mining Project has spent a total of approx. Rs. 0.5 Cr under different heads like health, education, infrastructure, drinking water, capacity building/ skill development during 2022-23 till Sept-2022. Photograph has been attached as Annexure-V .

(xxx)	An amount of Rs.1592 lakhs (capital costs) and Rs.734 lakhs (recurring) costs earmarked for EMP shall be implemented and detail thereof furnished as part of the compliance report and also uploaded on the company website.	Amount earmarked for EMP are being utilized for implementation and being complied with.
(xxxii)	Coal transportation in pit: Rear Dumper, Surface to Siding through Conveyor belts and loading at siding by rail.	Noted and being adhered to. Presently transportation is being done in rear dumpers from face to stock yard and wagon loading of coal through CHP commenced in April'22.
(xxxii)	The production shall be within the same Mining Lease area.	Adhered to.
(xxxiii)	The OB shall be completely re-handled at the end of the mining.	The OB will be completely re-handled at the end of the mining as per the approved Mining Plan.
(xxxiv)	Final mine void depth will not be more than 40m. The void area will be converted into water body. The rest of the area will be back filled upto the ground level and covered with about a meter thick top soil and put to use.	Shall be complied and the same has already been incorporated in the approved Mining Plan for the project.
(xxxv)	Garland drains be provided.	Catch drains and siltation ponds of appropriate size are constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The Mine boundary garland drain is so designed that it will discharge the rain water to settling pond. The Khapurikachhar, Khuntijharia and Beldihi OB dump yard garland drains are so designed that it will discharge the rainwater to Garia nala through overflow of Sedimentation Pond. To reduce the mine working/ OB dump, catchment water drain / Garland drain has been made. Sedimentation pond/ settling pond has been constructed or De-Silted. ➤ About 2840 m of garland drain with

		<p>width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along the OB dump-1B with proper settling pond before discharge of rainwater to Garia Nalla.</p> <ul style="list-style-type: none"> ➤ About 1620m of garland drain with width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along the OB dump-1A with proper settling pond has been constructed before discharge of rainwater to Garia Nalla. ➤ About 2350m of garland drain having width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along the up-dip side of mine and discharge to sedimentation pond before discharge to Garia Nalla and prevent outside water to rush inside. ➤ Adequate embankment has been provided along the Garia Nalla. ➤ About 2578m of garland drain having width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along Khuntijharia OB dump and discharge to sedimentation pond before discharge to Garia Nalla. ➤ About 860m of garland drain having width varies from 1.5m to 2m and depth varies from 1.5m to 2m has been constructed along Beldihi OB dump and discharge to sedimentation pond before discharge to Garia Nalla.
(xxxvi)	The land after mining shall be brought back for agriculture purpose.	Noted
(xxxvii)	Mine water should be treated for discharge into the lagoon. The quality of lagoon water shall be regularly monitored and mitigation measures taken.	Shall be complied with. Presently, no Mine Water is being discharged in lagoons.
(xxxviii)	Everybody in the core area should be provided with mask for protection	Everybody in the core area are being provided with dust mask for protection against fugitive

	against fugitive dust emissions.	dust emissions as a part of PPE during mining operations.
(xxxix)	Dust mask to be provided to everyone working in the mining area.	Dust masks are being provided to all personnel working in the mining area.
(xl)	The supervisory staff should be held personally responsible for ensuring compulsory regarding wearing of dust mask in the core area.	The supervisory staffs are instructed to ensure wearing of in the core area and the same is being complied with.
(xli)	People working in the core area should be periodically tested for the lung diseases and the burden of cost on account of working in the coal mine area.	Being adhered with. Chest X – Ray is a part of Occupational Health Check up, Regular health check up has been carried out for the workers. As per instructions, Initial Medical Examination has already done for all the employees working in mining operations as well periodic health check-up of the workers are being carried out.
(xlii)	The mining area should be grounded by green belt having thick closed thick canopy of the tree cover.	The stipulations shall be adhered to.
(xliii)	The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilized with plantation so as to withstand the peak water flow and prevent mine inundation.	As per directions, design of the embankment will be made accordingly. Extensive plantation activities shall be carried out on either sides of the embankment.
(xliv)	There shall be no overflow of OB into the river and into the agricultural fields and massive plantation of native species shall be taken up in the area between the river and the project.	No Surface runoff from OB Stacks /dump being discharged into any nearby agricultural fields.
(xlv)	OB shall be stacked at one earmarked external OB dumpsite(s) only. The ultimate slope of the dump shall not exceed 28°. Monitoring and management of existing reclaimed	The stipulation shall be adhered to. Till end of Sept-22, 19,00,000 m ³ of solid waste has been dumped in the void created

	dumpsites shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forest and its concerned Regional office on yearly basis.	after mining.
(xlvi)	Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper setting of silt material.	As per the stipulation, Garland drains (size, gradient and length) and sump capacity have been designed keeping 50% adjoining the mine site. Dimensions vary like 2m, 4m & 3m with the gradient of 1:30. Sump capacity has been provided with adequate retention period to allow proper settling of silt materials.
(xlvii)	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.	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation will be designed based on the rainfall data of the area. Construction of retaining wall will be carried out once we reach the optimum height and area section wise. At present there is no run off from the OB.
(xlviii)	Crushers at the CHP of adequate capacity for the expansion project shall be operated with high efficiency bag filters, water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.	CHP of capacity 1325 tph is constructed and operational since 28/01/2022 with inbuilt mist type dust suppression system in conveyors. Dust suppression arrangements have also been provided to check fugitive emissions from crushing operations, haulage roads, transfer points, etc.
(xlix)	Drills shall be wet operated.	Wet operated drills are being used during drilling operation.
(l)	The project authorities shall undertake regular repairing and tarring of roads used for mineral transportation. A3-tier green belt comprising of a mix of native species shall be developed all along the	Being complied with. Avenue Plantation has been taken up during the monsoon season along the roads constructed by NTPC – DCMP. As of now 6 kms of road have been done with

	major approach roads.	avenue plantation.
(li)	Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to attest the fly rocks and boulders shall be implemented.	Controlled blasting during daytime are in practiced with use of delay detonators and being done only in daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders are being implemented. Scientific study of controlled blasting designed by ISM, Dhanbad. Regular controlled blasting done within the proposed design limit. Additionally, all stipulations made by DGMS to this effect shall duly adhered to.
(lii)	A Progressive Mine Closure Plan shall be implemented by reclamation and afforestation of 351.23 ha of the total quarry area of 567.19 ha by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha. The balance 159.55 ha decoaled area being converted into a water reservoir of 45-50m depth at the post mining stage shall be gently sloped along the upper benches an stabilized and reclaimed with plantation	Mine Closure Plan has already been approved as a part of Mining Plan and it envisages the stipulations as made herein by the Ministry. It shall be duly implemented.
(liii)	A temporary external OB dump in an area of 106.62 ha and of 60m height for the initial period of 2.5 years shall be created for dumping 38.5 Mm ³ of OB, which would be reclaimed with plantation and after 2.5 to 3 years. There would be no external OB dumping from 5th year onwards. The temporary OB dumps which require re-handling shall be stabilized with grass and shrubs.	As per Forest Clearance accorded by MoEF&CC, 18.34 Ha. of forest land involved in dump area has been left out and not approved for diversion. The revised dump area has been reduced to 86.0 Ha for accommodating 28.5 Million Cub Meter of OB for initial 4 years. However, due to local law & order issues (i.e. resistance from the villagers for rehabilitation activities), total proposed quantity i.e. 28.5 Million Cu.M is unable to accommodate in the external OB Dump. Till end of Sep-22, approx.7.0 Million Cu.M of OB is accommodated and the balance OB Quantity to be accommodated at the earliest.

		<p>Presently dumping activities are being carried out at Khapurikhachar OB dump, Beldihi OB Dump and Inpit Dump.</p> <p>Inactive OB dump of Khapurikhachar having 1.5 Ha. has been grassed with different varieties along with local sapling planted and along the slope with Stylo Hamata grass.</p>
(liv)	The proponent should prepare restoration and reclamation plan for the degraded area. The land be used in a productive and sustainable manner.	Restoration and Reclamation plan for the degraded area will be prepared. The land shall be used in a productive and sustainable manner.
(lv)	Compensatory Ecological & Restoration of waste land, other degraded land and OB dumps in lieu of breaking open the land be carried out	It shall be implemented.
(lvi)	The mining should be phased out in sustainable manner. No extra over burden dumps are permitted.	Stipulation shall be strictly adhered to during mining operations.
(lvii)	No groundwater shall be used for mining operations.	<p>No groundwater shall be used for mining operations.</p> <p>However, ground water will be used for potable use. NOC for ground water withdrawal in respect of Dulanga coal mining project has been accorded by the Central Ground Water Authority, New Delhi vide letter No. 21-4 (513)/ SER/ CGWA/ 2013-1982 dated 04th Dec. 2017 and renewed vide NOC No. CGWA/ NOC/MIN/REN/2/2022/7124 which is valid from 04th Dec. 2021 to 03rd Dec 2023.</p>
(lviii)	Regular monitoring of groundwater level and quality shall be carried out by establishing a network of existing wells and construction of new piezometers. 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	<ol style="list-style-type: none"> 1. Regular monitoring of groundwater level and quality has already been started by engaging an NABL Accredited as well as OSPCB empanelled laboratory. 2. Frequency of monitoring is as per the schedule mentioned. 3. Record of Ground water level for Pre Monsoon (April 2022) and Post Monsoon Season (August 2022) are annexed.

	thus collected shall be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.	Annexure -VI. 4. The ground water quality report for the month of April 2022 to September 2022 is annexed for your kind reference and necessary record. Annexure – VII.
(lix)	The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring indicates a decline in water table. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	Shall be adhered with if required. We have already commenced construction of rain water harvesting structures in our temporary office building. However, water tankers are being deployed in nearby villages during summer season as a part of Community development activity.
(lx)	Sewage treatment plant shall be installed in the existing colony. ETP shall also be provided for workshop and CHP wastewater.	ETP having 50KLD capacity has been constructed and is being used for treatment of Effluent water generated during Washing of Wheel. Inlet and outlet water of ETP whose water quality has been monitoring and all the parameter are under permissible limit and report has been annexed. Annexure-VIII.
(lxi)	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 specialized agency/ institution within the District/State and the results reported to this Ministry and to DGMS.	As per instructions, periodic health check- up of the workers are being carried out concurrent with mining operation.
(lxii)	For monitoring land use pattern and for post mining land use, a time series of land use 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	Mining operation has been started in February 2018. Land use map for both core and buffer has been prepared on a scale of 1: 5000 based on Satellite Imagery path available on Feb 2021 and was submitted with last half yearly compliances.

	submitted to MOEF and its concerned Regional office.	
(lxiii)	A detailed Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & forests within 6 months of grant of Environmental Clearance.	Detailed Final Mine Closure Plan already submitted to the MoEF&CC vide our letter ref no: 0100/ DLCMP/FD/ES/ 02/ 0814 dated 25/08/2014.
(lxiv)	The project authorities shall in consultation with the Panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried out over the balance life of the mine.	Various socio-economic and welfare measures are being undertaken as initial community development in consultation with the Panchayats of the local villages and administration and the same is being carried out accordingly. This practice shall be followed over the entire mine life.
(lxv)	The commitment made by the Proponent to the issue raised during Public Hearing shall be implemented by the Proponent.	Being implemented accordingly
(lxvi)	<p>Corporate Environment Responsibility :</p> <p>a. The Company shall have a well laid down Environment Policy approved by the Board of Directors.</p> <p>b. The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/ deviation/violation of the environmental or forest norms/conditions.</p> <p>c. The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance</p>	<p>The Corporate Environment Responsibility Policy of NTPC already exists and the same is also being revised from time to time.</p> <p>Recently Corporate Environment policy has been revised in 2017 Copy of the said Policy already submitted at your office along with EC Return June 2018.</p> <p>Hierarchical System of the Environment Management Cell is given below:</p> <ul style="list-style-type: none"> • Chairman (1 .0 No.) : Head of Project • Advisors (2.0 Nos) : Head of Departments • Members (3.0 Nos.): Env. Engineers • Secretary (1.0 No.): Mine Manager. <p>System of Reporting of Reporting of occurrence of any non compliance of EC</p>

	<p>conditions shall be furnished.</p> <p>d. To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.</p>	<p>conditions is as give below:</p> <ul style="list-style-type: none"> • Regular meeting of Environment Management Cell • Discussion on Pending Issues • Discussion and review on action taken on points of previous meeting. • Formulation of points for future • Discussion on Non-compliance • Discussion of such Non-Compliance reports during meeting of EMC for early rectification.
Sl. No	General Conditions	Compliances Status
(i)	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	Any changes in mining technology and scope of working will be submitted to MoEF&CC well in advance for approval.
(ii)	No change in the calendar plan of production for quantum of mineral coal shall be made.	There will be no change in the calendar plan of production for quantum of coal.
(iii)	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM ₁₀ , PM _{2.5} , SO ₂ , and NO _x monitoring. 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. etc. carried out at least once in six months.	<p>Four nos. of ambient air quality monitoring stations have already been established in consultation with the Odisha State Pollution Control Board at different locations in the core zone as well as in the buffer zone for monitoring of air quality parameters as mentioned such as PM₁₀, PM_{2.5}, SO₂, and NO_x.</p> <p>Heavy metals such as Hg, As, Ni, Cd and Cr. etc. are also carried out once in six months.</p> <p>The abstract of monitoring reports for the period from April 2022 to September 2022 is enclosed for your kind reference and necessary record. Annexure – IX.</p> <p>Also 01 (One) No. Continuous Ambient Air Quality Monitoring Station has been installed at our site to monitor the air quality. Photograph has been attached as Annexure – X.</p>

(iv)	<p>Data on ambient air quality (PM₁₀, PM_{2.5}, SO₂, and NO_x) and heavy metals such as Hg, As, Ni, Cd, Cr, and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office 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 EPA rules, 1986 shall be furnished as part of compliance report.</p>	<p>Monitoring reports are being submitted biannually as per order to the following authorities.</p> <ol style="list-style-type: none"> Dy Director General of Forest (Central), Ministry of Environment, Forest and Climate Change (MoEF&CC), Integrated Regional Office, A/3, Chandrasekharpur, Bhubaneswar - 751023, Odisha The Central Pollution Control Board, Zonal Office, Southern Conclave, Block -502, 5th & 6th Floors, 1582 Rajdanga Main Road, Kolkata – 700107, West Bengal The Member Secretary, State Pollution Control Board, Odisha, A/118, Nilakantha Nagar, Unit – VIII, Bhubaneswar – 751012, Odisha
(v)	<p>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.</p>	<p>Adequate measures are taken for control of noise levels below 85 dBA in the work environment during the operation phase of mining block.</p> <p>Workers in high noise environment are also provided with ear plugs/muffs.</p>
(vi)	<p>Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.</p>	<p>There is provision of Effluent Treatment Plant (ETP) along with establishment of workshop at site within the leasehold area.</p> <p>The said ETP is under in service.</p> <p>The treated wastewater will be reused for vehicle washing. No wastewater from work shop allowed to be discharged to outside under any circumstances.</p>
(vii)	<p>Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.</p>	<p>Regular pollution monitoring of all vehicles involved in the mining project are in practice to control emission during operation of the mine.</p>

(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 analyzed through a laboratory recognized under EPA Rules, 1986.	Monitoring of environmental quality parameters are being carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the Regional Office, State Pollution Control Board (SPCB), Jharsuguda and data is being analyzed through a laboratory recognized under EPA 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.	Protective respiratory devices are available to personnel working in dusty areas. They are provided with adequate training and information on safety & health aspects once in a year.
(x)	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 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.	Initial medical examination of all the workers deployed in the mine has been taken and periodically health check-up is being done. A schedule is prepared for implementation of Occupational Health Surveillance Programme of workers to determine the impact due to exposure to dust and to take corrective measures for the same. Compliances regarding environment quality, health issues of outsourced manpower are taken care of during outsourcing.
(xi)	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.	A separate Environmental Management Cell (EMC) under the control of senior executive who directly reports to the head of the company already exists for the project. EMC meetings are held regularly.
(xii)	The funds earmarked for environment protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.	The requisite funds for environment protection measures have been included in the project cost. Financial provision stipulated towards environment protection measures will not be diverted for other purpose.

(xiii)	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 .	Complied and compliance thereof has been mentioned in the first six-monthly EC compliance (April 2014 to Sept. 2014) vide letter dated 19/11/2016.
(xiv)	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.	Complied and compliance thereof has been mentioned in the first six-monthly EC compliance (April 2014 to Sept.2014) vide letter dated 19/11/2016.
(xv)	A copy of the environmental clearance letter shall also 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 Sector and Collector's Office/Tehsildar's Office for 30 days.	Complied.
(xvi)	The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance condition shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the	The clearance letter has been uploaded on the company's website. The compliance and the monitoring data of the stipulated environmental quality parameters being displayed at the entrance of the mine office and uploaded on the NTPC website. Photograph has been attached as Annexure-XI .

	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 sectorial parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	
(xvii)	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, respective Zonal Offices of CPCB and the SPCB.	Six monthly progress reports are being submitted regularly. Six monthly progress report for the period April 2022 to September 2022 is submitted herewith.
(xviii)	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.	The project authorities always extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/information /monitoring reports.
(xix)	The Environmental statement for each financial year ending 31 March in Form-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 Office of the MoEF by e-mail.	The Environmental Statement for each financial year ending 31 st March are being submitted to the Odisha State Pollution Control Board and Regional Office of MoEF&CC in prescribed Form-V and the same is also being uploaded on NTPC website. Last submission was made for FY 2021-2022 is submitted on 24.09.2022.
5.	The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report so also during their presentation to the EAC.	Shall abide with all the commitments and recommendations made in the EIA/EMP report so also during the presentation to the EAC.

6.	The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection.	All necessary clearances/approvals that are required for the project are obtained. We abide by the further condition for environmental protection issued by the Ministry or any other competent authority.
7.	The Proponent shall setup an Environment Audit cell with responsibility and accountability to ensure implementation of all the EC Conditions.	An Environment Audit Cell has been set up with responsibility and accountability to ensure implementation of all the EC Conditions.
8.	The Ministry or any other competent authority may stipulate any further condition for environmental protection.	Shall abide by the further condition for environmental protection issued by the Ministry or any other competent authority.
9.	Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environmental (Protection) Act, 1986.	Shall abide by this stipulated condition.
10.	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.	Shall abide by this stipulated condition.


(Neeraj Jalota)

General Manager & Head of Project

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Plantation Activities at different area.



Plantation over the Overburden (1 of 2)



Plantation over the Overburden (2 of 2)



Grassing Activities at Top Soil (1of2).



Grassing Activities at Top Soil (2of2).



Plantation over Earlier Coal Stock (Photo 1 of 2)



Plantation over Earlier Coal Stock (Photo- 2 of 2)

Fluoride (as F) content in Ground Water
Frequency of Monitoring: Monthly
(April 2022 to September 2022)

Sl. No	Monitoring Stations	Month	Date of Monitoring	Analysis Result in mg/L	Permissible Limit as per IS 10500 :2012
1	Open well in village Bendrichua	April 2022	09/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	< 0.1	1.0 mg/L
		July 2022	10/07/2022	< 0.1	1.0 mg/L
		August 2022	05/08/2022	< 0.1	1.0 mg/L
		September2022	10/09/2022	< 0.1	1.0 mg/L
2	Open well in village Dulanga	April 2022	09/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	< 0.1	1.0 mg/L
		July 2022	10/07/2022	< 0.1	1.0 mg/L
		August 2022	05/08/2022	< 0.1	1.0 mg/L
		September2022	10/09/2022	< 0.1	1.0 mg/L
3	Open well in village Beldihi	April 2022	09/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	< 0.1	1.0 mg/L
		July 2022	10/07/2022	< 0.1	1.0 mg/L
		August 2022	05/08/2022	< 0.1	1.0 mg/L
		September2022	10/09/2022	< 0.1	1.0 mg/L
4	Open well in village Kathfali	April 2022	10/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	<0.1	1.0 mg/L
		July 2022	10/07/2022	< 0.1	1.0 mg/L
		August 2022	05/08/2022	<0.1	1.0 mg/L
		September2022	10/09/2022	<0.1	1.0 mg/L

Sl. No	Monitoring Stations	Month	Date of Monitoring	Analysis Result in mg/L	Permissible Limit as per IS 10500 :2012
5	Bore well in Village Rengalmunr	April 2022	10/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	<0.1	1.0 mg/L
		July 2022	10/07/2022	< 0.1	1.0 mg/L
		August 2022	05/08/2022	<0.1	1.0 mg/L
		September2022	10/09/2022	<0.1	1.0 mg/L
6	Open Well in Village Khuntijhari a	April 2022	10/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	<0.1	1.0 mg/L
		July 2022	10/07/2022	< 0.1	1.0 mg/L
		August 2022	05/08/2022	<0.1	1.0 mg/L
		September2022	10/09/2022	<0.1	1.0 mg/L
7	Open Well in Village Kalamegha	April 2022	10/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	<0.1	1.0 mg/L
		July 2022	10/07/2022	< 0.1	1.0 mg/L
		August 2022	05/08/2022	<0.1	1.0 mg/L
		September2022	10/09/2022	<0.1	1.0 mg/L

Sl. No	Monitoring Stations	Month	Date of Monitoring	Analysis Result in mg/L	Permissible Limit as per IS 10500 :2012
8	Bore well near Pit Office	April 2022	09/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	<0.1	1.0 mg/L
		July 2022	10/07/2022	<0.1	1.0 mg/L
		August 2022	05/08/2022	<0.1	1.0 mg/L
		September2022	10/09/2022	<0.1	1.0 mg/L
9	Bore well near Labour Barrack	April 2022	09/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	<0.1	1.0 mg/L
		July 2022	10/07/2022	<0.1	1.0 mg/L
		August 2022	05/08/2022	<0.1	1.0 mg/L
		September2022	10/09/2022	<0.1	1.0 mg/L
10	Tap water inside NTPC site office	April 2022	09/04/2022	<0.1	1.0 mg/L
		May 2022	07/05/2022	<0.1	1.0 mg/L
		June 2022	06/06/2022	<0.1	1.0 mg/L
		July 2022	10/07/2022	<0.1	1.0 mg/L
		August 2022	05/08/2022	<0.1	1.0 mg/L
		September2022	10/09/2022	<0.1	1.0 mg/L



Grassing Activities along slope of Non-Active Overburden Dump.

Grassing activities at Top Soil Dump



Before Grassing Activities along the slope.



After Grassing Activities along slope of Top Soil.

Highlights of CSR activities



Tailoring batch starting at training center





Cake & confectionary training program



SPONSORSHIP OF STUDENTS FOR CIPET TRAINING

Mobilisation Cum Counselling Programme



HEALTH CAMP AND HYGIENE KIT DISTRIBUTION AT HEMGIR ORPHANAGE



Papad Making Training Program



PROJECT "DURGA" SPONSORSHIP WITH DISTRICT POLICE



Sponsorship of village sports meet



**HSC test paper
distribution at
School**

**Ground Water Level
Frequency of Monitoring - Quarterly**

Season : Pre Monsoon : April 2022
Monsoon : August 2022

Sl. No	Monitoring Stations	Period of Measurement	Date of Measurement	Depth in meter from Surface Level
1	Open well in village Bendrichua	April 2022	10/04/2022	3.85
		August 2022	05/08/2022	3.30
2	Open well in village Dulanga	April 2022	10/04/2022	8.08
		August 2022	05/08/2022	2.52
3	Open well in village Khuntjharia	April 2022	10/04/2022	7.04
		August 2022	05/08/2022	4.47
4	Open well in village Beldihi	April 2022	10/04/2022	3.96
		August 2022	05/08/2022	2.01
5	Open well in village Kathfali	April 2022	10/04/2022	1.75
		August 2022	05/08/2022	1.50
6	Open well in village Kalamegha	April 2022	10/04/2022	4.17
		August 2022	05/08/2022	2.34
7	Bore well near Central Canteen (Inside the Lease Area)	April 2022	10/04/2022	4.12
		-	-	-
8	Bore well near Pit Office (Inside the Lease Area)	April 2022	10/04/2022	57.35
		-	--	-

**Ground Water Sampling and Analysis Report
Frequency of Monitoring – Monthly Once**

**Ground Water Quality Analysis Report for the month of April 2022
Date of Sampling: 09-10/04/2022**

Sl. No	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results		
				Village Bendrichua	Village Dulanga	Village Beldihi
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	7.02	7.21	6.89
05	Turbidity	NTU	1.0	0.51	.44	0.32
06	Total Hardness as CaCO ₃	mg/L	200.0	176.6	182.4	128.6
07	Total Iron	mg/L	0.3	0.07	0.06	0.06
08	Chloride	mg/L	250.0	65.04	67.01	30.55
09	Total Dissolved Solids	mg/L	500.0	363.1	520.0	311.0
10	Calcium as Ca	mg/L	75.0	50.79	51.56	35.40
11	Sulphate as SO ₄	mg/L	200.0	24.17	27.24	11.99
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	130.0	112.0	128.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND

20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of April 2022

Date of Sampling: 09-10/04/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500: 2012	Analysis Results			
				Village Kalamegha	Village Kathfali	Village Khuntjaria	Village Rengalmunr
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A	A
03	Taste	--	Agreeable (A)	A	A	A	A
04	pH value	-	6.5 to 8.5	7.03	6.11	6.23	7.14
05	Turbidity	NTU	1.0	0.57	0.45	0.34	0.51
06	Total Hardness as CaCO ₃	mg/L	200.0	274.6	67.2	86.4	301.4
07	Total Iron	mg/L	0.3	0.08	0.08	0.07	0.07
08	Chloride	mg/L	250.0	64.06	24.64	37.45	65.04
09	Total Dissolved Solids	mg/L	500.0	618.4	98.8	289.2	398.2
10	Calcium as Ca	mg/L	75.0	52.33	15.39	21.55	33.09
11	Sulphate as SO ₄	mg/L	200.0	25.96	5.71	15.45	25.28
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	306.0	34.0	56.0	422.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND	ND

21	Selenium	mg/L	0.01	ND	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of April 2022
Date of Sampling: 09/04/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500: 2012	Analysis Results		
				Bore well Near Office (Inside the Lease Area)	Bore well Near Labour Barrack (Inside the Lease Area)	Tap water inside NTPC site office
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	7.11	6.89	7.41
05	Turbidity	NTU	1.0	0.94	0.48	0.41
06	Total Hardness as CaCO ₃	mg/L	200.0	101.8	67.2	147.8
07	Total Iron	mg/L	0.3	0.08	0.07	0.08
08	Chloride	mg/L	250.0	58.15	22.67	37.45
09	Total Dissolved Solids	mg/L	500.0	393.2	105.2	251.8
10	Calcium as Ca	mg/L	75.0	36.17	18.47	36.17
11	Sulphate as SO ₄	mg/L	200.0	14.29	10.58	9.55
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	206.0	60.0	140.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND

20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of May 2022
Date of Sampling: 07/05/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results			
				Village Bendrichua	Village Dulanga	Village Beldihi	Village Kalamegha
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A	A
03	Taste	--	Agreeable (A)	A	A	A	A
04	pH value	-	6.5 to 8.5	6.92	6.72	6.13	6.57
05	Turbidity	NTU	1.0	0.94	0.50	0.41	0.66
06	Total Hardness as CaCO ₃	mg/L	200.0	180.5	178.6	126.7	270.7
07	Total Iron	mg/L	0.3	0.08	0.09	0.07	0.08
08	Chloride	mg/L	250.0	63.7	64.06	32.52	66.03
09	Total Dissolved Solids	mg/L	500.0	364.5	473.9	265.4	603.9
10	Calcium as Ca	mg/L	75.0	53.10	52.33	36.17	51.56
11	Sulphate as SO ₄	mg/L	200.0	14.29	25.71	11.86	25.96
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	142.0	116.0	130.0	310.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND	ND

22	Total Arsenic	mg/L	0.01	ND	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of May 2022
Date of Sampling: 07/05/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results		
				Village Kathfali	Village Khuntjha ria	Village Rengalmun r
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	5.97	5.80	6.82
05	Turbidity	NTU	1.0	0.51	0.49	0.66
06	Total Hardness as CaCO ₃	mg/L	200.0	71.0	90.2	303.4
07	Total Iron	mg/L	0.3	0.09	0.08	0.08
08	Chloride	mg/L	250.0	23.65	38.43	67.01
09	Total Dissolved Solids	mg/L	500.0	89.4	285.3	783.4
10	Calcium as Ca	mg/L	75.0	16.16	22.32	34.63
11	Sulphate as SO ₄	mg/L	200.0	15.32	21.35	28.53
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	38.0	54.0	428.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND

19	Mercury	mg/L	0.001	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of May 2022
Date of Sampling: 07/05/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500: 2012	Analysis Results		Tap water inside NTPC site office
				Bore well Near Pit Office (Inside the Lease Area)	Bore well Near Labour Barrack (Inside the Lease Area)	
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	6.43	6.51	7.99
05	Turbidity	NTU	1.0	0.86	0.32	0.46
06	Total Hardness as CaCO ₃	mg/L	200.0	105.6	69.10	145.9
07	Total Iron	mg/L	0.3	0.06	0.07	0.07
08	Chloride	mg/L	250.0	59.13	23.65	25.62
09	Total Dissolved Solids	mg/L	500.0	411.5	129.6	254.5
10	Calcium as Ca	mg/L	75.0	36.94	20.01	31.55
11	Sulphate as SO ₄	mg/L	200.0	27.24	12.37	12.12
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	202.0	64.0	182.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND

21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of June 2022
Date of Sampling: 06/06/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results			
				Village Bendrichua	Village Dulanga	Village Beldihi	Village Kalamegha
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A	A
03	Taste	--	Agreeable (A)	A	A	A	A
04	pH value	-	6.5 to 8.5	6.99	6.85	6.55	6.61
05	Turbidity	NTU	1.0	0.55	0.35	0.37	0.36
06	Total Hardness as CaCO ₃	mg/L	200.0	188.0	186.0	132.0	282.0
07	Total Iron	mg/L	0.3	0.09	0.06	0.07	0.09
08	Chloride	mg/L	250.0	66.0	66.03	36.46	64.06
09	Total Dissolved Solids	mg/L	500.0	337.4	488.5	247.0	613.5
10	Calcium as Ca	mg/L	75.0	55.31	54.51	37.68	53.71
11	Sulphate as SO ₄	mg/L	200.0	13.27	23.14	11.47	24.68
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	150.0	118.0	138.0	302.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND	ND

22	Total Arsenic	mg/L	0.01	ND	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of June 2022
Date of Sampling: 06/06/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results		
				Village Kathfali	Village Khuntjharua	Village Rengalmunr
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	5.99	5.79	6.94
05	Turbidity	NTU	1.0	0.61	0.82	0.56
06	Total Hardness as CaCO ₃	mg/L	200.0	74.0	94.0	316.0
07	Total Iron	mg/L	0.3	0.05	0.06	.08
08	Chloride	mg/L	250.0	20.70	41.39	65.04
09	Total Dissolved Solids	mg/L	500.0	91.4	297.8	745.8
10	Calcium as Ca	mg/L	75.0	16.83	23.25	36.07
11	Sulphate as SO ₄	mg/L	200.0	14.04	18.78	24.68
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	44.0	62.0	416.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND

19	Mercury	mg/L	0.001	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of June 2022
Date of Sampling: 06/06/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500: 2012	Analysis Results		
				Bore well Near Pit Office (Inside the Lease Area)	Bore well Near Labour Barrack (Inside the Lease Area)	Tap water inside NTPC site office
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	6.81	6.99	7.66
05	Turbidity	NTU	1.0	0.56	0.47	0.33
06	Total Hardness as CaCO ₃	mg/L	200.0	110.0	72.0	152.0
07	Total Iron	mg/L	0.3	0.06	0.07	0.05
08	Chloride	mg/L	250.0	62.09	25.62	26.61
09	Total Dissolved Solids	mg/L	500.0	423.5	137.5	273.5
10	Calcium as Ca	mg/L	75.0	38.48	20.84	32.87
11	Sulphate as SO ₄	mg/L	200.0	24.68	13.14	13.40
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	194.0	66.0	176.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND

20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of July 2022
Date of Sampling 10/07/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results		
				Village Bendrichua	Village Dulanga	Village Beldihi
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	7.04	6.77	6.71
05	Turbidity	NTU	1.0	0.69	0.51	0.44
06	Total Hardness as CaCO ₃	mg/L	200.0	182.0	182.0	126.0
07	Total Iron	mg/L	0.3	0.07	0.07	0.08
08	Chloride	mg/L	250.0	64.06	64.06	34.49
09	Total Dissolved Solids	mg/L	500.0	302.0	461.2	232.1
10	Calcium as Ca	mg/L	75.0	54.51	23.71	36.87
11	Sulphate as SO ₄	mg/L	200.0	14.36	24.23	12.56
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	144.0	122.0	134.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND

23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of July 2022
Date of Sampling 10/07/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results			
				Village Kalamegha	Village Kathfali	Village Khuntjaria	Village Rengalmunr
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A	A
03	Taste	--	Agreeable (A)	A	A	A	A
04	pH value	-	6.5 to 8.5	6.74	6.04	6.11	6.99
05	Turbidity	NTU	1.0	0.54	0.57	0.89	0.54
06	Total Hardness as CaCO ₃	mg/L	200.0	284.0	70.0	92.0	306.0
07	Total Iron	mg/L	0.3	0.05	0.06	0.08	0.07
08	Chloride	mg/L	250.0	63.07	22.67	44.35	68.0
09	Total Dissolved Solids	mg/L	500.0	611.0	87.4	267.4	687.4
10	Calcium as Ca	mg/L	75.0	51.30	18.44	24.85	37.68
11	Sulphate as SO ₄	mg/L	200.0	25.77	15.13	19.87	25.26
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	306.0	54.0	66.0	382.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND	ND

22	Total Arsenic	mg/L	0.01	ND	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of July 2022
Date of Sampling 10/07/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500: 2012	Analysis Results		
				Bore well Near Office (Inside the Lease Area)	Bore well Near Labour Barrack (Inside the Lease Area)	Tap water inside NTPC site office
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	6.84	7.04	7.41
05	Turbidity	NTU	1.0	0.66	0.74	0.48
06	Total Hardness as CaCO ₃	mg/L	200.0	104.0	68.0	146.0
07	Total Iron	mg/L	0.3	0.06	0.06	0.08
08	Chloride	mg/L	250.0	61.10	23.65	28.58
09	Total Dissolved Solids	mg/L	500.0	437.1	122.4	267.1
10	Calcium as Ca	mg/L	75.0	38.48	36.07	31.26
11	Sulphate as SO ₄	mg/L	200.0	25.77	14.23	14.49
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	190.0	70.0	170.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND

19	Mercury	mg/L	0.001	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of August 2022
Date of Sampling: 05/08/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results		
				Village Bendrichua	Village Dulanga	Village Beldihi
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	6.98	6.82	6.75
05	Turbidity	NTU	1.0	0.77	0.57	0.54
06	Total Hardness as CaCO ₃	mg/L	200.0	178.0	178.0	122.0
07	Total Iron	mg/L	0.3	0.09	0.06	0.06
08	Chloride	mg/L	250.0	63.07	63.07	31.54
09	Total Dissolved Solids	mg/L	500.0	321.1	455.1	237.1
10	Calcium as Ca	mg/L	75.0	53.71	52.91	34.47
11	Sulphate as SO ₄	mg/L	200.0	14.23	21.67	13.85
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	140.0	120.0	132.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND

23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of August 2022
Date of Sampling: 05/08/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results			
				Village Kalamegha	Village Kathfali	Village Khuntjaria	Village Rengalmunr
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A	A
03	Taste	--	Agreeable (A)	A	A	A	A
04	pH value	-	6.5 to 8.5	6.84	6.21	6.81	7.04
05	Turbidity	NTU	1.0	0.64	0.67	0.69	0.74
06	Total Hardness as CaCO ₃	mg/L	200.0	280.0	66.0	90.0	302.0
07	Total Iron	mg/L	0.3	0.06	0.08	0.07	0.09
08	Chloride	mg/L	250.0	60.12	20.70	41.39	67.01
09	Total Dissolved Solids	mg/L	500.0	601.4	92.4	258.4	647.4
10	Calcium as Ca	mg/L	75.0	49.70	16.83	23.25	36.87
11	Sulphate as SO ₄	mg/L	200.0	27.05	13.85	17.31	23.97
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	302.0	52.0	64.0	380.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND	ND

22	Total Arsenic	mg/L	0.01	ND	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of August 2022
Date of Sampling: 05/08/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500: 2012	Analysis Results		
				Bore well Near Office (Inside the Lease Area)	Bore well Near Labour Barrack (Inside the Lease Area)	Tap water inside NTPC site office
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	6.74	7.11	7.21
05	Turbidity	NTU	1.0	0.61	0.77	0.52
06	Total Hardness as CaCO ₃	mg/L	200.0	102.0	62.0	142.0
07	Total Iron	mg/L	0.3	0.06	0.08	0.09
08	Chloride	mg/L	250.0	59.13	22.67	26.61
09	Total Dissolved Solids	mg/L	500.0	421.1	137.4	261.11
10	Calcium as Ca	mg/L	75.0	36.07	34.47	29.66
11	Sulphate as SO ₄	mg/L	200.0	24.49	15.51	13.21
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	188.0	64.0	168.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND

20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of Sept 2022
Date of Sampling: 10/09/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results		
				Village Bendrichua	Bore well inside SMSSL Office premises	Bore well R&R colony, Kalamegha
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	5.81	7.33	6.82
05	Turbidity	NTU	1.0	0.54	0.87	0.84
06	Total Hardness as CaCO ₃	mg/L	200.0	34.0	40.0	146.0
07	Total Iron	mg/L	0.3	0.07	0.07	0.08
08	Chloride	mg/L	250.0	19.71	15.77	24.64
09	Total Dissolved Solids	mg/L	500.0	42.0	97.6	287.0
10	Calcium as Ca	mg/L	75.0	5.61	8.82	33.67
11	Sulphate as SO ₄	mg/L	200.0	2.69	19.87	19.74
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	36.0	100.0	188.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND

22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of Sept 2022
Date of Sampling: 10/09/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500:2012	Analysis Results			
				Village Kalamegha	Village Kathfali	Village Khuntjaria	Village Rengalmunr
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A	A
03	Taste	--	Agreeable (A)	A	A	A	A
04	pH value	-	6.5 to 8.5	7.21	6.66	6.40	7.36
05	Turbidity	NTU	1.0	0.86	0.77	0.79	0.83
06	Total Hardness as CaCO ₃	mg/L	200.0	220.0	24.0	58.0	280.0
07	Total Iron	mg/L	0.3	0.06	0.08	0.05	0.07
08	Chloride	mg/L	250.0	54.20	14.78	34.49	83.77
09	Total Dissolved Solids	mg/L	500.0	593.0	48.6	231.0	781.0
10	Calcium as Ca	mg/L	75.0	36.37	6.41	21.64	28.06
11	Sulphate as SO ₄	mg/L	200.0	28.72	3.08	19.49	26.67
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	420.0	42.0	78.0	470.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND	ND
19	Mercury	mg/L	0.001	ND	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND	ND

22	Total Arsenic	mg/L	0.01	ND	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND	ND

Note: ND = Not Detected

Ground Water Quality Analysis Report for the month of Sept 2022
Date of Sampling: 10/09/2022

Sl	Parameters Analyzed	Unit	Permissible Limit as per IS 10500: 2012	Analysis Results		
				Bore well Near Office (Inside the Lease Area)	Bore well Near Labour Barrack (Inside the Lease Area)	Tap water inside NTPC site office
01	Colour	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	--	Agreeable (A)	A	A	A
03	Taste	--	Agreeable (A)	A	A	A
04	pH value	-	6.5 to 8.5	7.23	7.20	7.31
05	Turbidity	NTU	1.0	0.71	0.79	0.91
06	Total Hardness as CaCO ₃	mg/L	200.0	180.0	48.0	150.0
07	Total Iron	mg/L	0.3	0.06	0.07	0.06
08	Chloride	mg/L	250.0	51.25	17.78	32.52
09	Total Dissolved Solids	mg/L	500.0	369.0	103.0	272.0
10	Calcium as Ca	mg/L	75.0	36.87	12.83	36.07
11	Sulphate as SO ₄	mg/L	200.0	12.69	19.87	28.08
12	Fluoride	mg/L	1.0	<0.1	<0.1	<0.1
13	Total Alkalinity as CaCO ₃	mg/L	200.0	192.0	102.0	198.0
14	Nitrate as NO ₃	mg/L	45.0	< 5.0	< 5.0	< 5.0
15	Residual Free Chlorine	mg/L	0.2 (min)	Nil	Nil	Nil
16	Copper	mg/L	0.05	ND	ND	ND
17	Manganese	mg/L	0.1	ND	ND	ND
18	Phenolic Compound	mg/L	0.001	ND	ND	ND

19	Mercury	mg/L	0.001	ND	ND	ND
20	Cadmium	mg/L	0.003	ND	ND	ND
21	Selenium	mg/L	0.01	ND	ND	ND
22	Total Arsenic	mg/L	0.01	ND	ND	ND
23	Cyanide	mg/L	0.05	ND	ND	ND
24	Lead	mg/L	0.01	ND	ND	ND
25	Zinc	mg/L	5.0	ND	ND	ND
26	Anionic detergents	mg/L	0.2	ND	ND	ND
27	Total Chromium	mg/L	0.05	ND	ND	ND
28	Polynuclear aromatic hydrocarbons	mg/L	0.0001	ND	ND	ND
29	Mineral Oil	mg/L	0.5	ND	ND	ND
30	Pesticides	mg/L	---	ND	ND	ND
31	Aluminum	mg/L	0.03	ND	ND	ND
32	Boron	mg/L	0.5	ND	ND	ND
33	Nickel	mg/L	0.02	ND	ND	ND

Note: ND = Not Detected

**Effluent Water Sampling and Analysis Report
Frequency of Monitoring – Monthly Once**

Month: April 2022, Date of Sampling: 09/04/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as CTO issued by OSPCB	Analysis Result	
				ETP Inlet	ETP Outlet
1	pH value	-	6.5 – 8.5	6.82	6.77
2	Total Suspended Solids	mg/L	50.0	29.3	1.37
3	Oil & Grease	mg/L	10.0	2.52	1.32
4	COD	mg/L	150.0	20.0	16.0

Month: May 2021, Date of Sampling: 07/05/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as CTO issued by OSPCB	Analysis Result	
				ETP Inlet	ETP Outlet
1	pH value	-	6.5 – 8.5	6.86	6.97
2	Total Suspended Solids	mg/L	50.0	27.5	6.1
3	Oil & Grease	mg/L	10.0	2.66	1.56
4	COD	mg/L	150.0	24.0	12.0

Month: June 2021, Date of Sampling: 06/06/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as CTO issued by OSPCB	Analysis Result	
				ETP Inlet	ETP Outlet
1	pH value	-	6.5 – 8.5	6.91	6.88
2	Total Suspended Solids	mg/L	50.0	21.5	3.1
3	Oil & Grease	mg/L	10.0	2.60	2.56
4	COD	mg/L	150.0	20.0	12.0

Month: July 2022, Date of Sampling: 10/07/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as CTO issued by OSPCB	Analysis Result	
				ETP Inlet	ETP Outlet
1	pH value	-	6.5 – 8.5	7.01	6.91
2	Total Suspended Solids	mg/L	50.0	25.5	3.7
3	Oil & Grease	mg/L	10.0	2.26	2.16
4	COD	mg/L	150.0	16.0	12.0

Month: August 2022, Date of Sampling: 05/08/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as CTO issued by OSPCB	Analysis Result	
				ETP Inlet	ETP Outlet
1	pH value	-	6.5 – 8.5	7.07	6.99
2	Total Suspended Solids	mg/L	50.0	29.5	5.7
3	Oil & Grease	mg/L	10.0	4.06	3.16
4	COD	mg/L	150.0	20.0	16.0

Month: Sept 2022, Date of Sampling: 10/09/2022

Sl. No	Parameters Analyzed	Unit	Permissible Limit as CTO issued by OSPCB	Analysis Result	
				ETP Inlet	ETP Outlet
1	pH value	-	6.5 – 8.5	7.37	7.21
2	Total Suspended Solids	mg/L	50.0	2.06	1.76
3	Oil & Grease	mg/L	10.0	19.5	7.7
4	COD	mg/L	150.0	16.0	12.0

Ambient Air Quality Monitoring Report
Frequency of Monitoring: Monthly Twice
(April 2022 to September 2022)

Sl. No	Monitoring Stations	Month	Dt. of Monitoring	Analysis Result in $\mu\text{g}/\text{m}^3$					CO in mg/m^3
				SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	
1	Near Site Office, Khapurikachhar (Core Zone)	April 2022	10/04/2022	195.14	72.93	33.25	8.25	12.95	< 1.14
			22/04/2022	203.74	71.31	30.81	7.87	10.60	< 1.14
		May 2022	08/05/2022	183.90	68.73	30.48	8.03	12.74	< 1.14
			17/05/2022	209.52	73.59	32.33	8.36	11.26	< 1.14
		June 2022	06/06/2022	204.96	76.53	36.78	9.16	14.07	< 1.14
			17/06/2022	203.94	71.74	31.55	8.16	13.36	< 1.14
		July 2022	11/07/2022	187.20	71.05	31.15	6.72	10.65	< 1.14
			22/07/2022	152.34	58.32	25.91	7.60	10.68	< 1.14
		August 2022	06/08/2022	166.67	56.42	29.13	6.40	10.35	< 1.14
			19/08/2022	150.31	64.84	27.00	6.71	11.64	< 1.14
Sept 2022	10/09/2022	133.45	56.89	29.15	7.70	10.41	< 1.14		
	21/09/2022	109.35	52.59	27.89	9.10	10.36	< 1.14		
2	Near Coal Lab (Core Zone)	April 2022	10/04/2022	207.80	72.91	30.66	9.76	13.86	< 1.14
			22/04/2022	206.03	68.63	31.49	9.06	14.50	< 1.14
		May 2022	08/05/2022	213.07	74.76	35.12	8.88	12.19	< 1.14
			17/05/2022	205.30	77.73	32.94	9.23	14.94	< 1.14
		June 2022	06/06/2022	207.98	75.62	34.23	8.02	13.00	< 1.14
			17/06/2022	212.95	68.67	35.79	9.58	13.99	< 1.14
		July 2022	11/07/2022	187.76	68.19	33.95	8.31	13.76	< 1.14
			22/07/2022	157.50	54.93	26.17	7.67	10.96	< 1.14
		August 2022	06/08/2022	168.90	64.37	26.28	7.10	10.94	< 1.14
			19/08/2022	159.22	67.49	27.29	7.55	11.64	< 1.14
Sept 2022	10/09/2022	138.40	60.50	27.43	8.50	10.84	< 1.14		
	21/09/2022	113.02	47.91	28.38	8.09	11.92	< 1.14		
3	Near Work Shop (Core Zone)	April 2022	10/04/2022	203.30	73.48	31.31	8.01	13.03	< 1.14
			22/04/2022	194.02	73.22	31.11	7.74	10.76	< 1.14
		May 2022	08/05/2022	188.15	73.79	31.17	7.12	11.59	< 1.14
			17/05/2022	209.40	76.51	33.45	9.40	13.04	< 1.14
		June 2022	06/06/2022	196.2	71.79	29.88	7.47	10.64	< 1.14
			17/06/2022	183.15	72.18	31.03	7.54	11.31	< 1.14
		July 2022	11/07/2022	179.94	70.75	34.07	7.55	10.61	< 1.14
			22/07/2022	163.33	60.05	25.25	6.30	11.15	< 1.14
		August 2022	06/08/2022	165.48	63.67	27.44	6.64	11.25	< 1.14
			19/08/2022	164.14	55.49	25.40	6.85	10.29	< 1.14
Sept 2022	10/09/2022	137.61	65.45	29.21	8.78	11.90	< 1.14		
	21/09/2022	111.90	52.16	28.76	8.13	11.05	< 1.14		
Permissible Limits as per NAAQS, 2009				-	100	60	80	80	2.0

Sl. No	Monitoring Stations	Month		Analysis Result in $\mu\text{g}/\text{m}^3$					CO in mg/m^3		
				SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x			
4	Near Village Dulanga (Core Zone)	April 2022	10/04/2022	205.26	70.95	32.11	8.20	11.75	< 1.14		
			22/04/2022	197.02	74.19	33.63	8.06	13.70	< 1.14		
		May 2022	08/05/2022	198.36	74.47	34.10	6.58	12.75	< 1.14		
			17/05/2022	204.54	70.07	30.91	8.28	12.18	< 1.14		
		June 2022	06/06/2022	206.15	77.42	32.76	8.20	13.74	< 1.14		
			17/06/2022	204.51	75.57	34.92	7.78	14.30	< 1.14		
		July 2022	11/07/2022	169.23	68.06	29.84	9.54	13.13	< 1.14		
			22/07/2022	163.10	61.30	23.96	7.33	10.74	< 1.14		
		August 2022	06/08/2022	153.88	61.88	23.89	6.77	11.37	< 1.14		
			19/08/2022	159.42	63.79	24.77	7.89	11.87	< 1.14		
		Sept 2022	10/09/2022	141.16	61.27	27.01	7.25	12.04	< 1.14		
			21/09/2022	110.12	49.64	31.13	7.23	12.89	< 1.14		
		5	Near Village Bendrichua (Buffer Zone)	April 2022	11/04/2022	205.12	74.21	30.08	7.83	10.58	< 1.14
					23/04/2022	174.62	68.42	26.68	6.61	11.43	< 1.14
May 2022	07/05/2022			191.73	69.37	32.50	8.40	11.48	< 1.14		
	18/05/2022			187.60	70.23	28.23	7.25	10.97	< 1.14		
June 2022	07/06/2022			194.07	70.21	29.98	7.71	10.61	< 1.14		
	18/06/2022			202.23	73.40	34.51	9.53	12.64	< 1.14		
July 2022	12/07/2022			185.22	63.32	28.46	8.11	13.64	< 1.14		
	23/07/2022			154.38	60.75	25.55	7.84	10.39	< 1.14		
August 2022	07/08/2022			152.29	63.77	25.19	7.85	12.49	< 1.14		
	20/08/2022			162.50	57.64	23.16	7.29	9.82	< 1.14		
Sept 2022	11/09/2022			142.96	62.45	32.07	9.98	12.04	< 1.14		
	22/09/2022			108.35	50.04	30.18	9.30	10.50	< 1.14		
6	Near Village Rengalmunr (Buffer Zone)			April 2022	11/04/2022	179.21	72.83	28.92	6.98	10.12	< 1.14
					23/04/2022	193.08	68.20	29.94	7.18	12.69	< 1.14
		May 2022	07/05/2022	203.01	78.03	27.45	9.12	13.69	< 1.14		
			18/05/2022	198.84	72.88	33.37	6.39	11.14	< 1.14		
		June 2022	07/06/2022	202.30	77.75	29.94	8.04	12.34	< 1.14		
			18/06/2022	202.59	14.26	32.90	8.57	11.94	< 1.14		
		July 2022	12/07/2022	164.28	70.82	34.68	7.09	12.77	< 1.14		
			23/07/2022	164.46	58.80	28.20	6.79	12.04	< 1.14		
		August 2022	07/08/2022	169.73	62.87	28.05	6.69	10.14	< 1.14		
			20/08/2022	155.39	58.88	24.99	6.52	10.06	< 1.14		
		Sept 2022	11/09/2022	138.75	56.58	29.90	8.11	11.02	< 1.14		
			22/09/2022	101.22	48.28	31.58	8.95	12.73	< 1.14		
		Permissible Limits as per NAAQS, 2009				-	100	60	80	80	2.0

Sl. No	Monitoring Stations	Month	Dt. of Monitoring	Analysis Result in $\mu\text{g}/\text{m}^3$					CO in mg/m^3
				SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	
7	Near Village Khuntjharua (Buffer Zone)	April 2022	11/04/2022	190.52	68.36	27.25	8.19	13.93	< 1.14
			23/04/2022	186.82	73.58	30.59	9.16	11.67	< 1.14
		May 2022	07/05/2022	195.93	70.10	30.34	8.40	13.13	< 1.14
			18/05/2022	195.48	69.50	32.85	9.44	12.09	< 1.14
		June 2022	07/06/2022	193.93	75.66	34.51	7.67	13.03	< 1.14
			18/06/2022	189.56	68.20	28.82	8.60	10.96	< 1.14
		July 2022	12/07/2022	179.41	69.71	32.80	8.57	14.70	< 1.14
			23/07/2022	161.63	59.16	26.40	7.01	11.45	< 1.14
		August 2022	07/08/2022	157.95	61.37	29.84	7.45	10.01	< 1.14
			20/08/2022	157.02	65.53	23.69	6.47	10.35	< 1.14
Sept 2022	11/09/2022	141.65	63.08	31.52	9.10	11.91	< 1.14		
	22/09/2022	103.30	47.31	32.01	8.06	13.17	< 1.14		
8	Near Village Kathfali (Buffer Zone)	April 2022	11/04/2022	183.75	72.53	26.52	7.05	10.86	< 1.14
			23/04/2022	206.11	72.04	27.49	7.49	12.14	< 1.14
		May 2022	07/05/2022	184.56	68.82	31.57	7.63	11.09	< 1.14
			18/05/2022	177.18	66.61	34.48	8.17	13.48	< 1.14
		June 2022	07/06/2022	196.51	70.59	33.64	7.36	13.50	< 1.14
			18/06/2022	194.32	65.72	33.90	7.91	13.96	< 1.14
		July 2022	12/07/2022	161.10	66.42	30.18	7.93	11.69	< 1.14
			23/07/2022	156.15	57.14	26.84	7.42	11.66	< 1.14
		August 2022	07/08/2022	152.56	57.38	26.20	6.44	10.73	< 1.14
			20/08/2022	161.56	63.18	26.00	7.32	11.61	< 1.14
Sept 2022	11/09/2022	129.45	63.67	30.75	7.88	13.43	< 1.14		
	22/09/2022	109.06	45.98	30.42	8.12	11.64	< 1.14		
Permissible Limits as per NAAQS, 2009				-	100	60	80	80	2.0

**Reports on Heavy Metals in Ambient Air Quality
Frequency of Monitoring – Bi - Annual
(September 2022)**

Sl. No	Monitoring Stations	Month	Date of Monitoring	Analysis Result				
				Hg in $\mu\text{g}/\text{m}^3$	Ni in ng/m^3	As in ng/m^3	Cr in $\mu\text{g}/\text{m}^3$	Cd in $\mu\text{g}/\text{m}^3$
1	Near Site Office, Khapurikachhar	September 2022	12/09/2022 & 22/09/2022	ND	ND	ND	ND	ND
2	Near Coal Lab (Core Zone)	September 2022	12/09/2022 & 22/09/2022	ND	ND	ND	ND	ND
3	Near Workshop (Core Zone)	September 2022	12/09/2022 & 22/09/2022	ND	ND	ND	ND	ND
4	Near Village Dulanga (Core Zone)	September 2022	12/09/2022 & 22/09/2022	ND	ND	ND	ND	ND
5	Near Village Bendrichua (Buffer Zone)	September 2022	12/09/2022 & 22/09/2022	ND	ND	ND	ND	ND
6	Near Village Rengalmunr (Buffer Zone)	September 2022	12/09/2022 & 22/09/2022	ND	ND	ND	ND	ND
7	Near Village Khuntjharia (Buffer Zone)	September 2022	12/09/2022 & 22/09/2022	ND	ND	ND	ND	ND
8	Near Village Kathfali (Buffer Zone)	September 2022	12/09/2022 & 22/09/2022	ND	ND	ND	ND	ND
Permissible Limits as per NAAQS, 2009				-	20	06	-	-

Note: ND: Not Detected

Continuous Ambient Air Quality Monitoring Station



Annexure-XI

Monitoring data of the stipulated environmental quality parameters being displayed at the entrance of the mine office

