



दुलंगा / Dulanga

Ref: 1070/NTPC/DLCMP/EC/HCY/27

Date: 01/12/2023

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 Mar'23 to Sept'23** 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,

अरिंदम पट्टनायक / ARINDAM PATTNAIK
वरिष्ठ प्रबंधक / Sr. MANAGER
(पर्यावरण प्रबंधन) / (ENVIRONMENT MANAGEMENT)
दुलंगा सी.एम.पी. / DULANGA C.M.P.
एनटीपीसी लिमिटेड / NTPC LTD.
सुंदरगढ़ / SUNDARGARH

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, A/118, Nilakantha Nagar, Unit - VIII, Bhubaneswar –
751012

Dulanga Coal Mining Project, Khapurikachhar, PO – Sanghumuda, Tehsil-Hemgir, Dist- Sundargarh 770013

दुलंगा कोल माइनिंग प्रोजेक्ट, खापुरिकछार, पोस्ट - संघुमुड़ा, तहसील - हेमगीर, ज़िला - सुंदरगढ़ ७७००१३

पंजिकृत कार्यालय: एन टी पी सी भवन, स्कोप कॉम्प्लेक्स, 7 इंस्टीटयुशनल एरिया, लोधी रोड, नई दिल्ली ११०००३

कॉर्पोरेट पहचान नंबर: L40101DL1975GOI007966, टेलीफोन नं: 011-24387333, फैक्स नं: 011-24361018, ई मेल: ntpccc@ntpc.co.in, वेबसाइट: www.ntpc.co.in

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**DULANGA COAL MINING PROJECT (7.0 MTPA)
SIX MONTHLY COMPLIANCE STATUS OF ENVIRONMENTAL CLEARANCE
CONDITIONS (PERIOD: March 2023 to September 2023)**

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 21°50'40"N to 22°01'30' N and Longitude 83°42'06"E to 83°53'43"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, 4th July 2019 and 7th January 2020.

Present Status of the Project:

The Mining Operations have commenced from this block w.e.f. 28/02/2018 and had produced **70,00,000** Tonnes of Coal in the last financial year 2022-2023.

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

This report is being submitted as per the General condition no. xvii in the Environmental Clearance Order. The point-wise six monthly compliance status of conditions stipulated in the environmental clearance accorded by MoEF&CC vide letter No. J-11015/1140/2007-IA.II (M) dated 03rd March, 2014 in respect of Dulanga Coal Mining Project for the period **from March 2023 to September 2023** is furnished hereunder.



Point wise Compliance Report of Conditions specified in Environmental Clearance

Ref. Ltr. No. J-11015/1140/2007-IA.II (M) dated 03rd March, 2014 and amendment as on date

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
(i)	The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.	<p>Being Complied</p> <p>As per the EC granted and as per approved Mining Plan, the rated peak production capacity of DLCMP is 7.0 MTPA.</p> <p>During FY 2023-24, 2.92 MT coal has been produced till 30.09.2023.</p> <p>Coal Produced in Last five years are as follows:</p> <p>FY 18-19: 5,00,948.49 Tonnes FY 19-20: 15,40,002.71 Tonnes FY 20-21: 31,23,840.00 Tonnes FY 21-22: 52,92,094.00 Tonnes FY 22-23: 70,00,000.00 Tonnes</p>
(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.	<p>Being Complied</p> <p>Presently mining activity is restricted within the forest land diverted to Dulanga Coal Mining Project.</p> <p>Working Plan showing the present mining activity is attached as Annexure-I.</p>
(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.	<p>Noted and Agreed to Comply</p> <p>This has been incorporated in the Mine Closure Plan and shall be ensured at the time of mine closure.</p>

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ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
(iv)	An estimated 112 Mm ³ of OB is proposed to be re-handled from the eastern and western OB dumps.	Noted and Agreed to Comply Presently dumping of the OB in the eastern and western OB dumps are being done. Same shall be rehandled at the mine closure.
(v)	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.	Noted and Agreed to Comply Plantation in quarry area will be done in phases in the available area after completion of mining and internal dumping is over. So far, 52,092 nos. of plants have been planted in the vacant areas inside and outside the Mining Lease area. 6120 nos. of sapling have been planted and 1200 kg of Stylo Hamata grass seeds have been spread all along the slope of inactive portion of OB dump over 1.5 Ha. 1200 kg of Stylo Hamata seeds all along the slope of Topsoil Dump and about 400 nos. of tree sapling over 1.27 Ha of area along the topsoil dump have been done. Total 9,350 numbers of sapling have been planted till Nov'2023 and total 52,092 nos. of plants have been planted (including distribution) since inception of the mine. Copy of photos of Plantation activities carried out in different region is attached as Annexure – II.
(vi)	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.	Noted and Agreed to Comply. Presently no fly ash is being dumped in the backfilling area.
(vii)	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 their diversion to be taken up during the 8th and 10th year.	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 letter dated. 23.08.2021. Copy of Nallah diversion permission letter is attached as Annexure-III. The Diversion of Garia Nala has been

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
		<p>completed. However, embankment works are in progress. The Nalla has taken its natural course.</p> <p>Work for diversion of Baidhar Nallah & Nallah-B is in progress as per the approved diversion plan.</p>
(viii)	<p>The fluoride in the groundwater both in dug wells and by installing piezometers in the study area at appropriate locations be monitored.</p>	<p>Being Complied</p> <p>Groundwater quality including Fluoride is being monitored by an NABL Accredited laboratory at eight different locations in Core and Buffer zone.</p> <p>One (01) no. of Piezometer has been installed at Site Office area as per the conditions of NOC from CGWA.</p> <p>Also, Water level is being monitored through network of borewells/wells in core and buffer zone of DLCMP.</p> <p>The analysis report wrt fluoride in groundwater collected from the different locations within the study area for the period from the month of Apr'2023 to Sept'2023 is attached as Annexure - IV.</p>
(ix)	<p>Transport of coal to Darlipalli TPS located at a distance of about 10km shall be by MGR.</p>	<p>Noted & Agreed</p> <p>Coal produced from the DLCMP is being transported to Darlipalli Super Thermal Power Plant through MGR.</p>
(x)	<p>An integrated calendar plan of production including the details re-handling separately in external and internal dumps should be furnished to MOEF for record.</p>	<p>Being Complied</p> <p>Integrated calendar plan of production including details of re-handling of external and internal dumps has been submitted to MoEF & CC vide letter no. 0100/DLCMP/FD/ES/02/0814 dated 25.08.2014. Copy of letter attached as Annexure-V.</p>
(xi)	<p>Temporary OB dumps which require re-handling should be stabilized with grass and shrubs.</p>	<p>Being Complied</p> <p>Presently, OB dumps are active, and dumping is being done over there as per the approved mining plan.</p> <p>However, the inactive portion of the OB dump over 1.5 Ha has been stabilized with grassing and planting the tree sapling.</p>

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
		Photos of the OB dump grassing is attached as Annexure-VI.
(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 the nearby villages.	<p>Being Complied</p> <p>Level of Fluorides, TDS etc. in the bore well and drinking water to R&R Colony is being monitored through NABL Accredited laboratory.</p> <p>The concentration level is well within the prescribed limits.</p> <p>Water is being supplied to all the dwelling units in the R&R Colony through overhead tank after treatment in water treatment plant.</p> <p>Additionally, UV Water purifiers have been provided to all the dwelling units of R&R Colony for ensuring safe drinking water.</p> <p>Copy of Ground water quality report attached as Annexure-IV & photographs of UV Purifier, WTP & OHT is attached as Annexure-VII.</p>
(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.	<p>Being Complied</p> <p>The Diversion of Garia Nala has been completed. However, embankment works are in progress. The Nalla has taken its natural course.</p> <p>The embankment work of Baidhar Nala and Nala B are being done parallelly in tandem with excavation work.</p> <p>The embankment is designed taking into account the highest flood level and approved by the Water Resource Department, Govt. of Odisha.</p>
(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.	<p>Being Complied</p> <p>Topsoil is being stacked within ML with proper slope at earmarked site.</p> <p>7,60,000.00 m3 of topsoil has been stacked at the earmarked site as on 30.09.2023.</p> <p>As on 30.09.2023, a total of 1.27 Ha of Topsoil Dump has been stabilized with grassing of Stylo Hamata grass. Photographs attached as Annexure - VIII.</p>

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ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
(xv)	<p>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.</p>	<p>Noted and Agreed to Comply</p> <p>Initially the external OB dump was planned in 106.62 ha area, but while granting the forest clearance, an area of 18.34 ha forest land and 2.95 ha of Govt land was excluded hence the present area for the external OB dump is reduced to 86 ha, accordingly only 28.5 mill.CuM shall be accommodated in the external OB dump.</p> <p>However, due to local law & order issues (i.e., resistance from the villagers for rehabilitation activities), the total proposed quantity i.e., 28.5 million Cu.M is unable to accommodate in the external OB Dump.</p> <p>Till end of Sep-23, approx. 11.0 million CuM of OB is accommodated and the balance OB Quantity to be accommodated at the earliest.</p> <p>Presently dumping activities are being carried out at Khapurikachhar OB dump, Beldihi OB Dump and In pit dump.</p> <p>Inactive OB dump of Khapurikhachhar having 1.5 ha. has been grassed with different varieties along with local sapling planted and along the slope with Stylo Hamata grass.</p>
(xvi)	<p>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 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>Noted and Agreed to Comply</p> <p>Plantation in quarry area will be done in phases in the available area after completion of mining and internal dumping is over.</p> <p>So far, 52,092 nos. of plants have been planted in the vacant areas inside and outside the Mining Lease area.</p> <p>6120 nos. of sapling have been planted and 1200 kg of Stylo Hamata grass seeds have been spread all along the slope of inactive portion of OB dump over 1.5 Ha.</p> <p>1200 kg of Stylo Hamata seeds all along the slope of Topsoil Dump and about 400 nos. of tree sapling over 1.27 Ha of area along the topsoil dump have been done.</p> <p>Total 9,350 numbers of sapling have been planted during last monsoon period and total 52,092 nos. of plants have been planted (including distribution) since inception of the</p>

Ratha

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		mine.
(xvii)	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>Being Complied</p> <p>Catch drains of 6 Kms length and siltation ponds of appropriate size are constructed to arrest silt and sediment flows from topsoil, OB and mineral dumps. Garland drain is so designed that it will discharge the rainwater to settling pond.</p> <p>Garland drains having width and depth of 1.5m to 2.0m have been constructed along OB Dumps. All the garland drains are connected to settling pond before discharging the rainwater to Garia Nala.</p> <p>Details of the same is as under:</p> <ul style="list-style-type: none"> ➤ OB dump-1A: 2350 m ➤ OB dump-1B: 2840 m ➤ Khuntijharia OB dump: 2578 m ➤ Beldihi OB dump: 860 m ➤ Up-side of the mine: 2350 m this prevents entry of outside storm water into the mine pit. <p>Sedimentation pond/ settling pond has been de-Silted periodically. Also, embankment of adequate size is being provided along the Garia Nalla.</p> <p>Photos of garland drains, sedimentation pond and dust suppression are attached as Annexure - IX.</p>
(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>Noted and Agreed to Comply</p> <p>Coal transportation to Darlipalli Super Thermal Power Plant is through MGR with wagon loading.</p> <p>In the event of Silo maintenance wagon loading is done through loaders ensuring proper dust prevention and suppression measures.</p> <p>Photos of Coal Silo and rail wagons are attached as Annexure - X.</p>
(xix)	An STP shall be provided for the township/ colony to treat	<p>Being Complied</p> <p>The township of NTPC Dulanga is integrated</p>

Ratha

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	<p>the domestic effluents to prescribed standards and for their reuse in project activities.</p>	<p>with NTPC Darlipalli and STP of 1200 KLD is provided in the integrated township.</p> <p>However, STP has been provided for NTPC administrative Office.</p> <p>For mines pit offices septic tank followed by soak pit have been provided.</p> <p>The treated effluents are as per prescribed standards and are being reused for horticultural purpose.</p> <p>Photograph of STP at Darlipali Township is attached as Annexure-XI.</p>
(xx)	<p>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 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>Noted and Agreed to Comply</p> <p>Plantation in quarry area will be done in phases in the available area after completion of mining and internal dumping is over.</p> <p>So far, 52,092 nos. of plants have been planted in the vacant areas inside and outside the Mining Lease area.</p> <p>6120 nos. of sapling have been planted and 1200 kg of Stylo Hamata grass seeds have been spread all along the slope of inactive portion of OB dump over 1.5 Ha.</p> <p>1200 kg of Stylo Hamata seeds all along the slope of Topsoil Dump and about 400 nos. of tree sapling over 1.27 Ha of area along the topsoil dump have been done.</p> <p>Total 9,350 numbers of sapling have been planted during last monsoon period and total 52,092 nos. of plants have been planted (including distribution) since inception of the mine.</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</p>	<p>Being Complied</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>Copy of the SSWCP approval letter & deposit slip is attached as Annexure-XII.</p> <p>Funds for implementation of the same in the buffer zone by the State Forest Department have already been deposited in Ad-hoc CAMPA account vide UTR No. SBIN714073448793</p>

Ratha

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	<p>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 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.</p>	<p>dated 14/03/2014 for Rs.4,49,70,000/-.</p>
(xxii)	<p>The project authorities shall also participate in a Regional</p>	<p>Being Complied Funds for the Regional Wildlife Conservation</p>

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
	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.	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/-. Copy of the RWCP approval letter & deposit acknowledgement is attached as Annexure-XIII.
(xxiii)	The progress made on the implementation of the Wildlife Conservation Plan shall be monitored by the 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.	For third party monitoring of implementation of WL Conservation Plan; College of Forestry, OUAT, Bhubaneswar has been engaged. Dr Nirakar Bhol, I/C Head of the Department-cum-Principal Investigator of the Monitoring Project oversees the third-party monitoring. The 2 nd Six monthly report received from College of Forestry, OUAT, Bhubaneswar for the year 2022-23 is attached as Annexure-XIV.
(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.	Being Complied For third party monitoring of implementation of WL Conservation Plan; College of Forestry, OUAT, Bhubaneswar has been engaged. Dr Nirakar Bhol, I/C Head of the Department-cum-Principal Investigator of the Monitoring Project oversees the third-party monitoring. The 2 nd Six monthly report received from College of Forestry, OUAT, Bhubaneswar for the year 2022-23 is attached as Annexure-XIV.
(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	Being Complied 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

Ratha

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	<p>within December 2014; R&R shall include specific income generation schemes, skill development and capacity building, etc. The details of status of 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.</p>	<p>outlay of Rs. 112 Crores.</p> <p>The plan is being implemented accordingly for all eligible PAPs in phases.</p> <p>Expenditure incurred up to March 2023:</p> <ol style="list-style-type: none"> 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). <p>Details of the R&R grants provided to PAPs of NTPC Dulanga is uploaded on to NTPC Website. The same can be accessed through https://www.ntpc.co.in/about-us/corporate-functions/corporate-citizenship/rehabilitation-resettlement</p>
(xxvi)	<p>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.</p>	<p>Being Complied</p> <p>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.</p> <p>NTPC Dulanga Coal Mining Project has spent a total of approx. Rs 1.61 Cr under different heads like health, education, infrastructure, drinking water, capacity building / skill development during FY 2022-23.</p> <p>As on date an amount of Rs 41.7 Crores has been spent on CSR activities.</p> <p>Expenditure incurred on CD activity in FY 2022-23 is attached as Annexure-XV.</p>
(xxvii)	<p>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.</p>	<p>Being Complied</p> <p>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. Copy of the R&R plan is attached as Annexure-XVI.</p>

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
(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.	Noted and Agreed to Comply Detailed R&R plan has already been prepared, approved of and has been implemented.
(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 Agreed to Comply NTPC Dulanga Coal Mining Project has spent a total of approx. Rs 1.61 Cr under different heads like health, education, infrastructure, drinking water, capacity building / skill development during FY 2022-23. As on date an amount of Rs 41.7 Crores has been spent on CSR activities. Expenditure incurred on CD activity in FY 2022-23 is attached as Annexure-XV .
(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.	Noted and Agreed to Comply Amount earmarked for EMP are being utilized for implementation and being complied with. An amount of Rs 18.84 Crores has been incurred towards Environment Protection & Management.
(xxxii)	Coal transportation in pit: Rear Dumper, Surface to Siding through Conveyor belts and loading at siding by rail.	Being complied Presently transportation is being done in rear dumpers from coal face to CHP – Hopper and wagon loading of coal through RLS.
(xxxiii)	The production shall be within the same Mining Lease area.	Being Complied
(xxxiii)	The OB shall be completely re-handled at the end of the mining.	Noted and Agreed to Comply The OB will be 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	Noted and Agreed to Comply Mining is being done as per the approved Mining Plan for the project. After completion of the mining the mine shall be closed as per the approved mine closure plan.

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
	and put to use.	
(xxxv)	Garland drains be provided.	<p>Being Complied</p> <p>Garland drains having width and depth of 1.5m to 2.0m have been constructed along OB Dumps. All the garland drains are connected to settling pond before discharging the rainwater to Garia Nala.</p> <p>Details of the same is as under:</p> <ul style="list-style-type: none"> ➤ OB dump-1A: 2350 m. ➤ OB dump-1B: 2840 m. ➤ Khuntijharia OB dump: 2578 m. ➤ Beldihi OB dump: 860 m. <p>Up-side of the mine: 2350 m. this prevents entry of outside storm water into the mine pit.</p>
(xxxvi)	The land after mining shall be brought back for agriculture purpose.	<p>Noted and Agreed to Comply</p> <p>Mining is being done as per the approved Mining Plan for the project. After completion of the mining the mine shall be closed as per the approved mine closure plan.</p>
(xxxvii)	Mine water should be treated for discharge into the lagoon. The quality of lagoon water shall be regularly monitored, and mitigation measures taken.	<p>Being Complied</p> <p>Presently, no Mine Water is being discharged in lagoons.</p> <p>The quality of mine water is being monitored regularly through NABL accredited laboratory.</p>
(xxxviii)	Everybody in the core area should be provided with mask for protection against fugitive dust emissions.	<p>Being Complied</p> <p>All the persons working in the dust prone area are being provided with dust mask for protection against fugitive dust emissions as a part of PPE during mining operations.</p> <p>Photographs attached as Annexure-XVII.</p>
(xxxix)	Dust mask to be provided to everyone working in the mining area.	<p>Being Complied</p> <p>All the persons working in the dust prone area are being provided with dust mask for protection against fugitive dust emissions as a part of PPE during mining operations.</p>

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
(xl)	The supervisory staff should be held personally responsible for ensuring compulsory regarding wearing of dust mask in the core area.	<p>Being Complied</p> <p>All the persons working in the dust prone area are being provided with dust mask for protection against fugitive dust emissions as a part of PPE during mining operations.</p> <p>Ensuring the use of dust mask by the worken's has been made part of duty of the supervisory staffs.</p>
(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.	<p>Being Complied</p> <p>All the personnel engaged in mining are tested under Occupational Health Checkup. Further, periodical health checkups are done for identification of lungs diseases through Chest X – Ray. All Test Reports are available at site.</p> <p>Records of health checkup is attached as Annexure-XVIII.</p>
(xlii)	The mining area should be grounded by green belt having thick closed thick canopy of the tree cover.	<p>Being Complied</p> <p>Plantation of trees having thick canopy have been done in the safety zone of the Dulanga Coal mining project</p> <p>Photographs of Safety Zone Gap Plantation along with Fencing is attached as Annexure-XIX.</p>
(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.	<p>Being Complied</p> <p>The Diversion of Garia Nala has been completed. However, embankment works are in progress. The Nalla has taken its natural course.</p> <p>The embankment work of Baidhar Nala and Nala B are being done parallely in tandem with excavation work.</p> <p>The embankment is designed taking into account the highest flood level and approved by the Water Resource Department, Govt. of Odisha.</p>
(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	<p>Being Complied</p> <p>No Surface runoff from OB Stacks /dump being discharged into any nearby agricultural fields.</p> <p>Already available plantation in the area between the river and the project have not</p>

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
	project.	been disturbed. Also, additional plantation have been done in the available gaps.
(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 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.	Being Complied Only one external dump has been formed. Presently dumping of the OB is going on in the external OB Dump. The ultimate height of the external OB shall be maintained as per the approval. And the ultimate slope angle of the OB dump shall be maintained as 28 deg.
(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.	Being Complied As per the stipulation, Garland drains (size, gradient and length) and sump capacity have been designed keeping 50% adjoining the mine site. Dimensions vary from 2m to 4m 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.	Being Complied 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.
(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	Being Complied CHP of capacity 1325 tph is constructed and operational with inbuilt mist type dust suppression system in conveyors. Dust suppression arrangements such as fixed water sprinkling system have also been provided to check fugitive emissions from

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
	system, haulage roads, transfer points, etc.	crushing operations, haulage roads, transfer points, etc. Photographs attached as Annexure-XX .
(xlix)	Drills shall be wet operated.	Being Complied Wet operated drills are being used during drilling operation. Photographs of wet drilling is attached as Annexure-XXI .
(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 major approach roads.	Being Complied Coal transportation to Darlipalli Super Thermal Power Plant is being done through MGR with wagon loading by Silo. Also, avenue plantation has been taken up during the monsoon season along the roads constructed by NTPC – DLCMP.
(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.	Being Complied Controlled blasting during daytime are practiced with the use of delay detonators. Further, Scientific study of controlled blasting designed by ISM, Dhanbad. Additionally, all stipulations made by DGMS to this effect is being duly adhered to. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders are being implemented. Ground vibrations due to blasting are also being monitored regularly.
(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-	Being Complied Mine Closure Plan has already been approved as a part of Mining Plan and it envisages the stipulations as made herein by the Ministry. Progressive Mine Closure Plan is being implemented and annual report in this regard is being submitted the Coal Controller of India, Kolkata. Copy of the annual mine closure report is attached as Annexure-XXII .

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
	50m depth at the post mining stage shall be gently sloped along the upper benches and stabilized and reclaimed with plantation	
(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.	<p>Noted and Agreed to Comply</p> <p>Initially the external OB dump was planned in 106.62 ha area, but while granting the forest clearance, an area of 18.34 ha forest land and 2.95 ha of Govt land was excluded hence the present area for the external OB dump is reduced to 86 ha, accordingly only 28.5 mill.CuM shall be accommodated in the external OB dump.</p> <p>However, due to local law & order issues (i.e., resistance from the villagers for rehabilitation activities), the total proposed quantity i.e., 28.5 million Cu.M is unable to accommodate in the external OB Dump.</p> <p>Till end of Sep-23, approx. 11.0 million CuM of OB is accommodated and the balance OB Quantity to be accommodated at the earliest.</p> <p>Presently dumping activities are being carried out at Khapurikachhar OB dump, Beldihi OB Dump and In pit dump.</p>
(liv)	The proponent should prepare restoration and reclamation plan for the degraded area. The land be used in a productive and sustainable manner.	<p>Noted and Agreed to Comply</p> <p>Mine Closure Plan has already been approved as a part of Mining Plan and it envisages the stipulations as made herein by the Ministry.</p> <p>Progressive Mine Closure Plan is being implemented and annual report in this regard is being submitted the Coal Controller of India, Kolkata.</p> <p>Copy of the annual mine closure report is attached as Annexure-XXII.</p>
(lv)	Compensatory Ecological & Restoration of waste land, other degraded land and OB dumps in lieu of breaking open the land be carried out	<p>Noted and Agreed to Comply</p> <p>Mine Closure Plan has already been approved as a part of Mining Plan and it envisages the stipulations as made herein by the Ministry.</p> <p>Progressive Mine Closure Plan is being implemented and annual report in this regard is being submitted the Coal Controller of India,</p>

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
		Kolkata. Copy of the annual mine closure report is attached as Annexure-XXII.
(lvi)	The mining should be phased out in sustainable manner. No extra over burden dumps are permitted.	Noted and Agreed to Comply Only one external OB dump has been made at DLCMP. Mining is being done as per the approved mining plan. For phasing out of the mining activity, Mine Closure Plan has already been prepared and approved by the MoC. Same is under implementation.
(lvii)	No groundwater shall be used for mining operations.	Being Complied Rainwater collected into the mine sump and seepage water is being used for mining purposes. Ground water is being used only for potable use. NOC for abstraction of ground water has been obtained from the Central Ground Water Authority, New Delhi vide letter No. 21-4 (513)/ SER/ CGWA/ 2013-1982 dated 04 th Dec. 2017 and renewed vide NOC No. CGWA/ NOC/MIN/REN/2/2022/7124 which is valid from 04 th Dec. 2021 to 03 rd Dec 2023. Copy of the NOC is attached as Annexure-XXIII.
(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 thus collected shall be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.	Being Complied Regular monitoring of groundwater level and quality is being carried out through NABL Accredited as well as OSPCB empaneled laboratory. The frequency of monitoring is as per the schedule mentioned. Record of Ground water level for the period Apr'23 to Sep'23 is attached as Annexure - XXIV. The ground water quality report for the period Apr'23 to Sep'23 is annexed for your kind reference and necessary record. Annexure – IV.

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
(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.	<p>Being Complied</p> <p>Water level is being monitored through network of borewells/wells) in core and buffer zone of DLCMP.</p> <p>Record of Ground water level for the period Apr'23 to Sep'23 is attached as Annexure - XXIV.</p> <p>To augment the ground water in the area, rainwater harvesting structures have been constructed in the Vocational Training Centre & Coal Laboratory building and Pond construction activities in R&R Colony and Pond deepening activities have been undertaken in the nearby villagers as water conservation measures.</p> <p>Further, water tankers are also being deployed in nearby villages during summer season as a part of Community development activity.</p>
(lx)	Sewage treatment plant shall be installed in the existing colony. ETP shall also be provided for workshop and CHP wastewater.	<p>Being Complied</p> <p>The township of NTPC Dulanga is integrated with NTPC Darlipalli and STP of 1200 KLD is provided in the integrated township.</p> <p>However, STP has been provided for NTPC administrative Office.</p> <p>For mines pit offices septic tank followed by soak pit have been provided.</p> <p>ETP having 50KLD capacity has been constructed and is being used for treatment of Effluent water generated during vehicle washing.</p> <p>Inlet and outlet water samples of ETP is being monitored. All the parameters are under permissible limit. Copy of report for period Apr 2023 to Sept 2023 is annexed at Annexure-XXV.</p>
(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	<p>Being Complied</p> <p>All the personnel engaged in mining are tested under Occupational Health Checkup. Further, periodical health checkups are done for identification of lungs diseases through Chest X – Ray and hearing impairment, if any, through a specialist in the field.</p>

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
	hearing impairment, if any, through an specialized agency/ institution within the District/State and the results reported to this Ministry and to DGMS.	Records of health checkup is attached as Annexure-XVIII.
(Ixii)	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 submitted to MOEF and its concerned Regional office.	<p>Being Complied</p> <p>Mining operation started in the month of February 2018. Copy of Notice of Opening of Mine submitted to DGMS, Dhanbad is attached as Annexure-XXVI.</p> <p>Land use map for both core and buffer has been prepared on a scale of 1: 5000 based on Satellite Imagery path available in 2021 and was submitted with last half yearly compliance.</p> <p>Copy of Land Use Map attached as Annexure-XXVII.</p>
(Ixiii)	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.	<p>Being Complied</p> <p>An ESCROW account for depositing of the Mine Closure cost have been opened for the DLCMP. Till date Rs 19.57 Cr. has been deposited in the ESCROW account.</p> <p>Detailed Final Mine Closure Plan have already submitted to the MoEF & CC vide our letter ref no: 0100/ DLCMP/FD/ES/ 02/ 0814 dated 25/08/2014.</p> <p>Copy of the approval of mine closure plan is attached as Annexure-XXVIII.</p>
(Ixiv)	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.	<p>Being Complied</p> <p>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 life of the mine.</p>

Ratha

ECC. No.	Specific EC Conditions	Compliance Status as on 30.09.2023
(lxv)	The commitment made by the Proponent to the issue raised during Public Hearing shall be implemented by the Proponent.	<p>Being Complied</p> <p>All the commitment made during Public Hearing have been implemented.</p> <p>The status of implementation is attached as Annexure-XXIX.</p>
(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 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>Being Complied</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 2021 Copy of the said Policy has been attached as Annexure-XXX.</p> <p>Hierarchical System of the Environment Management Cell is given below:</p> <ul style="list-style-type: none"> • Chairman: Head of the Project • Vice Chairman: Mine Agent • Member Secretary: AGM (Env Mgmt) • 2 nos. Advisors: Mining, Safety • 3 nos. Members: Process Managers • Convenor: Sr Manager (Env Mgmt) <p>System of Reporting of Reporting of occurrence of any non-compliance of EC conditions is as give below:</p> <ul style="list-style-type: none"> • Regular meeting of Environment Management Cell • Discussion and review of action taken on points of previous meeting. • Discussion on Pending Issues • Formulation of points for future • Discussion on OFI, if any. <p>Discussion of such OFI reports during meeting of EMC for early rectification.</p>

Ratha

ECC. No.	General EC Conditions	Compliance Status as on 30.09.2023
(i)	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	<p>Noted and Agreed to Comply</p> <p>Necessary approval shall be obtained from the MoEF & CC for any changes in mining technology and scope of working.</p>
(ii)	No change in the calendar plan of production for quantum of mineral coal shall be made.	<p>Being Complied</p> <p>There will be no change in the calendar plan of production for quantum of coal.</p>
(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>Being Complied</p> <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 AAQ monitoring reports for the period from Apr 2023 to Sept 2023 is attached for your kind reference and necessary record. Annexure – XXXI.</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 – XXXII.</p>
(iv)	Data on ambient air quality (PM ₁₀ , PM _{2.5} , SO ₂ , and NO _x) and heavy metals such as Hg, As, Ni, Cd, Cr, and other monitoring data shall be regularly submitted to 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>Being Complied</p> <p>Monitoring is being carried out through NABL accredited laboratory and the monitoring reports are being submitted monthly to concerned Regional Office and to the State Pollution Control Board and along with compliance report biannually to IRO, MoEF&CC.</p> <p>The AAQ monitoring reports for the period from Apr 2023 to Sept 2023 are attached as Annexure – XXXI.</p>

Ratha

ECC. No.	General EC Conditions	Compliance Status as on 30.09.2023
(v)	Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc. shall be provided with ear plugs/muffs.	<p>Being Complied</p> <p>Planned periodic maintenance of the equipment engaged in the mining is being done to prevent excessive noise.</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)	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>Being Complied</p> <p>ETP having 50KLD capacity has been constructed and is being used for treatment of Effluent water generated during vehicle washing.</p> <p>Inlet and outlet water samples of ETP is being monitored. All the parameters are under permissible limit. Copy of report is annexed at</p> <p>Annexure-XXV.</p> <p>The treated wastewater is being reused for vehicle washing.</p> <p>Photograph of ETP is attached as Annexure-XXXIII.</p>
(vii)	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>Being Complied</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.	<p>Being Complied</p> <p>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.</p>

Ratha

ECC. No.	General EC Conditions	Compliance Status as on 30.09.2023
(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.	Being Complied Protective respiratory devices are provided to the personnel working in dusty areas. They are provided with adequate training and information on safety & health aspects regularly.
(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.	Being Complied Initial medical examination of all the workers deployed in the mine has been taken and periodically health check-ups are being done. A schedule is prepared for implementation of Occupational Health Surveillance Program 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.	Being Complied 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. Details of EMC is mentioned at ECC no. LXVI.
(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.	Being Complied The requisite funds for environmental protection measures have been included in the project cost. Financial provision stipulated towards environment protection measures will not be diverted for other purpose. Year wise expenditure incurred on environment protection measures is attached as Annexure-XXXIV .
(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	Complied The advertisement was published in The Samaj (Kolkata, Baleswar, Brahmapur, Vishakapatnam, Sambalpur, Bhubaneswar, Cuttack, Rourkela) on 08.03.2014. A copy of the same is attached as Annexure-XXXV .

Ratha

ECC. No.	General EC Conditions	Compliance Status as on 30.09.2023
	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 .	
(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 Copy of EC is uploaded in the company website.
(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 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.	Complied The clearance letter has been uploaded on the company's website. The monitoring data of the stipulated environmental quality parameters being displayed at the entrance of the mine office. The photograph of display has been attached as Annexure-XXXVI . The compliance status has been uploaded on the NTPC website.

Ratha

ECC. No.	General EC Conditions	Compliance Status as on 30.09.2023
(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.	<p>Being Complied</p> <p>Six-monthly progress reports are being submitted regularly.</p> <p>The last Six-monthly progress reports for the period Sept 2022 to Mar 2023 was submitted vide our Ltr. No. 1070/NTPC/DLCMP/EC/HCY/18/819 dated 29.07.2023.</p>
(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.	<p>Noted and agreed</p>
(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.	<p>Being Complied</p> <p>The Environmental Statement for each financial year ending 31st 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.</p> <p>Last submission was made for FY 2022-23 is submitted on 27.09.2023.</p> <p>The copy of the same has been uploaded on NTPC website.</p>
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.	<p>Complied</p>
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.	<p>Noted and agreed</p> <p>All necessary clearances/approvals that are required for the project are obtained.</p> <p>We abide by the further condition for environmental protection issued by the Ministry or any other competent authority.</p>

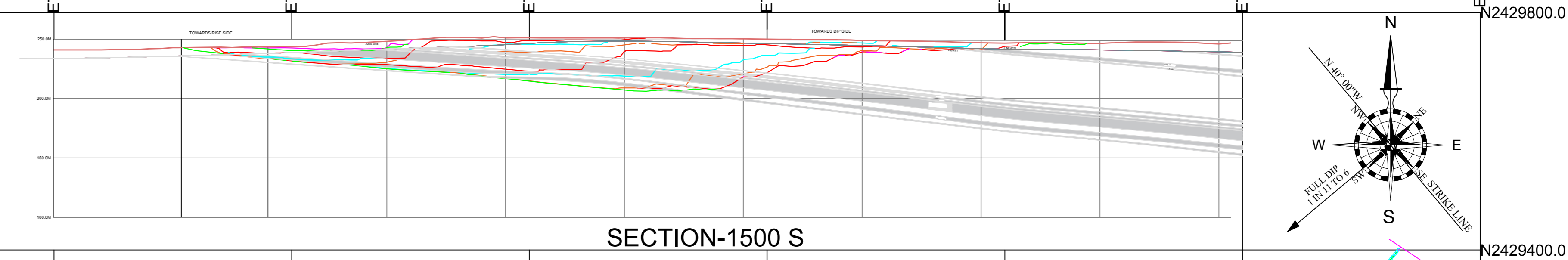
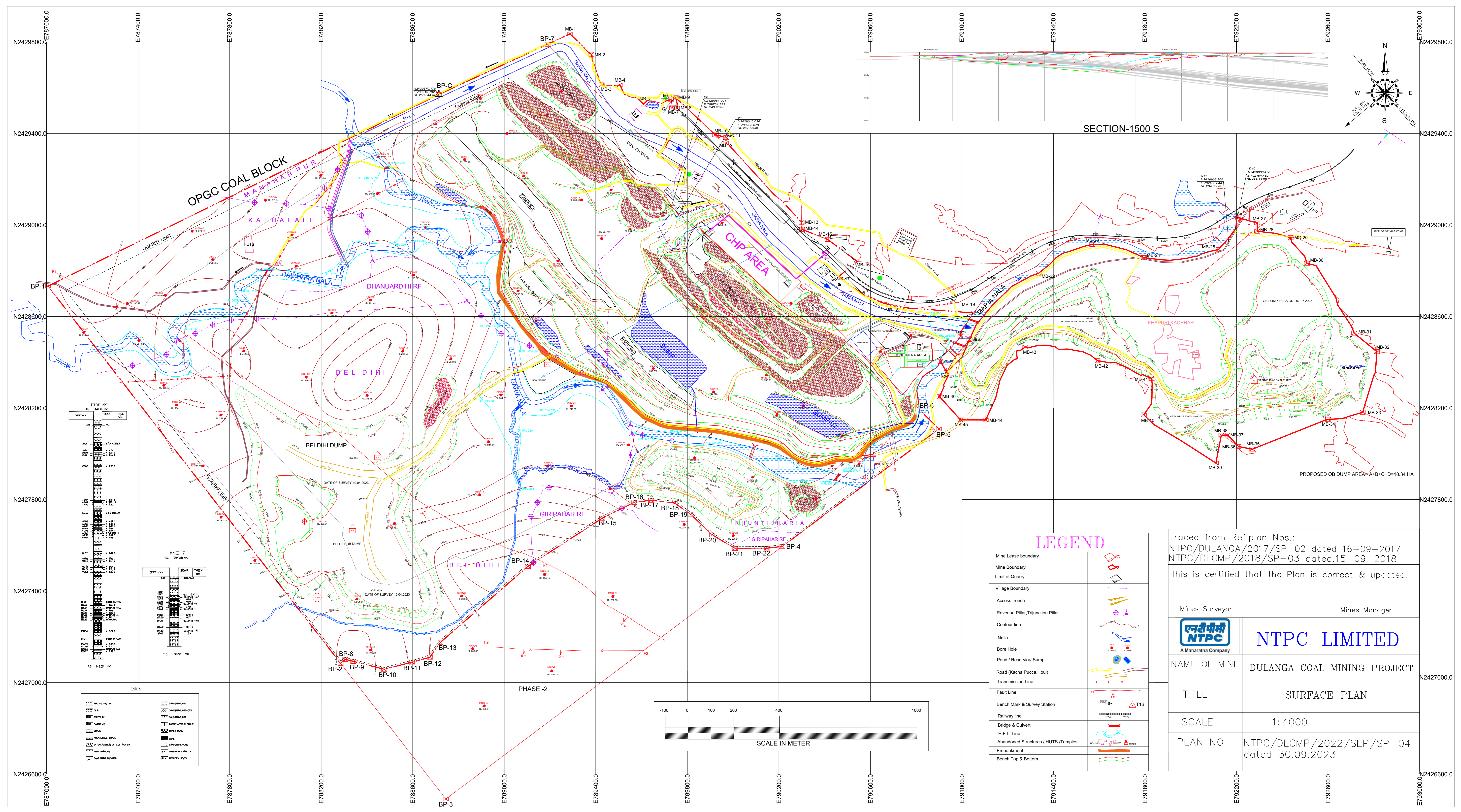
Ratha

ECC. No.	General EC Conditions	Compliance Status as on 30.09.2023
7.	The Proponent shall setup an Environment Audit cell with responsibility and accountability to ensure implementation of all the EC Conditions.	Being Complied 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.	Noted and agreed Agreed to Comply any additional condition stipulated 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.	Noted and agreed
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.	Noted and agreed



अरिंदम पट्टनायक / ARINDAM PATTNAIK
वरिष्ठ प्रबंधक / Sr. MANAGER
(पर्यावरण प्रबंधन) / (ENVIRONMENT MANAGEMENT)
दुर्लगा सी.एम.पी. / DULANGA C. M. P.
एनटीपीसी लिमिटेड / NTPC LTD.
सुंदरगढ़ / SUNDARGARH

Arindam Pattnaik
Sr Manager (Env. Mgmt.)
NTPC Ltd., Dulanga Coal Mining Project



INDEX

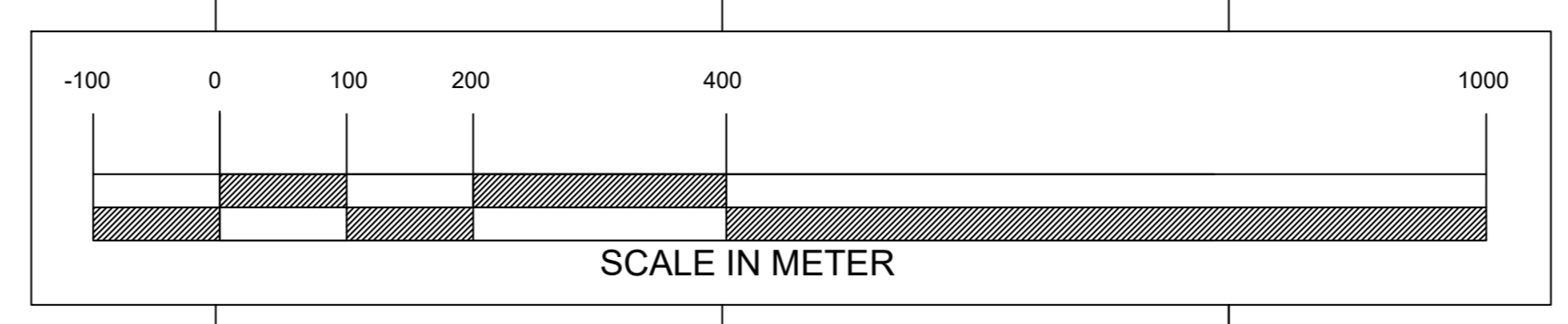
BP-1 to BP-22	MB-1 to MB-45
Other symbols and codes	Other symbols and codes

DEPTHING

DEPTHING	SEAM	THICK	UNIT
0.00	0.00	0.00	0.00
0.05	0.05	0.05	0.05
0.10	0.10	0.10	0.10
0.15	0.15	0.15	0.15
0.20	0.20	0.20	0.20
0.25	0.25	0.25	0.25
0.30	0.30	0.30	0.30
0.35	0.35	0.35	0.35
0.40	0.40	0.40	0.40
0.45	0.45	0.45	0.45
0.50	0.50	0.50	0.50
0.55	0.55	0.55	0.55
0.60	0.60	0.60	0.60
0.65	0.65	0.65	0.65
0.70	0.70	0.70	0.70
0.75	0.75	0.75	0.75
0.80	0.80	0.80	0.80
0.85	0.85	0.85	0.85
0.90	0.90	0.90	0.90
0.95	0.95	0.95	0.95
1.00	1.00	1.00	1.00

LEGEND

Mine Lease boundary	
Mine Boundary	
Limit of Quarry	
Village Boundary	
Access trench	
Revenue Pillar/Trijunction Pillar	
Contour line	
Nalla	
Bore Hole	
Pond / Reservoir / Sump	
Road (Kacha/Pucca/Haul)	
Transmission Line	
Fault Line	
Bench Mark & Survey Station	
Railway line	
Bridge & Culvert	
H.F.L. Line	
Abandoned Structures / HUTS /Temples	
Embankment	
Bench Top & Bottom	



Traced from Ref.plan Nos.:
 NTPC/DULANGA/2017/SP-02 dated 16-09-2017
 NTPC/DLCMP/2018/SP-03 dated.15-09-2018

This is certified that the Plan is correct & updated.

Mines Surveyor	Mines Manager
	NTPC LIMITED A Maharatna Company
NAME OF MINE	DULANGA COAL MINING PROJECT
TITLE	SURFACE PLAN
SCALE	1: 4000
PLAN NO	NTPC/DLCMP/2022/SEP/SP-04 dated 30.09.2023

Avenue Plantation



Plantation in Infra Office



Vacant Area Plantation



Plantation Near View Point



Plantation along MGR



Sapling Distribution





Government of Odisha
Department of Water Resources

No. 21250 /WR.,
WR-MAJII-WRC-0009/2016 (OSWAS)
Irr.-II-WRC-161/21 (Physical)

Date: 23/8/2021

COPY
- AEM(Civil)
- AEM(Mining)
- DAM(PS)

From

Ms Archana Patnaik, IAS,
Special Secretary to Government.

To

The General Manager, M/s NTPC Ltd.,
Dulunga Coal Mining Project, 2nd Floor,
Megha Mallahar, Mission Road, Sundargarh.

Sub: Permission for diversion of Garia Nalla and its tributaries (Baidhar Nallah and Nallah -B) flowing within the coal block boundary of Dulunga Coal Mining Project allotted to NTPC Ltd.

Sir,

In inviting reference to your Correspondence No-0100/ NTPC/DLCMP/MDO/2017/17 dated 05.04.2017 on the subject noted above I am directed to say that Government in Water Resources Department have been pleased to accord permission in favour of your industry for diversion of Garia Nalla and its tributaries (Baidhar Nallah and Nallah -B) flowing within the coal block boundary of Dulunga Coal Mining Project allotted to NTPC Ltd. with the following terms & conditions:-

Terms & Conditions:-

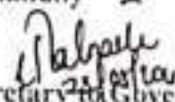
1. NTPC shall divert the Garia Nalla and its tributaries (Baidhar Nallah and Nala -B) in accordance with the provisions made in the mining plan of Dulanga Coal Block which has been approved by Ministry of Coal, Government of India and as per the condition(s) stipulated in the Environment clearance granted for Dulanga Coal Block by MOEF&CC.
2. NTPC shall divert the Garia Nalla and its tributaries namely Baidhar Nallah and Nala -B within the land under their possession on its own cost. All direct or indirect and annual expenditure on maintenance of the above said nallahs shall be borne by NTPC.
3. Any adverse impact noticed due to the diversion must be set right by NTPC at its own cost.
4. The gradient of the original nallah shall be maintained in the proposed diverted route by NTPC.
5. The regime channel section shall be maintained in the proposed diversion alignment by NTPC. Smooth transition shall be provided between diversion and original nallah section by NTPC.

P.T.O.

6. Safe distance shall be maintained by NTPC from the diversion channel to the mining operation boundary for safety point of view following Govt. norms.
7. NTPC shall ensure that riparian rights of the people residing in the downstream area shall not be affected upon diversion of Garia Nallah and its tributaries namely Baidhar Nallah and Nallah -B.
8. The water quality shall be maintained in the nallah by NTPC to ensure the protection of the riparian right of people living in the d/s of the diversion channel. NTPC shall not discharge/dispose any untreated and contaminated waste material into the nallahs so that the flora and fauna will be in peril.
9. Ecological and environmental damages, if any, arising during and after diversion of nallahs shall be the sole responsibility of NTPC for which they shall be treated as per law. NTPC shall have to obtain permission or clearance from Competent Authorities on ecology, environment and forest aspects as necessary.
10. The diverted nallahs shall be treated as public property.
11. Any construction activities /interference should be consistent with the hydraulic compulsions and structural safety standards.
12. NTPC shall ensure that diversion portion of nallah is adequate to carry design flood discharge. In case of failure, change of path of nallahs is noticed after diversion, NTPC is liable for reconstruction at their cost and pay compensation if damages occur to public/private properties.
13. Necessary safety arrangement shall be the responsibility of NTPC while executing the diversion work of nallahs. The Company shall have to provide barricading, display boards and other necessary caution boards while executing the work.
14. Cutting of any tree or removal of any utility services along the proposed diversion alignment if required, NTPC shall have to obtain clearances from concerned approving authorities.
15. NTPC shall procure insurance from reputed insurance Company against damages during execution. In case of damage caused to any assets due to diversion of nallahs, DoWR shall not be accountable or liable in any manner whatsoever.
16. NTPC shall intimate Revenue official's viz. Tahasildar & Collector of the district regarding such diversion in order to incorporate it in the cadastral map & ROR.
17. DoWR shall reserve the right to review/modify/revoke the permission in case of violation of terms and conditions of the permission.
18. NTPC shall construct peripheral drains for discharge of flood water of the catchments s Mining Lease area if required.
19. The diverted nallahs are to be properly fenced and protected against accidents.
20. The interest of the local villagers is to be suitably addressed in the event of diversion.

21. NTPC shall make necessary arrangement so that seepage water from diverted Nallah shall not enter into the mining area.
22. The work should be executed in accordance with the Codal Provision with the overall objective of environmental safeguards. Latest codal provision and National/International best practices must be followed. DoWR shall not be responsible for any breach of the safeguards.
23. DoWR shall have the right to order such works as may be necessary to maintain the integrity of the nallahs at any time during or after the execution not covered in approved scheme. NTPC shall be bound to execute the same as per instruction of DoWR at their own cost.

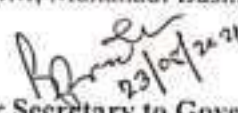
Yours faithfully



Special Secretary to Government

Memo No. 21251 /WR, Dtd. 23/8/2021

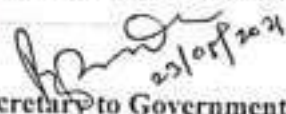
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Under Secretary to Government

Memo No. 21252 /WR, Dtd. 23/8/2021

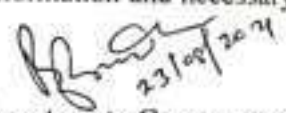
Copy forwarded to Industries Department / Steel & Mines Department/ IPICOL / IDCO for information and necessary action.



Under Secretary to Government

Memo No. 21253 /WR, Dtd. 23/8/2021

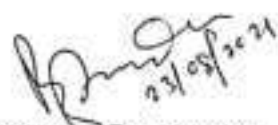
Copy forwarded to Collector & District Magistrate, Sundargarh for information and necessary action.



Under Secretary to Government

Memo No. 21254 /WR, Dtd. 23/8/2021

Copy forwarded to Executive Engineer, Sundargarh Irrigation Division, Sundargarh for information and necessary action.



Under Secretary to Government



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744023000000207F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 24 Apr 2023

Test Report No: ERSIPL/TR/WA/109

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 12.04.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 17.04.2023
Analysis Started on : 17.04.2023
Analysis Completed on : 24.04.2023
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/247
2. ERSIPL/WA/248
3. ERSIPL/WA/249

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/247	ERSIPL/WA/248	ERSIPL/WA/249
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	6.97	6.84	6.73
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.53	0.47	0.55
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	142.0	168.0	36.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.07	0.08	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	35.48	49.28	20.70
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	257.0	344.0	108.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	34.47	35.27	9.62
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	24.87	10.90	3.97
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	176.0	172.0	86.0

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329 , E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ ~~Waste Water~~)**

Pg No: 1 of 2

Date: 24 Apr 2023**Test Report No: ERSIPL/TR/WA/T-109**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12.04.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 17.04.2023

Analysis Started on : 17.04.2023

Analysis Completed on : 24.04.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/247
2. ERSIPL/WA/248
3. ERSIPL/WA/249

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analyzed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/247	ERSIPL/WA/248	ERSIPL/WA/249
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND

**Environmental Research and Services (India) Pvt. Ltd.**


(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P.Pattanayak
Tech.Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC744023000000208F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 1

Date: 24 Apr 2023

Test Report No: ERSIPL/TR/WA/110

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 12/13.04.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 17.04.2023
Analysis Started on : 17.04.2023
Analysis Completed on : 24.04.2023
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

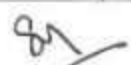
1. ERSIPL/WA/250
2. ERSIPL/WA/251
3. ERSIPL/WA/252
4. ERSIPL/WA/253

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/250	ERSIPL/WA/251	ERSIPL/WA/252	ERSIPL/WA/253
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	6.81	6.78	6.72	6.98
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.52	0.55	0.41	0.48
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	202.0	22.00	86.0	270.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.07	0.08	0.06	0.05
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	48.29	19.71	31.54	80.81
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	584.0	57.4	211.0	712.4
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	33.67	6.41	19.24	26.45
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	25.38	4.10	15.51	18.46
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	390.0	36.0	64.0	436.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329 , E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ Waste Water)**

Pg No: 1 of 2

Date: 24 Apr 2023**Test Report No: ERSIPL/TR/WA/T-110**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12/13.04.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 17.04.2023

Analysis Started on : 17.04.2023

Analysis Completed on : 24.04.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/250
2. ERSIPL/WA/251
3. ERSIPL/WA/252
4. ERSIPL/WA/253

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/250	ERSIPL/WA/251	ERSIPL/WA/252	ERSIPL/WA/253
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND	ND



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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000209F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 24 Apr 2023

Test Report No: ERSIPL/TR/WA/111

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.04.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 17.04.2023

Analysis Started on : 17.04.2023

Analysis Completed on : 24.04.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

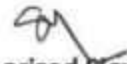
1. ERSIPL/WA/254
2. ERSIPL/WA/255

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/254	ERSIPL/WA/255
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	6.25	6.88
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.50	0.56
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	30.0	142.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	20.70	24.64
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	58.4	239.4
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	7.21	32.87
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	6.28	18.08
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	38.0	168.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329 , E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ Waste Water)**

Pg No: 1 of 2

Date: 24 Apr 2023**Test Report No: ERSIPL/TR/WA/T-111**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.04.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 17.04.2023

Analysis Started on : 17.04.2023

Analysis Completed on : 24.04.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/254
2. ERSIPL/WA/255

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/254	ERSIPL/WA/255
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND

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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744023000000255F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/WA/131

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.05.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 22.05.2023

Analysis Started on : 22.05.2023

Analysis Completed on : 29.05.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/307
2. ERSIPL/WA/308
3. ERSIPL/WA/309

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/307	ERSIPL/WA/308	ERSIPL/WA/309
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	7.04	6.87	6.79
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.43	0.45	0.51
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	146.0	170.0	38.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.08	0.06	0.06
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	36.46	51.25	22.67
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	260.2	347.5	111.7
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	35.27	36.87	10.42
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	23.72	10.38	4.74
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	180.0	174.0	88.0

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329 , E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ Waste-Water)**

Pg No: 1 of 2

Date: 30 May 2023**Test Report No: ERSIPL/TR/WA/T-131**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.05.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 22.05.2023

Analysis Started on : 22.05.2023

Analysis Completed on : 29.05.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/307
2. ERSIPL/WA/308
3. ERSIPL/WA/309

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analyzed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/307	ERSIPL/WA/308	ERSIPL/WA/309
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND

ND-Not Detected


(Authorized Signatory)S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000256F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/WA/132

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.05.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 22.05.2023

Analysis Started on : 22.05.2023

Analysis Completed on : 29.05.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/310
2. ERSIPL/WA/311
3. ERSIPL/WA/312
4. ERSIPL/WA/313

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharla
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/310	ERSIPL/WA/311	ERSIPL/WA/312	ERSIPL/WA/313
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	6.91	6.85	6.77	7.05
02	Turbidity	IS:3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.46	0.45	0.49	0.42
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	204.0	26.0	88.0	272.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.08	0.08	0.07	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	50.26	21.68	32.52	81.80
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	587.4	60.1	213.5	714.5
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	33.67	7.21	20.84	27.25
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	22.82	4.49	12.95	15.90
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	394.0	38.0	70.0	438.0

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager



Environmental Research and Services (India) Pvt. Ltd.

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Test Report Format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste Water)

Pg No: 1 of 2

Date: 30 May 2023

Test Report No: ERSIPL/TR/WA/T-132

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
 Date of Sampling : 14.05.2023
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of Customer
 Sample Received on : 22.05.2023
 Analysis Started on : 22.05.2023
 Analysis Completed on : 29.05.2023
 Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
 Quantity of Sample : 2ltrs
 Type of Container : Glass Bottle & HDPE Bottle
 Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/310
2. ERSIPL/WA/311
3. ERSIPL/WA/312
4. ERSIPL/WA/313

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/310	ERSIPL/WA/311	ERSIPL/WA/312	ERSIPL/WA/313
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND	ND

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329 , E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected


 (Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000257F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/WA/133

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 13.05.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 22.05.2023
Analysis Started on : 22.05.2023
Analysis Completed on : 29.05.2023
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

- ERSIPL/WA/314
- ERSIPL/WA/315

Locations

- Open well in Village Bendrichua
- Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/314	ERSIPL/WA/315
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	6.38	6.97
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.45	0.49
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	32.0	144.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	22.67	26.61
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	63.8	241.8
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	8.02	34.47
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	6.03	15.64
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	42.0	170.0

(Authorized Signatory)

S. P. Pattanayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329 , E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ ~~Waste Water~~)**

Pg No: 1 of 2

Date: 30 May 2023**Test Report No: ERSIPL/TR/WA/T-133**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.05.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 22.05.2023

Analysis Started on : 22.05.2023

Analysis Completed on : 29.05.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/314
2. ERSIPL/WA/315

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/314	ERSIPL/WA/315
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND

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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000341F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/WA/171

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 14.06.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 17.06.2023
Analysis Started on : 17.06.2023
Analysis Completed on : 29.06.2023
Method of Sampling : IS 17614: Part 1: 2021
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/400
2. ERSIPL/WA/401
3. ERSIPL/WA/402

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/400	ERSIPL/WA/401	ERSIPL/WA/402
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	7.04	6.87	6.79
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.51	0.46	0.53
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	148.0	174.0	42.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.07	0.06	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	35.48	49.28	22.67
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	264.0	351.0	115.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	36.07	36.87	12.02
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	27.05	12.05	4.87
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	182.0	174.0	92.0

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ ~~Waste Water~~)**

Pg No: 1 of 2

Date: 29 June 2023**Test Report No: ERSIPL/TR/WA/T-171**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.06.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 17.06.2023

Analysis Started on : 17.06.2023

Analysis Completed on : 29.06.2023

Method of Sampling : IS 17614: Part 1: 2021

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/400
2. ERSIPL/WA/401
3. ERSIPL/WA/402

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analyzed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/400	ERSIPL/WA/401	ERSIPL/WA/402
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND

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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000342F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/WA/172

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 14-15.06.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 17.06.2023
Analysis Started on : 17.06.2023
Analysis Completed on : 29.06.2023
Method of Sampling : IS 17614: Part 1: 2021
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/403
2. ERSIPL/WA/404
3. ERSIPL/WA/405
4. ERSIPL/WA/406

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharja
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/403	ERSIPL/WA/404	ERSIPL/WA/405	ERSIPL/WA/406
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.91	6.85	6.77	7.05
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.49	0.53	0.39	0.46
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	210.0	30.0	96.0	278.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.07	0.06	0.08	0.06
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	52.23	20.70	34.49	82.78
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	598.0	62.8	222.0	731.4
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	36.07	8.02	20.04	28.06
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	27.05	4.62	16.92	21.41
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	394.0	38.0	70.0	442.0

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

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TEST REPORT (Water/ Waste-Water)**

Pg No: 1 of 2

Date: 29 June 2023**Test Report No: ERSIPL/TR/WA/T-172**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14-15.06.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 17.06.2023

Analysis Started on : 17.06.2023

Analysis Completed on : 29.06.2023

Method of Sampling : IS 17614: Part 1: 2021

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/403
2. ERSIPL/WA/404
3. ERSIPL/WA/405
4. ERSIPL/WA/406

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfall
3. Open well in Village Khuntjharua
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/403	ERSIPL/WA/404	ERSIPL/WA/405	ERSIPL/WA/406
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND	ND

**Environmental Research and Services (India) Pvt. Ltd.**

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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744023000000343F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/WA/173

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 15.06.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 17.06.2023

Analysis Started on : 17.06.2023

Analysis Completed on : 29.06.2023

Method of Sampling : IS 17614: Part 1: 2021

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/407
2. ERSIPL/WA/408

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/407	ERSIPL/WA/408
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.38	6.97
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.48	0.44
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	34.0	144.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	22.67	26.61
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	65.4	239.7
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	8.82	34.47
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	6.54	18.59
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	42.0	172.0


(Authorized Signatory)
S.P. Pattansayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ ~~Waste Water~~)**

Pg No: 1 of 2

Date: 29 June 2023**Test Report No: ERSIPL/TR/WA/T-173**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 15.06.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 17.06.2023

Analysis Started on : 17.06.2023

Analysis Completed on : 29.06.2023

Method of Sampling : IS 17614: Part 1: 2021

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/407
2. ERSIPL/WA/408

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/407	ERSIPL/WA/408
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND

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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected

(Authorized Signatory)S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000386F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/WA/196

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.07.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 15.07.2023
Analysis Started on : 15.07.2023
Analysis Completed on : 24.07.2023
Method of Sampling : IS 17614: Part 1: 2021
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/474
2. ERSIPL/WA/475
3. ERSIPL/WA/476

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/474	ERSIPL/WA/475	ERSIPL/WA/476
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.75	6.53	5.74
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.67	0.86	0.43
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	146.0	138.0	52.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.10	0.07	<0.05
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	28.58	22.67	11.83
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	296.0	359.0	93.2
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	32.06	27.25	12.02
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	40.67	48.43	2.16
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	122.0	22.0	58.0

(Handwritten Signature)

(Authorized Signatory)

S.P.Pattanayak

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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TEST REPORT (Water/ Waste Water)**

Pg No: 1 of 2

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/WA/T-196

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.07.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 15.07.2023

Analysis Started on : 15.07.2023

Analysis Completed on : 24.07.2023

Method of Sampling : IS 17614: Part 1: 2021

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/474
2. ERSIPL/WA/475
3. ERSIPL/WA/476

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analyzed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/474	ERSIPL/WA/475	ERSIPL/WA/476
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000387F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/WA/197

Name and Address of the Customer

: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling

: 13/14.07.2023

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer

Sample Received on

: 15.07.2023

Analysis Started on

: 15.07.2023

Analysis Completed on

: 24.07.2023

Method of Sampling

: IS 17614: Part 1: 2021

Quantity of Sample

: 2ltrs

Type of Container

: Glass Bottle & HDPE Bottle

Environment Condition

: All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/477
2. ERSIPL/WA/478
3. ERSIPL/WA/479
4. ERSIPL/WA/480

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharja
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/477	ERSIPL/WA/478	ERSIPL/WA/479	ERSIPL/WA/480
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.75	6.65	5.92	7.75
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.79	0.47	0.69	0.87
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	372.0	32.0	48.0	276.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.07	0.06	0.08	0.06
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	47.30	22.67	26.61	66.03
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	577.0	67.8	210.0	703.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	68.94	7.21	12.83	7.21
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	34.10	10.22	12.01	46.19
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	300.0	40.0	20.0	342.0

(Authorized Signatory)

**Environmental Research and Services (India) Pvt. Ltd.**

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TEST REPORT (Water/ Waste Water)**

Pg No: 1 of 2

Date: 05 Aug 2023**Test Report No: ERSIPL/TR/WA/T-197**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13/14.07.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 15.07.2023

Analysis Started on : 15.07.2023

Analysis Completed on : 24.07.2023

Method of Sampling : IS 17614: Part 1: 2021

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/477
2. ERSIPL/WA/478
3. ERSIPL/WA/479
4. ERSIPL/WA/480

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/477	ERSIPL/WA/478	ERSIPL/WA/479	ERSIPL/WA/480
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

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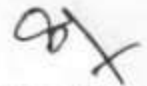
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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000388F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/WA/198

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 14.07.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 15.07.2023
Analysis Started on : 15.07.2023
Analysis Completed on : 24.07.2023
Method of Sampling : IS 17614: Part 1: 2021
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/481
2. ERSIPL/WA/482

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/481	ERSIPL/WA/482
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.32	6.63
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.37	0.49
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	36.0	132.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.08	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	23.65	20.70
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	69.4	395.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	8.02	26.45
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	9.18	25.60
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	44.0	168.0

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ Waste Water)**

Pg No: 1 of 2

Date: 05 Aug 2023**Test Report No: ERSIPL/TR/WA/T-198**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.07.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 15.07.2023

Analysis Started on : 15.07.2023

Analysis Completed on : 24.07.2023

Method of Sampling : IS 17614: Part 1: 2021

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/481
2. ERSIPL/WA/482

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/481	ERSIPL/WA/482
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10		IS 3025:Part 41: 1992				



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

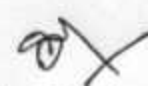
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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC74402300000449F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/WA/226

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.08.2023
Sample Collected by : T Mohanta, Dy. QM of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Customer.
Sample Received on : 24.08.2023
Analysis Started on : 24.08.2023
Analysis Completed on : 30.08.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 2 ltrs
Type of Container : Glass Bottle, HDPE Bottle
Weather Condition : Overcast
Atmospheric Temperature : 33 °C

Sample ID. No.

1. ERSIPL/WA/532
2. ERSIPL/WA/533
3. ERSIPL/WA/534

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/532	ERSIPL/WA/533	ERSIPL/WA/534
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	-	6.5 to 8.5	6.77	6.56	5.78
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.63	0.81	0.49
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	144.0	140.0	54.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.07	0.08
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	27.59	22.67	12.81
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	287.0	364.0	97.2
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	31.26	28.06	12.83
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	36.19	46.94	2.61
09	Fluoride	IS 3025:Part 60: 2008, Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	120.0	24.0	60.0

- Note-
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 4. Samples (Filter Papers & Thimbles) received shall be destroyed after 01 year & Gaseous/liquid samples received shall be destroyed after 07 days from the date of issue of the test report, unless otherwise specified.
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Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 2

Date: 30 Aug 2023**Test Report No: ERSIPL/TR/WA/T-226**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.08.2023

Sample Collected by : T Mohanta, Dy. QM of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Customer.

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 2 ltrs

Type of Container : Glass Bottle, HDPE Bottle

Weather Condition : Overcast

Atmospheric Temperature : 33 °C

Sample ID. No.

1. ERSIPL/WA/532
2. ERSIPL/WA/533
3. ERSIPL/WA/534

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analyzed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/532	ERSIPL/WA/533	ERSIPL/WA/534
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND



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11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND

ND-Not Detected



...END OF TEST REPORT...



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TC-7440

ULR-TC744023000000450F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/WA/227

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.08.2023
 Sample Collected by : T Mohanta, Dy. QM of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of the Customer.
 Sample Received on : 24.08.2023
 Analysis Started on : 24.08.2023
 Analysis Completed on : 30.08.2023
 Method of Sampling : As per Applicable Test Method
 Quantity of Sample : 2 ltrs
 Type of Container : Glass Bottle, HDPE Bottle
 Weather Condition : Overcast
 Atmospheric Temperature : 33 °C

Sample ID. No.

1. ERSIPL/WA/535
2. ERSIPL/WA/536
3. ERSIPL/WA/537
4. ERSIPL/WA/538

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharua
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/535	ERSIPL/WA/536	ERSIPL/WA/537	ERSIPL/WA/538
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	-	6.5 to 8.5	6.72	6.75	5.98	7.71
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.75	0.51	0.72	0.81
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	370.0	34.0	50.0	278.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.05	0.05	0.06
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	49.28	23.65	27.59	67.01
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	582.0	68.5	213.0	709.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	69.74	8.02	13.63	15.23
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	34.85	9.18	11.12	45.30
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	302.0	42.0	22.0	344.0

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Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 2

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/WA/T-227

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.08.2023

Sample Collected by : T Mohanta, Dy. QM of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Customer.

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 2 Itrs

Type of Container : Glass Bottle, HDPE Bottle

Weather Condition : Overcast

Atmospheric Temperature : 33 °C

Sample ID. No.

1. ERSIPL/WA/535
2. ERSIPL/WA/536
3. ERSIPL/WA/537
4. ERSIPL/WA/538

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/535	ERSIPL/WA/536	ERSIPL/WA/537	ERSIPL/WA/538
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND

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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected

(Authorized Signatory)

...END OF TEST REPORT...



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ULR-TC744023000000451F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/WA/228

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.08.2023
Sample Collected by : T Mohanta, Dy. QM of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Customer.
Sample Received on : 24.08.2023
Analysis Started on : 24.08.2023
Analysis Completed on : 30.08.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 2 ltrs
Type of Container : Glass Bottle, HDPE Bottle
Weather Condition : Overcast
Atmospheric Temperature : 34 °C

Sample ID. No.

1. ERSIPL/WA/539
2. ERSIPL/WA/540

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/539	ERSIPL/WA/540
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.35	6.69
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.47	0.43
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	40.0	134.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.08
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	24.64	22.67
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	71.4	399.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	8.82	28.06
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	9.63	26.34
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	46.0	170.0

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ ~~Waste Water~~)**

Pg No: 1 of 2

Date: 30 Aug 2023**Test Report No: ERSIPL/TR/WA/T-228****Name and Address of the Customer** : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.08.2023
Sample Collected by : T Mohanta, Dy. QM of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Customer.
Sample Received on : 24.08.2023
Analysis Started on : 24.08.2023
Analysis Completed on : 30.08.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 2 ltrs
Type of Container : Glass Bottle, HDPE Bottle
Weather Condition : Overcast
Atmospheric Temperature : 34 °C

Sample ID. No.

1. ERSIPL/WA/539
2. ERSIPL/WA/540

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/539	ERSIPL/WA/540
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected



...END OF TEST REPORT...



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ULR-TC74402300000520F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/WA/266

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12.09.2023

Sample Collected by : S. Samantaray, Field assistant, ERS(I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Customer.

Sample Received on : 16.09.2023

Analysis Started on : 16.09.2023

Analysis Completed on : 26.09.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 3 ltrs

Type of Container : Glass Bottle, HDPE Bottle

Weather Condition : Overcast

Atmospheric Temperature : 31 °C

Sample ID. No.

1. ERSIPL/WA/625
2. ERSIPL/WA/626
3. ERSIPL/WA/627

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/625	ERSIPL/WA/626	ERSIPL/WA/627
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.71	6.58	5.87
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.71	0.68	0.52
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	140.0	138.0	52.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.08	0.06	0.05
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	25.62	22.67	11.83
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	281.0	357.0	96.2
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	30.46	27.25	12.02
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	31.87	43.96	2.01
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	122.0	26.0	58.0

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 4. Samples (Filter Papers & Thimbles) received shall be destroyed after 01 year & Gaseous/Liquid samples received shall be destroyed after 07 days from the date of issue of the test report, unless otherwise specified.
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Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 2

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/WA/T-266

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12.09.2023
Sample Collected by : S. Samantaray, Field assistant, ERS(I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Customer.
Sample Received on : 16.09.2023
Analysis Started on : 16.09.2023
Analysis Completed on : 26.09.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 3 ltrs
Type of Container : Glass Bottle, HDPE Bottle
Weather Condition : Overcast
Atmospheric Temperature : 31 °C

Sample ID. No.

1. ERSIPL/WA/625
2. ERSIPL/WA/626
3. ERSIPL/WA/627

Locations

1. Tap water inside NTPC site office
2. Borewell Near Pit Office
3. Borewell Near Labour Barrack

TEST FINDINGS:

Sl	Parameters Analyzed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result		
					ERSIPL/WA/625	ERSIPL/WA/626	ERSIPL/WA/627
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory)



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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC74402300000521F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/WA/267

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12.09.2023
Sample Collected by : S. Samantaray, Field assistant, ERS(I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Customer.
Sample Received on : 16.09.2023
Analysis Started on : 16.09.2023
Analysis Completed on : 26.09.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 3 ltrs
Type of Container : Glass Bottle, HDPE Bottle
Weather Condition : Overcast
Atmospheric Temperature : 31 °C

Sample ID. No.

1. ERSIPL/WA/628
2. ERSIPL/WA/629
3. ERSIPL/WA/630
4. ERSIPL/WA/631

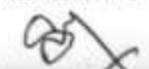
Locations

1. Tube well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharla
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/628	ERSIPL/WA/629	ERSIPL/WA/630	ERSIPL/WA/631
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.97	6.95	5.95	7.51
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.68	0.49	0.69	0.71
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	366.0	32.0	48.0	272.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.07	0.07	0.08	0.05
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	48.29	24.64	25.62	64.06
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	562.0	66.5	211.4	702.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	68.14	8.02	12.83	14.43
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	30.37	7.54	10.52	44.25
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	296.0	40.0	24.0	340.0

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 4. Samples (Filter Papers & Thimbles) received shall be destroyed after 01 year & Gaseous/liquid samples received shall be destroyed after 07 days from the date of issue of the test report, unless otherwise specified.
 5. This report shall not used in any advertising media or as evidence in the court of law without prior written consent of ERS (I) Pvt. Ltd.


(Authorized Signatory)

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Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 2

Date: 26 Sept 2023**Test Report No: ERSIPL/TR/WA/T-267**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12.09.2023

Sample Collected by : S. Samantaray, Field assistant, ERS(I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Customer.

Sample Received on : 16.09.2023

Analysis Started on : 16.09.2023

Analysis Completed on : 26.09.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 3 ltrs

Type of Container : Glass Bottle, HDPE Bottle

Weather Condition : Overcast

Atmospheric Temperature : 31 °C

Sample ID. No.

1. ERSIPL/WA/628
2. ERSIPL/WA/629
3. ERSIPL/WA/630
4. ERSIPL/WA/631

Locations

1. Tube well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharla
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/628	ERSIPL/WA/629	ERSIPL/WA/630	ERSIPL/WA/631
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
		IS 3025:Part 41: 1992						

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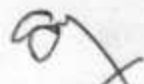
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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000522F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/WA/268

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12.09.2023

Sample Collected by : S. Samantaray, Field assistant, ERS(I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Customer.

Sample Received on : 16.09.2023

Analysis Started on : 16.09.2023

Analysis Completed on : 26.09.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 3 ltrs

Type of Container : Glass Bottle, HDPE Bottle

Weather Condition : Overcast

Atmospheric Temperature : 31 °C

Sample ID. No.

1. ERSIPL/WA/632

2. ERSIPL/WA/633

Locations

1. Open well in Village Bendrichua

2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/632	ERSIPL/WA/633
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	6.5 to 8.5	6.45	6.84
02	Turbidity	IS 3025:Part 10: 2023	NTU	1.0	0.51	0.54
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	36.0	130.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.08	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	22.67	20.70
06	Total Dissolved Solids	IS 3025:Part 16: 2023	mg/L	500.0	70.4	384.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	8.82	26.45
08	Sulphate as SO ₄	IS 3025 (Part 24/Sec 1) : 2022	mg/L	200.0	8.13	23.36
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	44.0	166.0

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(Authorized Signatory)

**Environmental Research and Services (India) Pvt. Ltd.**

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Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 2

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/WA/T-268

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12.09.2023

Sample Collected by : S. Samantaray, Field assistant, ERS(I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Customer.

Sample Received on : 16.09.2023

Analysis Started on : 16.09.2023

Analysis Completed on : 26.09.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 3 ltrs

Type of Container : Glass Bottle, HDPE Bottle

Weather Condition : Overcast

Atmospheric Temperature : 31 °C

Sample ID. No.

1. ERSIPL/WA/632
2. ERSIPL/WA/633

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/632	ERSIPL/WA/633
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2021	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05:2018	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 2021	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2022	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND

**Environmental Research and Services (India) Pvt. Ltd.**


(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 2022	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 2021	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2021	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...

000223

Annexure - V



एनटीपीसी लिमिटेड
(भारत सरकार का उद्यम)

NTPC Limited

(A Govt. of India Enterprise)

दुलंगा कोल माइनिंग प्रोजेक्ट
Dulanga Coal Mining Project

Ref.: 0100/DLCMP/FD/ES/02/0814

Date: 25.08.2014

To,

The Director
Ministry of Environment, Forests & Climatic Change, Gov of India
Indira Paryavaran Bhawan,
Jorbagh, Aliganj
New Delhi - 110003

श्री. आर. कमुजम डाल लोधी रोड
Received by C.R. Section
पर्यावरण एवं वन विभाग
Ministry of Environment & Forests
भारत सरकार/Govt. of India
के. ए. ए. परिसर, लोधी रोड
C.O. Complex, Lodhi Road
नई दिल्ली/New Delhi-110008

26/8/14

Subject: Compliance of Specific condition Nos. 4A(x) & 4A (Ixiii) of environmental clearance accorded for Dulanga Coal Mining project (7MTPA in an area of 785.37ha= (803.71ha-18.34ha=785.37ha); of M/s NTPC Limited, Ib valley coalfields, Dist. Sundargarh, Odisha.

Reference: Letter No.: J/11015/1140/2007-IA.II(M) dated 03.03.2014 issued by MoEF, GoI.

Sir,

With reference to above subject, it is to mention that the Ministry of Environment and Forests, Government of India have accorded Environmental clearance for Dulanga Coal Mining project (7MTPA in an area of 785.37ha= (803.71ha-18.34ha=785.37ha); of M/s NTPC Limited, Ib valley coalfields, Dist. Sundargarh, Odisha vide J/11015/1140/2007-IA.II(M) dated 03.03.2014. In compliance to the subject Specific conditions of Environmental clearance, the compliance details are furnished below and the same is also being furnished in soft in form of CD:

Condition No. 4A (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 re-handling separately in external and internal dumps is furnished as **Annexure-I**.

000224

Condition No. 4A (Ixiii) - 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.

A brief note on detailed final mine closure plan along with details of corpus fund as per the Revised Mining Plan is enclosed as **Annexure-II**.

The Revised Mining Plan including **Mine Closure Plan** (1st Revision) (April 2012) of Dulanga Coal Block of IB valley Coalfield, Sundargarh District, Odissa has been approved by MoC, vide letter No 13016/27/2012-CA-I Dated 14th August, 2012.

The copy the approval letter of MoC and the relevant information on the detailed Final Mine Closure Plan along with details of Corpus Fund as per the Revised Mining Plan approved by MoC is enclosed at **Annexure-III**.

This is for your kind information in compliance to above conditions please.

Thanking You.

Yours Faithfully


(C. R. Barik) 25/8/14
Addl. General Manager (I/c)

Enclosure: As above

~~ANNEXURE - I~~**An integrated calendar plan of production including the details re-handling separately in external and internal dumps**

The mining method in the proposed Dulanga coal Mining Project is opencast mining method by shovel-dumper combination for excavation of OB and Surface miner as well as shovel-dumper combination for extraction coal. The extractable coal reserves is 152 Million Tonne. With the rated output of 7MTPA the life of mine computed as 24 years. In addition to this, there will be construction period of two years before commencement of actual production from the mine.

A total quantity of 394.00 Cum of overburden (including 3.65 M.Cu.m of top soil) will be removed from the quarry of the project during the life of 24 years of mining operations. In the initial years the excavated OB will be dumped in the external surface dump and the back filling operations will commence only after sufficient de-coaled areas is available within the quarry. With assessed overall stripping ratio of 2.59 cum/t and annual target of 7 MT, the yearly average overburden removal would be in the order of 18.4 M cum.

The OB generated during 1st & 2nd year will be exclusively disposed in external surface dump located at south eastern side of ML (Block) area, lying outside the allotted coal block boundary. In the 3rd and 4th year, disposal of waste will be partly in surface dump and partly in backfilling. From the start of 5th year and onward full scale backfilling will start. The external OB dump will expand over an area of 86 ha and the dump is designed to accommodate 28.5 Mcum.

About 7% of waste will be disposed on the proposed overburden dump. Remaining 93% of the total waste will be disposed of in the mined out de-coaled area.

The calendar programme of coal production and OB removal is furnished hereunder.

Calendar Programme of coal production and OB removal in Dulanga Coal Block

Year	Coal Progressive (Mt)	Coal Cumulative (Mt)	Total waste (OB) (Mcum) prog.	Total waste (OB) (Mcum) Cumulative	Stripping ratio (cum/t) prog	Stripping ratio (Cum/t)
C1						
C2						
1	1	1	4.5	4.5	4.5	4.5
2	2.5	3.5	10.5	15	4.2	4.29
3	4.5	8	5.5	30.5	3.44	3.81
4	7	15	18	48.5	2.57	3.23
5	7	22	18	66.5	2.57	3.02
6	7	29	18.4	84.9	2.63	2.93
7	7	36	18.4	103.3	2.63	2.87
8	7	43	18.4	121.7	2.63	2.83
9	7	50	18.4	140.1	2.63	2.8
10	7	57	18.4	158.5	2.63	2.78
11	7	64	18.4	176.9	2.63	2.76
12	7	71	18.4	195.3	2.63	2.75
13	7	78	18.4	213.7	2.63	2.74
14	7	85	18.4	232.1	2.63	2.73
15	7	92	18.4	250.5	2.63	2.72
16	7	99	18.4	268.9	2.63	2.72
17	7	106	18.4	287.3	2.63	2.71
18	7	113	18.4	305.7	2.63	2.71
19	7	120	18.4	324.1	2.63	2.7
20	7	127	18.4	342.5	2.63	2.7
21	7	134	18.4	360.9	2.63	2.69
22	7	141	18.4	379.3	2.63	2.69
23	6	147	10	389.3	1.67	2.65
24	5	152	4.7	394	0.94	2.59
Total	152		394			2.59

The dumping schedule is given in **Table below:**

Dumping Schedule (Figure in Mm³)

Year	External Dump		Internal Dump		Total	
	OB	Cumm OB	OB	Cumm OB	OB	Cumm OB
C1						
C2						
1	4.50	4.50	0.00	0.00	4.50	4.50
2	10.50	15.00	0.00	0.00	10.50	15.00
3	9.00	24.00	6.50	6.50	15.50	30.50
4	4.50	28.50	13.50	20.00	18.00	48.50
5	0.00	28.50	18.00	38.00	18.00	66.50
6	0.00	28.50	18.40	56.40	18.40	84.90
7	0.00	28.50	18.40	74.80	18.40	103.30
8	0.00	28.50	18.40	93.20	18.40	121.70
9	0.00	28.50	18.40	111.60	18.40	140.10
10	0.00	28.50	18.40	130.00	18.40	158.50
11	0.00	28.50	18.40	148.40	18.40	176.90
12	0.00	28.50	18.40	166.80	18.40	195.30
13	0.00	28.50	18.40	185.20	18.40	213.70
14	0.00	28.50	18.40	203.60	18.40	232.10
15	0.00	28.50	18.40	222.00	18.40	250.50
16	0.00	28.50	18.40	240.40	18.40	268.90
17	0.00	28.50	18.40	258.80	18.40	287.30
18	0.00	28.50	18.40	277.20	18.40	305.70
19	0.00	28.50	18.40	295.60	18.40	324.10
20	0.00	28.50	18.40	314.00	18.40	342.50
21	0.00	28.50	18.40	332.40	18.40	360.90
22	0.00	28.50	18.40	350.80	18.40	379.30
23	0.00	28.50	10.00	360.80	10.00	389.30
24	0.00	28.50	4.70	365.50	4.70	394.00
TOTAL	28.50		365.50		394.00	

Proper attention will be given to the stability of the external surface dump, backfilled dump and crown dump from failures and leaching out.

Re-handling of dump

In view of recommendations of Expert Appraisal Committee (EAC) and Environmental Clearance (EC) granted by MoEF, the internal dumps (Western & Eastern) will be re-handled for void filling. Due to this re-handling, the depth of void will reduce from 255m to 40-50m and the whole area of 351.23Ha will be reclaimed. The height of east side internal dump reduced matching to surrounding ground level and afforested. The height of west side internal dump reduced upto 30m from surrounding ground level and afforested.

Year-wise re-handling of OB is furnished in table below.

Year	OB Rehandled (Mm3)	
	Progressive	Cumulative
25 th	22.4	22.4
26 th	22.4	44.8
27 th	22.4	67.2
28 th	22.4	89.6
29 th	22.4	112.0
Total	112.0	

Final topography shall confirm to the surrounding ground level except in some areas and final void area.

BRIEF NOTE ON DETAILED FINAL MINE CLOSURE PLAN
ALONG WITH DETAILS OF CORPUS FUND

BACKGROUND

Revised Mining Plan including Mine Closure Plan (1st Revision) (April 2012) of Dulanga Coal Block of IB valley Coalfield, Distt. Sundergarh. Orissa was approved by MoC, vide letter No 13016/27/2012-CA-I Dated 14th August,2012 **(Copy Enclosed at Annexure-I)**

As this is a Progressive Mine Closure Plan (PMCP), only tentative cost estimate has been envisaged and estimated as per the guidelines issued by MoC. Detailed Mine Closure Plan shall be prepared 5 years prior to the actual closure of the mining operations.

ANNUAL CLOSURE COST

As mentioned above, the annual closure cost has been calculated as per the guidelines issued by MoC (vide letter no 55011-01-2009-CPAM dated 27/08/2009 & 18.02.2011). As per circulated guidelines of MoC the closure cost for an opencast mine is to be modified based on the Wholesale Price Index (WPI) as notified by Govt. of India.

The WPI for all commodities Issued from Office of Economic Advisor, Ministry of Commerce and Industry, Govt. of India (Base date: 2004-05) was 129.60 in Aug'09 and 148.10 in Feb'11. The closure cost was `6.00 Lakhs per ha in Aug'09. The current closure cost has been arrived by multiplying ` 6.00 Lakhs per ha by the ratio of WPI in Feb'11 and WPI in Aug'09 which comes to be ` 6.86 Lakhs per ha. The calculation methodology is as follows:

Total lease hold area Considered for mine closure (A)	: 890.63 ha
Mine closure cost per Ha for opencast mine in Aug'09	: ` 6.00 Lakhs

Mine closure cost per Ha for opencast mine in Feb'11(B) : ₹. 6.86 Lakhs

Life of the mine (C) : 26 years
(Incl. 2 years of construction period)

Annual base price [(A X B)/C] (for 1st year) : ₹. 2.35 Crores

Total closure cost for opencast mine : ₹.120.05 Crores

(Compounding @ 5% annual escalation)

The year wise closure cost is tabulated in the following Table as per the approved Revised Mining Plan

YEAR WISE AMOUNT TO BE DEPOSITED IN ESCROW ACCOUNT

YEAR	AV. COST PER ANNUM (₹. CRORES)	YEAR WISE EXPENDITURE WITH 5 % ESCALATION (₹.CRORES)
C1	2.35	2.35
C2	2.35	2.47
P1	2.35	2.59
P2	2.35	2.72
P3	2.35	2.85
P4	2.35	3.00
P5	2.35	3.15
P6	2.35	3.30
P7	2.35	3.47
P8	2.35	3.64
P9	2.35	3.83
P10	2.35	4.02
P11	2.35	4.22
P12	2.35	4.43
P13	2.35	4.65
P14	2.35	4.88
P15	2.35	5.13
P16	2.35	5.38
P17	2.35	5.65
P18	2.35	5.94
P19	2.35	6.23
P20	2.35	6.54
P21	2.35	6.87

YEAR	AV. COST PER ANNUM (` .CRORES)	YEAR WISE EXPENDITURE WITH 5 % ESCALATION (` .CRORES)
P22	2.35	7.21
P23	2.35	7.57
P24	2.35	7.95
TOTAL	61.07	120.05

Total Estimated cost for completing the envisaged closure activities comes to **Rs 120.05 Crores**. This Estimated cost will be modified based on WPI as notified from Govt. of India from time to time.

ABANDONMENT COST/CORPUS FUND

Tentative cost of likely closing activities as envisaged below has been estimated considering base date as Feb '2011. Actual closing activities and activity wise costs may change during the preparation of Final Mine Closure Plan which will be prepared 5 years before the likely cessation of mining operation. A time schedule for abandonment along with tentative fund requirement over the life of mine has been shown in the bar chart given below: **(Prepared inline with Table 11.9, Chapter XI of Approved Revised Mining Plan, Enclosed at Annexure-II)**

Tentative Fund Requirement for Closure Activities (Without Escalation)

Sl. No.	Detailed Activities to be undertaken	P-5	P-10	P-15	P-20	P-24	End of Mine Closure
1.0	<u>Mine Area & Waste Management</u>						
1.1	Plantation along the block boundary, embankment, approach road, CHP, Cross country conveyor, Railway siding etc and around the mine infrastructure area						
1.2	Physical reclamation of external dump (Levelling, Spreading of top soil, toe wall formation, drain etc.)						
1.3	Physical reclamation of internal and external dump (Levelling, Spreading of top soil, toe wall formation, drain etc.)						
1.4	Bio reclamation of above items						
1.5	Barbed wire fencing as per requirement						
2.0	<u>Environmental Management (Air, Water, Waste, Noise etc)</u>						
2.1	Treatment of mine water before discharging into nala/river						
2.2	Thorough inspection of external and stabilized internal dumps to find state of its stabilization & Bio reclamation.						

Sl. No.	Detailed Activities to be undertaken	P-5	P-10	P-15	P-20	P-24	End of Mine Closure
2.3	Action to stabilize & vegetate uncovered patches, if any.						
2.4	Inspection of garland drains & bunds around external dumps to prevent leachate water from entering natural water courses directly.						
2.5	Inspection of embankment to prevent entry of uncontrolled water to mine						
2.6	Strengthening of embankment						
2.7	Quarterly sampling of water,air,noise and soil and it's mitigation						
2.8	Record keeping, monitoring and reporting						
3.0	Actions for safety & security of local community due to abandonment of the mine or part of the mine						
3.1	Regular inspection of the mined out area, O.B. dumps etc. for assessing the closure job.						
3.2	Action for making safe the drainage areas, fire areas etc.						
3.3	Making 2 meter high pucca wall/stone fencing around the top edge of the mined out area, where immediate void exists at the quarry edge (to avoid drowning).						
3.4	Making 2 meter high pucca wall/stone fencing around the external OB Dump in the north of the block (if required)						
3.5	Survey of the total project area for updating mine plans Under Coal Mine Regulation.						
4.0	Social & Economic Aspects						
4.1	C.S.R activities						
5.0	Execution & Supervision						
5.1	Purchasing / Hiring of equipment for closure activities etc.						
5.2	Execution & Supervision of the activities by mining and other statutory personal .						
6.0	Miscellaneous charges towards activities incidental/related to progressive mine closure including power cost, deployment of security personal, 3 years post closure environmental monitoring, supervision , rehandling of OB, protective & rehabilitation measures including their maintenance & monitoring etc.						
	Total estimated expenditure incurred in Rs Crore	20.00	25.00	30.00	35.00	45.00	61.07

(The amount deposited in the Escrow Account and the amount to be released does not include the interest accrued in the Escrow Account.)

FINANCIAL ASSURANCE

As per guidelines for Mine Closure Plan, NTPC shall take following actions for ensuring the financial assurance to complete the mine closure activities:

- **Opening of a Escrow Account**

The proponent (NTPC) shall open an escrow Account with any Scheduled Bank. The beneficiary of this account shall be Coal Controller Organisation (on behalf of central Government). The proponent shall deposit the amount detailed in **Table No 11.10** ,Chapter XI of the Approved Revised Mining Plan, on yearly basis into this Escrow account.

Estimated cost will be modified based on WPI as notified by Government of India.

- **Condition for operating the Escrow Account**

An agreement, outlining detailed terms and conditions of operating the Escrow account, shall be finalized and executed amongst the project owners, concerned Bank and the Coal Controller. The agreement shall be executed before the grant of permission by the coal controller to open the mine.

- **Release of Funds from Escrow Account**

Mining will be carried out in a phased manner initiating afforestation/ Reclamation work in the mined out area of the first phase while commencing the mining in the second phase i.e. continuation of mining activities from one phase to other indicating the sequence of operations depending on the geo mining condition of the mine. Up to 80% of the total deposited amount including interest accrued in the escrow account will be released after every five years in line with the periodic examination of the closure plan as per Clause 3.1 of the Annexure of the Guidelines (**Mine Closure Guidelines issued by MoC**). The amount released will be equal to the expenditure incurred in the Progressive Mine Closure in past five years or 80% whichever is less. The balance amount at the end of the Final Mine Closure shall be released to mine owner/lease holder on compliance of all provisions of closure plan duly signed by the lessee. It will be certified that said closure of mine complied all statutory rules, regulations, orders made by the Central or State Govt, statutory organisations, court etc and duly certified by the coal controller.

RESPONSIBILITY OF MINE OWNER

NTPC will ensure that protective measures contained in the Mine Closure Plan including reclamation and rehabilitation works have been carried out in accordance with the approved Mine Closure Plan and Final Mine Closure Plan.

NTPC shall submit the coal controller a yearly report before 1st July every year setting forth the extent of protective and rehabilitative works carried out as envisaged in the approved mine closure plans. Details of physical progress of the closure activities and expenses incurred will be included in the yearly report.

PROVISION FOR MINE CLOSURE

The mine owner will obtain a mine closure certificate from coal controller to the effect that the protective, reclamation and rehabilitation works have been carried out by the mine owner in accordance with the mine closure plan/final mine closure plan for surrendering the reclaimed land to the State Government concerned.

This is to inform that, Dump management as suggested by EAC was studied in detail considering the geo-mining conditions of the block and it was found that backfilling of the void can be done within five years of post mining operations (exhaustion of coal resources in the present block boundary) by re-handling the Western and Eastern internal dumps as shown in the Final Stage Dump Plan(**Plate No. 48**).

As per the EAC suggestions, NTPC submitted a Revised Final Stage Dump Plan (**Plate No. 53**) with void of area of 159 ha, but the depth of void will be reduced from 255m to 50m from surface by re-handling the internal dumps.

Apart from the above, efforts have been made to rework the post mining topography conforming to the surrounding surface level. Instead of planting trees NTPC may resort to spread the bio reclaimed soil over the internal dumps and convert some portion of land based on the practicability, into agricultural land.

No.13016/27/2012-CA-1
Government of India
Ministry of Coal

....
New Delhi, the 14th August, 2012

To,

Shri A.K.Dash,
Addl GM(PE-Mine Planning & Design)
5th Floor, Engineering Officer Complex,
Sector-24
NTPC Limited,
NOIDA- 201 301

Subject: Approval of Revised Mining Plan including Mine Closure Plan (1st Revision) (April 2012) of Dulanga coal block of IB Valley Coalfield, Distt. Sundergarh, Orissa -Reg.

Sir,

I am directed to refer to your letter no. CC:PEM:7015:MP:30 dated 17th October, 2011 submitting therewith Revised Mining Plan including Mine Closure Plan (1st Revision) (April 2012) of Dulanga coal block of IB Valley coalfield, Distt Sundergarh, Orissa and to say that the matter has been considered and the approval of the Central Government thereon is hereby conveyed under Section 5(2)(b) of the Mines & Minerals(Development & Regulation) Act, 1957 subject to the following conditions:-

- (i) The mining company shall take all necessary precautions regarding safety of mine workings, persons deployed therein.
- (ii) Mining Lease to be acquired shall not encroach into any other coal block.
- (iii) The approval of the Mining Plan is without prejudice to the requirement of approvals from competent/prescribed authority under the relevant rules/regulations etc.

2. Two copies of the approved Revised Mining Plan including Mine Closure Plan (1st Revision) duly signed by the competent authority are returned herewith with the request that a copy of the approved Revised Mining Plan including Mine Closure Plan (1st Revision) may be submitted to the concerned State Government for necessary action and also a photocopy of the approved Revised Mining Plan including Mine Closure Plan (1st Revision) may be sent to the Coal Controller for monitoring the block.

Yours faithfully,


(Sandeep Gupta)

Under Secretary to the Govt. of India

Encl: as above

Copy to:

The Under Secretary, CPAM Section, Ministry of Coal for information and record.

CHAPTER-XI

PROGRESSIVE AND FINAL MINE CLOSURE PLAN

11.1 INTRODUCTION

The present Mine Closure Plan is prepared for 890.63 ha, which includes block area, external OB dump area, facilities, diversion of nala & road, colony etc.

Earlier Mine Closure Plan based on the Approved Mining Plan has already been submitted to MoC on 04.11.2010. The presentation to the standing committee was made on 07.03.2011. Observations from MoC received on 07.04.2011. The observations of MoC along with reply to the observations on the Earlier Mining Closure Plan are enclosed in **Annexure-XVI**.

In view of the reasons as explained in the Chapter-II, NTPC has prepared Revised Mining Plan based on which Progressive & Final Mine Closure Plan is also prepared which is in line with the MoC guidelines issued in this regard and covering all the aspects of Mine Closure Plan (already submitted to MoC). As per the Revised Mining Plan in Phase-I of mining operation the life of Mine is estimated as 26 years including 2 years of construction period.

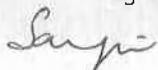
NTPC has also envisaged approaching to MoEF during 20th year of mining operation for seeking permission of mining of 87 ha of forest land. If the permission is granted by the MoEF, life of mine will be enhanced by approximately 6 years and accordingly the mine closure activities will be applicable and implemented from the date of exhaustion of resources.

11.1.1 REASONS FOR CLOSURE

Mine will be closed either

- after exhaustion of coal reserves or
- by any order of government or
- by any violation of statutory obligation or
- any other unforeseen reason.

सदीप कुमार गुप्ता
अवर सचिव / Under Secretary
कोयला मंत्रालय / Ministry of Coal
भारत सरकार / Govt. of India
नई दिल्ली / New Delhi-110001



11.1.2 STATUTORY OBLIGATIONS


All applicable statutory rules, regulations, bye-laws etc. and statutory requirement related to Govt. licenses, workers compensation, insurance etc., including minimum wage act for workers employed by the outside agency will be adhered.

Following statutory rules, regulations, bye-laws etc will be adhered:

1. Coal Mines Regulation, 1957
2. Mines Act, 1952
3. Mines Rules, 1966
4. Vocational Training Rules, 1966
5. Indian Electricity Rules, 1956
6. DGMS circulars
7. Factories Act, 1948 (as applicable to mines)
8. Explosive Act and Rules,
9. Recommendations of National Safety Conferences, Tripartite Safety Review Committees.
10. Special guidelines issued by DGMS following accident's enquiries etc.
11. ILO code of Safety & Health in opencast Mines (1991)
12. Special conditions imposed while execution of lease deed, approval of Mining Plan, directive issued by the Ministry of Coal, conditions imposed by the MoEF, State Pollution Control Board or by any other Government organization will be followed.

Mining Plan of this block has been approved. All conditions stipulated in approved Mining Plan, Environmental clearance and other statutory clearances which are still to come will be complied.

List of clearances along with their status is as elaborated in **Table No. 11.1**.


संदीप गुप्ता / SANDEEP GUPTA
अवर सचिव / Under Secretary
कोयला मंत्रालय / Ministry of Coal
भारत सरकार / Govt. of India
नई दिल्ली / New Delhi-110001

**TABLE NO. 11.1
LIST OF CLEARANCES**

CLEARANCE/STUDY	STATUS	REMARKS
Approval of Mining Plan - MoC	Approved	All conditions as stipulated in received statutory clearances and other statutory clearances which are still to come will be complied.
Public Hearing SPCB	Completed	
Environment clearance – MOEF	In process	
Approval from the State govt. for Garia nala diversion	Awaited	
Forest clearance - MOEF	In process	
Land Acquisition / surface rights - State Govt/Govt. of India	In Process	
Clearance for use of explosives and construction of magazine – Chief Controller of Explosives.	In Process	
Permission for opening of coal mine from DGMS	In Process	
Rehabilitation & Resettlement of displaced families	In Process	

11.1.3 CLOSURE PLAN PREPARATION

A Final Mine Closure plan shall be prepared 5 years before the likely cessation of mining operations. However, conceptual Mine Closure Plan has been prepared by RQP and is being put up for approval by the competent authority.

संदीप गुप्ता / SANDEEP GUPTA
अवर सचिव / Under Secretary
कोयला विभाग / Ministry of Coal
एन.टी.पी.सी. / Coal of India -
एन.डी.ए.ओ. / New Delhi-110001

11.2 WATER QUALITY MANAGEMENT

Water is an essential resource that sustains all life supporting system on the earth. It is an essential requirement for all human activities right from survival to the development. Therefore, quality and quantity of water are the utmost important factors for survival and sustainable development. Hydro geologically the district is mainly confined to Precambrian crystalline ground water and Gondwana ground water province.

11.2.1 EXISTING SURFACE & GROUND WATER BODIES

11.2.1.1 Surface Water Resources

The source of the surface water is mainly River, Nalas and Ponds. The drainage system of the study area is dendrites' to sub-dendritic type and well developed. The drainages are flowing towards East and southeast directions. A major source of surface water in the study area is Basundhra, Garia, Bichna, Bagmora, Brahmani, Bhesrakharu, Lilari and Tangramounda Jhari

Sanjiv

Nala. Garia Nala, flows along the central part of the exploration block and more or less bisects the block into two sub-blocks.

11.2.1.2 Ground water sources

The groundwater in sedimentary formation occurs under confined conditions and is limited to the thickness of the formation. The Barakar formation acts as a good aquifer due to high porosity and permeability in the formation. Predominantly western part of the study area comprises of hills and rugged topography, the water level is at great depth as compared to the pediplain areas. Mostly the rainwater gets run-off in this area and hence the percentage of recharge of ground water is very less. The water table of this area varies from 5m to 20m; in the valley-fill areas, the water table is at shallow depth. The ground recharge in these areas is very high. The major source of drinking water is dug wells and hand pumps, which are available in almost all the villages in the study area.

11.2.2 EXISTING WATER QUALITY (SURFACE & GROUNDWATER)

The ground water becomes the main source of drinking water in the rural areas. The ground water quality in the study area is of acceptable quality for drinking purpose. In some of the villages high percentage of iron content has been reported, which is beyond acceptable limit (i.e. Desirable limit: 0.3 and Permissible limit: 1.0) for drinking water purpose. Summarised water quality results are shown in **Table 11.2** and Water analytical data from the villages of the study area is given in **Table 11.3**

**TABLE 11.2
SUMMARISED WATER QUALITY RESULTS**

PARAMETER	LIMIT		OBSERVED RANGE	
	Desirable	Permissible	Ground Water	Surface Water
pH	6.5 - 8.5	6.5 - 8.5	6.89 - 7.88	6.94 - 7.36
Total hardness (as CaCO ₃),mg/l	300	600	60 - 292	44 - 64
Iron (as Fe),mg/l	0.3	1.0	0.02 - 0.75	0.1 - 0.37
Chlorides (as Cl),mg/l	250	1000	12 - 103	12 - 18
Total dissolved solids	500	2000	85 - 554	82 - 96
Calcium (as Ca), mg/l	75	200	8.1- 94.8	8.2 - 14.7
Sulphate (as SO ₄), mg/l	200	400	0.15 -	0.9 - 4.14
Nitrate (as NO ₃), mg/l	45	100	1 - 89	5 - 6
Fluoride (as F), mg/l	1.0	1.5	0.1 - 0.77	0.11 - 0.14
Alkalinity	200	600	48 - 162	42 - 52

Chapter-XI Progressive and Final Mine Closure Plan

RQP No. 34011/(15)/2009-CPAM dated 27.09.10.

TABLE 11.3
WATER ANALYTICAL DATA FROM THE VILLAGES OF THE STUDY AREA

DISTRICT: SUNDARGARH & JHARSUGUDA, ORISSA, RWSS DIVISION OFFICE			
SL. NO.	VILLAGE NAME	LOCATION OF WATER SOURCE	Fe
P.S. HEMGIR, DISTT. SUNDARGARH			
1	Kanika	Jhupudipara/Mahajit	0.20 -1.50
2	Durubaga	Near School/Near Post Office	0.3 -2.00
3	Duduka	Near Boy's Hostel/Road side	0.4 -3.00
4	Garjanbahal	Bhaisalpara/U.P.School	0.3 -8.00
5	Kiripashira	Basti/Harijanpada	0.1 -8.00
6	Tithaitangara	School/Basti	0.03 -0.6
7	Laikera	Gandapara/Harizanpara	0.2 -4.00
8	Chuanahal	Mission (K.Para)	0.3
9	Kanakatora	Mundapara/Junadihi	0.1 -1.5
10	Ratakhandi	Basti/School	0.02 -0.5
11	Kalamegha	Alekhpara/Dhanmunda	0.2 -4.00
12	Dulanga	Basti/Basti	1--3
13	Manoharpur	Basty	1
14	Majhapada	Basti/School	0.1 -0.8
15	Khuntijhaaria	School	1
16	Tangardihi	Manipur/Ghanachal	0.5 -8.0
17	Telia	Basti	6.0
18	Singaribahal	Basti	0.3


11.2.3 IMPACT ON WATER QUALITY DUE TO MINING

11.2.3.1 IMPACT ON SURFACE WATER

The surface water quality is likely to be affected with suspended solids by the following:

- Wash off from dumps
- Soil erosion from mine and roads
- Pumping out mine water to surface water channels

The outside dump may contribute to the pollution of surface water in terms of suspended solids. Since dumping location proposed to be carried out at a safe distance from nalas, it will have negligible impact on water pollution. The pumped out water during dewatering may carry higher levels of suspended


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solids. Other sources of pollution are by oil spillage at the pit head and at the facilities viz. Workshop, resulting in oil and grease contamination of surface water if appropriate control measures are not adopted.

Ground water pollution can take place only if dumps and stock piles contain harmful chemical substances, which may get leached by precipitation of water and percolate to the ground water table, thus causing water pollution.

However, this is not the case with this mine, as neither the coal nor the OB, contains any harmful ingredients which may leach down to the water table and pollute it. Therefore, no adverse impact on ground water quality is anticipated considering this aspect. The leaching down of pollutants (oil, grease etc.) to the ground water may render the water unpotable and hence cannot be used by the local people. The percolation of sewage waste from the pit head as well as colony area will also pollute the ground water if control measures are not adopted as envisaged in the management plan.

11.2.3.2 IMPACT ON WATER REGIME

No impact on the surface water resources is envisaged as the water is not proposed to be drawn from surface or ground water resources. The water from the mine sump will be used for all purposes. However, in view of availability of ground water at shallow levels, the ground water level in the surrounding vicinity of the mine will be lowered causing drying of wells upto certain distance.

11.2.4 WATER REQUIREMENT

Industrial water required for HEMM washing, sprinkling on haul roads for dust suppression and for watering the mine site plantations, will be supplied from pumping installation at mine sump and surface reservoir (settling pond). The drinking water will be supplied from mine sump after proper treatment and stored in overhead tank near the facilities area and distributed through pipe lines to different facilities area for drinking and domestic purposes during operational stage. However, during construction stage (till adequate water in mine sump is not available), potable water will be drawn from bore wells.

Total requirement of fresh water for mining and allied activities is estimated as 1500 m³/day besides the water which is reclaimed and reused for plantation from colony and canteen sewage effluent. The water requirements

for various activities are given in **Table 11.4**.

Out of total fresh requirement of 1500 cum/day, 653 cum/day is potable and there 847cum/day is for industrial use from mine water. Additional requirement is met by reclaimed water from colony ETP, canteen etc (435 cum). Hydrogeological study has been carried out and the report is attached with the earlier Mine Closure Plan.

**TABLE 11.4
WATER REQUIREMENTS**

Sl. No	Particulars	Water (m ³ /day)
1.	Sprinkling @ 68 m ³ /Mt of annual coal production excluding CHP	480.00
2.	CHP excluding washery	160.00
3.	Plantation @ 15 m ³ /ha for peak 40 ha in 3rd year = 600 m ³ - recirculated from colony STP 408 m ³ - 27 m ³ from canteen	165.00
4.	Vehicles washing @ 2 m ³ /vehicle/day for 30 Vehicles = 60 m ³ - 48 m ³ recirculated	12.00
5.	Fire fighting water evaporation 10% of 45 m ³ /Mt of annual coal production	30.00
	Sub - total (Industrial)	847.00
6.	Drinking at working place @ 45 lpd/head for about 1350 workers	60.00
7.	Colony for 945 employees (70% satisfaction) @ 135 lpd/head	510.00
8.	Canteen for 100 seater @ 68 lpd (500 persons)	34.00
9.	Others (LS)	49.00
	Sub-total (Potable)	653.00
	Total	1500.00

11.2.5 WATER POLLUTION CONTROL MEASURES

11.2.5.1 Effluent from Mine

To prevent surface and ground water contamination by oil/grease and sewage waste, following control measures are proposed to be implemented.

- Leak proof containers will be used for storage and transportation of oil/grease. In the store also, the container containing oil/grease will be kept in empty safe open containers of higher volume than the containers to avoid oil/grease spillage. The area over which oil/grease is handled will be kept effectively impervious. Any wash off from the oil/grease handling area or workshop will be drained through impervious drains,

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collected in specially constructed pit and treated appropriately before releasing it into the natural drains.

- The sewage waste generated will be drained by underground impervious drains, lead to appropriately designed septic tanks and soak pits to prevent any pollution of surface or ground water.

11.2.5.2 The surface and ground water in and around the mine, loading plant and infrastructure will be regularly tested and appropriate control measures adopted in case of any pollutant is detected above the prescribed limit.

11.2.5.3 All stacking and loading areas will be provided with proper garland drains equipped with baffles to prevent wash offs from reaching the downstream natural channels.

11.2.6 CONTROL MEASURES FROM STORM WATER

Control measures to be adopted are briefly discussed below:

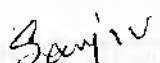
- Check dams will be provided to prevent solids from wash off and screen if any from the mine related activities.
- Peripheral bunds will be erected on the outer edge of the abandoned benches before reclamation so that the soil is not carried away by storm water.
- A water gradient of about 1 in 100 will be kept at every bench towards inside of the bench to prevent formation of gullies in the bench slopes causing serious erosion.
- Chutes will be constructed by using local stone or masonry to guide the water in areas with loose soil to prevent erosion and uncontrolled descent of water wherever necessary.
- Construction of garland drains around freshly excavated and dumped areas so that flow of water with loose material is prevented. The mine water will be passed through specially constructed catch pits to arrest any loose material being carried away with water.
- Any areas with loose debris within the lease hold will be planted.

11.2.7 MEASURE TO MINIMISE ADVERSE EFFECTS ON WATER REGIME

During the process of mine rehabilitation and with the completion of backfilling, a water body will be created in the mined out pit which will act as water reservoir improving the ground water recharge, source of attraction for

Chapter-XI Progressive and Final Mine Closure Plan

RQP No. 34011/(15)/2009-CPAM dated 27.09.10.


SANJIV KUMAR SINGH
Recognised Qualified Person
No. 34011/(15)/2009-CPAM

fauna and will help in the maintenance of afforested areas. To enhance aesthetic appearance, parks and lawns will be made around the water body. Selected water quality parameters of ground and surface water resources within 10 km radius of the study area have been studied for assessing the water environment and evaluate anticipated impact of the proposed project. Secondary data shows that water quality in ground water sources is within permissible limits

11.3 PROPOSED NALA DIVERSION

11.3.1 GARIA NALA


As explained in Chapter-III Clause 3.9

11.3.2 NALA A (BAIDHARA NALA) AND NALA B

As explained in Chapter-III Clause 3.9

11.3.3 IMPACT OF NALA DIVERSION ON LOCAL COMMUNITY

The project affected persons will be suitably rehabilitated in the R&R colony earmarked for them located nearby. The impact of diversion does not have any impact on water availability for the local community.


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11.4 AIR QUALITY MANAGEMENT

There will be constant monitoring of air quality to keep within the prescribed norms. Dust pollutants are generated during blasting and while operating diesel equipment and these will be kept at minimum levels by ensuring good blast design and good equipment maintenance. Dust suppression system and dust extraction system will be in operative. Plantation around the quarry and CHP will put up a green belt for mitigating air pollution. External OB dump afforested.

11.4.1 EXISTING AIR QUALITY STATUS

11.4.1.1 Construction Phase

The sources of air pollution in the region are vehicular traffic, dust arising from unmettalled village roads, domestic fuel burning and fugitive emissions. The ambient air quality test results are given in **Table 11.5**.

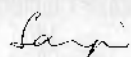


TABLE 11.5
AMBIENT AIR QUALITY TEST RESULTS ($\mu\text{g}/\text{m}^3$) (Sep. To Nov.2009)

LOCATION	RPM			SPM			SO ₂			NO _x		
	Mi	Ma	98%il	Min	Max	98%il	Mi	Ma	98%il	Min	Max	98%il
Dulanga	34	44	44	98	127	127	7.6	9.7	9.7	9.2	12.8	12.7
Bendrichua	34	44	44	96	125	125	6.5	9.9	9.8	9.7	13.4	13.4
Rangalmund	36	46	46	102	131	130	8.7	10.	10.9	10.	14.3	13.9
Manoharpur	34	45	45	98	128	127	6.3	8.7	8.5	9.0	12.4	12.4
Kanika	38	47	47	108	135	135	8.0	11.	10.9	11.	14.9	14.9
Khunt Jharia	36	45	45	103	128	128	7.3	9.6	9.6	10.	12.7	12.7
Lamihara	35	44	44	99	127	126	6.1	9.7	9.7	9.8	12.8	12.7

11.4.1.2 IMPACT ON AIR QUALITY DUE TO MINING

The main activities, which generally contribute to air pollution in mining industry, are:

- Drilling and blasting
- Excavation and loading
- Transportation
- Crushing at CHP

The excavation / loading of the OB/coal will be done by hydraulic shovels. The transportation of OB and coal will be carried out in the same way as is generally done in OC mining i.e. by dumpers. Dust generation by this is anticipated. Coal crushing at CHP will also generate dust.

The opencast mining operations are generally prone to generation of high levels of SPM and to a limited extent SO₂, NO_x and CO due to fossil fuel based vehicles, machines and blasting using explosive and fuel combustion etc. Air pollution due to SO₂, NO_x and SPM may result in irritation and inflammation of eyes and congestion of throat and oedema of lungs. Carbon monoxide can cause loss of haemoglobin in blood and subsequently stresses on those suffering from cardio-vascular and pulmonary diseases. High level of CO in the air is dangerous and may be fatal.

11.4.2 AIR POLLUTION MITIGATION MEASURES

The mining operations and related activities are anticipated to increase the levels of SPM and gaseous pollutants to a limited extent. The control measures to be adopted are mentioned in the following paragraphs.

11.4.2.1 Controlling fugitive dust

Dust particles which are normally generated during various mining, crushing operation and transportation deteriorate the ambient air quality. Adequate control measures are, therefore, proposed to be taken during mining operations, transportation and crushing/loading operations. These control measures are discussed as follows:

11.4.2.2 Mines

- a) Dust suppression systems (like water spraying) will be adopted at:
 - Faces before and after blasting
 - Faces while loading
- b) Dust extraction systems will be used in drill machines and crushing plant.
- c) Dust generation will also be reduced by using sharp drill bits for drilling holes; drills with flushing system.


11.4.2.3 Haul roads and stock-piles

- Dust suppression system (like water spraying) would be adopted at roads which are used for transportation. Sprinklers (Whirling) have been proposed to be installed along the roads to suppress the dust.
- Suitable dust extraction or suppression systems such as mist sprays with or without chemical will be provided at appropriate places for preventing dust pollution during handling and stockpiling of coal.

11.4.2.4 Preventing dispersal of air borne dust

In addition to the control measures proposed during mining and transportation operations, following steps will be taken to prevent air pollution due to airborne dust:

- Dense tree belts will be planted around the mine and sites housing crushing and loading facilities.
- Plantation over already mined out area will be done after backfilling as per schedule (with minimum gap between excavation and afforestation)


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- Dust masks will be provided as safety measure to the workers, engaged at dust generation points like drills, loading/unloading points, crushers etc.

11.4.2.5 Measures to mitigate CO levels

All heavy and light vehicles shall be tested for pollutants concentration in their exhausts regularly and well maintained. Strict vigil will be kept in and around the operational area for any fire which shall be immediately controlled.

11.4.2.6 Measures to mitigate NOx levels

The main reasons of production of NOx gases are:

- a. Poor quality of explosive having large oxygen imbalance which can be due to following reasons:
 - Manufacturing defect
 - The use of expired explosives in which disintegration of ingredients has taken place.
- b. Incomplete detonation is caused mainly due to low primer: column ratio.

To ensure that NOx levels do not increase during the proposed mining operations, the following control measures will be adopted:

- i) Good quality explosives will be used for which the oxygen balance will be checked from time to time. The expired explosives will not be used for which a strict vigil will be kept on the date of manufacture. Even as a normal procedure, all explosives will be subjected to a visual inspection and if disintegrated ingredient are spotted, the explosives will not be used even if it is within expire date.
- ii) Primer: Column ratio will be rationalised. The ratio thus established, for producing minimum NOx, will be adhered to.

The mine ambient air quality will be regularly tested to detect the presence of any pollutants above prescribed limits and appropriate measures will be adopted.

11.4.2.7 Measures to control noise pollution

The following control measures will be adopted to keep the ambient noise levels below permissible limits 75 dB (A).

Chapter-XI Progressive and Final Mine Closure Plan

- i. Provision and maintenance of thick tree belts to screen noise.
- ii. Avenue plantation within the project area to dampen the noise
- iii. Proper maintenance of noise generating machinery including the transport vehicles will be ensured.
- iv. Provision of the air silencer to modulate the noise generated by the machines will be made wherever required.

To protect the workers from exposures to higher noise levels the following measures will be adopted.

- i. Provision of protective devices like ear muffs/ear plugs to those workers who cannot be isolated from the source of noise
- ii. Confining the noise by isolating the source of noise
- iii. Reducing the exposure time of workers to the higher noise levels

11.4.2.8 Measures to reduce ground vibrations due to blasting and prevent fly rocks

The vibrations due to blasting will be studied before the commencement of mining operations and the recommendations/suggestion given as per the result of the said study will be strictly adhered to especially the charge per delay.

11.5 WASTE MANAGEMENT

11.5.1 TYPE OF ROCKS

The entire block is covered with Barakar formation. This formation constitutes fine to coarse grained, white to grey feldspathic, micaceous sandstone, shale, fire clay and carbonaceous shale with economic coal horizons. The Karharbari formation is noticed towards the east of village Dulanga. The rocks are mostly coarse to gritty, carbonaceous sandstone pebbly at places with unaltered fresh pink feldspar and quartz pieces. Few very thin carbonaceous shale and coal bands are also intersected in some boreholes. The block is free from any igneous intrusions.

As per the geological report, no major, minor and trace elemental analysis of different rock types was available. The chemical analysis of coal indicates presence of non toxic minerals. The sandstones of Barakar Formation constitute major part of area forms a principal aquifer. The chemical analysis of ground water shows the trace element like Cu, Mn, Hg, Cd, Se, As, Pb, Zn, Cr, Al and B are present below deduction limit. The ground water quality

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indirectly infers the source rocks characters. Hence, the rock of Dulanga block contains no toxic elements.

11.5.2 REMOVAL OF OVERBURDEN

As explained in Chapter-V, Clause No. 5.7.4

11.5.3 TYPES OF SOLID WASTE

Four types of solid waste are likely to be generated through mining activities.

These are:

- a) Overburden (both topsoil and waste)
- b) Sludge from washing HEMM
- c) Sludge created by mine water in settling pond.
- d) Municipal solid waste

The solid waste generated as mentioned above can have severe impacts on the health and surroundings of the area if proper management as suggested below is not done for handling these wastes. The solid waste dumping will lead to land degradation by occupying virgin area to an extent of about 73.84 Ha before the end of 3rd year. It will also cause an impact on topography and visual aesthetics due to its 60 m height.

11.5.4 PROTECTIVE MEASURES AND MANAGEMENT OF SOLID WASTES

11.5.4.1 Management of Overburden

As explained in Chapter-V, Clause No. 5.7.4 & Clause 5.7.5. The generation and disposal of total waste quantities for the life of the mine are shown in Table 11.6.

TABLE 11.6
CUMULATIVE WASTE DISPOSAL (TOPSOIL & OB)

	Mined Area (ha)	Surface Dump (ha)	Backfilling (Mm ³)	Top Soil (Mm ³)	Total Waste (Mm ³)	Backfilling Area (ha)
1st	29.06	4.5	0	0.17	4.67	0
2nd	37.47	10.5	0	0.17	10.67	0
3rd	35.4	13	2.5	0.17	15.67	24
4th	56.01	10.5	7.5	0.17	18.17	28
5th	39.28	0	18	0.17	18.17	15
Conceptual (24th)	510.78	38.50	355.50	3.65	359.15	413


Chapter-XI Progressive and Final Mine Closure Plan

11.5.4.2 Protective measures

- The dump will be stabilised and afforested. The top soil will be used for spreading over backfilled area and over OB dump for plantation. The area of top soil stack will be afforested.
- The area of ground disturbance will be minimized by progressively rehabilitating disturbed land.
- Reclamation of land will be carried out by landscaping, re-vegetation etc. As far as possible the reclamation activities will be taken up concurrently with the mining operations. For re-vegetation, the native plants and saplings suitable for the existing soils and site conditions will be considered.

11.5.4.3 Steps to be taken to avoid Dump Slides

- Dumping of top soil will be avoided at the bottom of the dump as it leads to instability. Dumping of soil and clayey material will be done away from the working area that is on farther end of the dump so that formation of weak planes is avoided.
- Afforestation by planting trees will helped a lot in improving stability of dumps by preventing erosion.
- Construction of retaining walls
- Construction of drains for drainage
- Provision of jute mesh for facilitating grass or vegetative growth on slopes
- Provision of good soil mixed with manure and subsequent irrigation for growth of grass for anchorage on slopes. Plantation mixed with indigenous and fast growing plant species
- The degraded area will be reclaimed and rehabilitated with local species of plantation in a phased manner
- Plantation will be carried out on waste dumps
- A belt of trees with thick canopy will be created along the mine boundary to intercept dust, gaseous pollutants and noise.


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The void area of the excavated pit will ultimately become a water reservoir. The depth of the void will be reduced in the post mining stage by filling it with waste. This void area will also be suitably sloped, bunded and fenced.

11.5.4.4 Management of Sludge from Oil/Water separator

Effluent from workshops, vehicle washing etc shall will be passed through impermeable drains and will be treated in the oil/water separator. The skimmed oil & grease collected from oil and grease separator shall be sold to the authorised recycling vendors.

11.5.4.5 Management of Sludge created by mine water in settling pond

Sludge from the mine water settling pond will be removed periodically and will be backfilled along with the OB.

11.5.4.6 Sludge from domestic waste

Sludge from the domestic waste will be utilized as manure for the plantation in the mine lease area and on dump.

11.5.4.7 Management of Municipal solid waste

The municipal solid waste e.g. from canteen, etc will be composted and used as manure for plantation along with the domestic sludge.

11.5.4.8 LAND DEGRADATION CONTROL MEASURES

Land degradation is one of the major adverse outcomes of opencast mining activities and any effort to control adverse impacts is considered incomplete when appropriate land reclamation strategy is not adopted. Since the land degradation in this mine is partly in the form of excavated void and partly in the form of external and internal dumps, the reclamation strategy must include a programme for the reclamation of the disturbed land.

11.5.5 TOPSOIL MANAGEMENT

As explained in Chapter-V, Clause 5.7.5

11.5.6 MANAGEMENT OF COAL REJECTS FROM WASHERY

Not Applicable.


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11.6 DECOMMISSIONING OF INFRASTRUCTURE

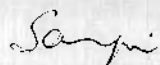
The infrastructure consists of substation, CHP, Workshops, Mine office, blasting shelters, rest shelters etc. The surface master plan showing proposed Infrastructure is attached as **Plate IV**. The mine office & related infrastructure shall be handed over to state govt. for public use. The probable list of facilities which will be dismantled and those which will be retained has been furnished in **Table 11.7**

TABLE 11.7
LIST OF FACILITIES TO BE DISMANTLED OR RETAINED AT THE END OF LIFE OF DULANGA COAL BLOCK

Sl. No.	Facilities	Remarks (Dismantled/Retained)	Corpus fund for maintenance
1.	Service buildings/ Infrastructure		
a	Project/Mine Office	To be retained.	Provision has been made in fund requirements as provided in Table 11.9
b	Workshop	To be retained.	
c	Store	To be retained.	
d	Canteen	To be retained.	
e	First aid centre	To be retained.	
f	Rest shelter	To be retained.	
g	Training centre	To be retained.	
h	Fire fighting station	To be retained.	
i	Pit head bath	To be retained.	
j	Magazines	To be retained.	
k	Environmental laboratory	To be retained.	
l	Dispensary	To be retained.	
2.	Mining Machinery	To be retained.	
3.	Pumps used in mines	To be retained.	
4.	Electrical/mechanical equipments used in workshop or other places	To be retained.	
5.	CHP, conveyors and railway siding	To be retained.	
6.	Sub-station	To be retained.	
7.	Furniture	To be retained.	
8.	Approach road and Culverts	To be retained.	
9.	Haul road and Culverts	To be retained.	
10.	Water supply arrangement	To be retained.	


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Chapter-XI Progressive and Final Mine Closure Plan



RQP No. 34011/(15)/2009-CPAM dated 27.09.10.

SANJIV KUMAR SINGH
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 No. 34011/(15)/2009-CPAM

11.	Permanent Manpower	To be transferred to "Forest Area" in SE side or to any other projects of NTPC or VRS	
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11.7 DISPOSAL OF MINING MACHINERY

Nearly all the mining machinery will be used for dip side/indicated area. Only the scraps and non-usable machines, if any, will be auctioned.

11.8 SAFETY & SECURITY

Security Personnel will be detailed for a period of two years after mine closure for protecting new plantations in the reclamation area and look after the protective fence around the boundary of the mine to prevent any stray animal/man entering the area.

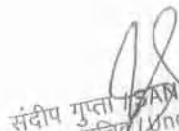
11.9 ECONOMIC REPERCUSSIONS OF CLOSURE OF MINE AND MANPOWER RETRENCHMENTS

The mine will be one of the highly mechanized open cast mine and will require services of highly skilled and semi skilled work force.

After closure of mining operations, local residents employed in the mine may be offered jobs elsewhere in the running projects of the Company. Employees who would be retrenched would get adequate compensation as per existing labour laws/ golden hand sack / VRS or any other scheme of the Company prevailing at the time of mine closure. In addition, parting employees can also utilize their savings accumulated during the period of employment for their own post- employment resettlement.

Number of persons engaged in the satellite occupations connected to the mining industry will be estimated during the preparation of Final Mine Closure Plan which will be prepared 5 years prior to likely cessation of mining operation. Those persons will be taken care of as per the Company's policy.

The Company would endeavour for harmonious relations with PAPs, not only during mining operation but there after also. But it would be prudent to develop their own ability to sustain their present life standard after the closure of the mine by self employment.



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 नई दिल्ली / New Delhi - 110001

The Company would like continuance of the social welfare amenities created for the employees and PAPs and try to meet the expectations of the society under the given financial constraints. The persons will be imparted lectures on the financial mechanism for its sustenance after the mine closure.

11.10 TIME SCHEDULING FOR ABANDONMENT

Tentative details of likely closing activities with manpower requirement as envisaged below has been estimated based on the present mine closure plan. Actual closing activities and manpower requirement may change during the preparation of Final Mine Closure Plan which will be prepared 5 years before the likely cessation of mining operation. A time schedule for abandonment along with tentative manpower requirement has been shown in the bar chart given in **Table 11.8**.


**TABLE 11.8
TIME SCHEDULE FOR ABANDONMENT ALONG WITH MANPOWER
REQUIREMENT FOR CLOSURE ACTIVITIES**

Sl. No.	Activities to be undertaken		1st Year		2nd Year		3rd Year		4th Year	
			1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half
1.0	Mined Out Area & Waste Management	Manpower of NTPC								
1.1	Physical reclamation of internal and external dump (Levelling, Spreading of top soil, toe wall formation, drain etc.)	Outsourced (under the supervision of NTPC) Environmental Engr-1 Surveyor-2 Chainman-4  सन्दीप गुप्ता / SANDEEP GUPTA अवर सचिव / Under Secretary कोयला मंत्रालय / Ministry of Coal भारत सरकार / Govt. of India नई दिल्ली / New Delhi-11001								
1.2	Physical reclamation of land of batter and haul road									
1.3	Bio reclamation of item 1.1 & 1.2									
1.4	Making safe approach up to the water lagoon for future uses									
1.5	Barbed wire fencing									
2.0	Environmental Management (Air, Water, Waste, Noise etc)									
2.1	Thorough inspection of external and stabilized internal dumps to find state of its stabilization & Bio reclamation.	Supervisors-2 in each shift Environmental Engineer-1 in each shift								

Saurin

Revised Mining Plan – Dulanga Opencast Coal Project - NTPC

Sl. No.	Activities to be undertaken		1st Year		2nd Year		3rd Year		4th Year	
			1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half
2.2	Action to stabilize & vegetate uncovered patches, if any	Job Outsourced								
2.3	Inspection of garland drains & bunds around external dumps to prevent leachate water from entering natural water courses directly	Supervisors-2 in each shift Mining Engineer-1 in each shift								
2.4	Inspection of embankment to prevent entry of uncontrolled water to mine	Supervisors-2 in each shift Engineer-1 in each shift								
2.5	Strengthening of embankment									
2.6	Quarterly sampling of water to know its quality status	Lab Assistant-1 Helper-1								
2.7	Record keeping, monitoring and reporting	Surveyor-1 Chainman-3								
3.0	Management of Infrastructure & Mining Machineries									
3.1	Decommissioning of structurals & semi permanent constructions	Job Outsourced Civil Engineer-1,								
3.2	Renovation of Mine/ Project office, Canteen, Training centre, Rest shelter etc.	Supervisor-1, Surveyor-1, Chainman-2								
3.3	Cleaning of land for vegetation over the area									
3.4	Dismantling of machineries									
4.0	Actions for safety & security of local community due to abandonment of the mine or part of the mine									


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 कोयला विभाग, नई दिल्ली / Coal Division, New Delhi
 भारत सरकार / Government of India

Revised Mining Plan – Dulanga Opencast Coal Project - NTPC

Sl. No.	Activities to be undertaken		1st Year		2nd Year		3rd Year		4th Year	
			1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half
4.1	Thorough inspection of the mined out area, O.B. dumps for assessing the closure job.	Supervisors-2 in each shift Mining Engineer-1 in each shift								
4.2	Action, if required, for making safe, the drainage areas, fire areas etc.									
4.3	Making 2 metre high pucca wall on the slope of internal dumps, along the estimated water level.	Supervisor-1 in each shift Civil Engineer-1 in each shift								
4.4	Making 2 meter high pucca wall around the top edge of the mined out area, where immediate void exists at the quarry edge.									
4.5	Making 2 meter high pucca wall around the external OB Dump									
4.6	Closing with walling and gates in the haul road, to prevent advertant entry into water lagoon.	Supervisor-1 in each shift								
4.7	Filling the haul road up to ground level, from surface up to sealing gate.									
4.8	Survey of the total project area for updating mine plans Under Coal Mine Regulation.	Supervisors-2 in each shift Mining Engineer-1 in each shift								
5.0	Social & Economic Aspects									
5.1	Approval of one time grant as corpus fund for maintenance of some C.S.R activities.	Engineer-1 HR executive/staff -2								
	Sub-total									
6.0	Execution & Supervisor									

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नई दिल्ली / New Delhi-110001

Chapter-XI Progressive and Final Mine Closure Plan

Sampat

RQP No. 34011/(15)/2009-CPAM dated 27.09.10.

SANJIV KUMAR SINGH
Recognised Qualified Person
No. 34011/(15)/2009-CPAM

Page XI-21

Sl. No.	Activities to be undertaken		1st Year		2nd Year		3rd Year		4th Year	
			1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half
6.1	Execution & Supervision of the activities by mining personal.	Mining Engineer-1 HR executive/ staff-2								
7.0	Miscellaneous charges including power cost, deployment of security personal, 3 years post closure environmental monitoring, supervision, power cost etc.	Engineer-2 HR executive/ staff-3								

11.11 ABANDONMENT COST

11.11.1 TENTATIVE ABANDONMENT COST

Tentative cost of likely closing activities as envisaged below has been estimated considering base date as Feb '2011 at current cost. Actual closing activities and activity wise costs may change during the preparation of Final Mine Closure Plan which will be prepared 5 years before the likely cessation of mining operation. A time schedule for abandonment along with tentative fund requirement has been shown in the bar chart given below at **Table No 11.9**

**TABLE 11.9
ESTIMATED FUND REQUIREMENT FOR CLOSURE ACTIVITIES (WITHOUT ESCALATION, BASE YEAR-FEB '2011)**

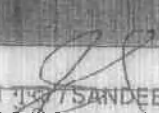
Sl. No.	Activities to be undertaken	Fund Requirement	1st Year		2nd Year		3rd Year		4th Year	
			1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half
1.0	<u>Mined Out Area & Waste Management</u>	Total (₹. Lakh)								
1.1	Physical reclamation of internal and external dump (Levelling, Spreading of top soil, toe wall formation, drain etc.)	79.65								
1.2	Physical reclamation of land of batter and haul road	52.62								

Chapter-XI Progressive and Final Mine Closure Plan

Sanjiv
SANJIV KUMAR SINGH
Recognised Qualified Person
No. 34011/(15)/2009-CPAM


RQP No. 34011/(15)/2009-CPAM dated 27.09.10.

1.3	Bio reclamation of item 1.1 & 1.2	64.69	
1.4	Making safe approach up to the water lagoon for future uses	120.37	
1.5	Barbed wire fencing	170.66	
	Sub-total	487.99	
2.0	<u>Environmental Management (Air, Water, Waste, Noise etc)</u>	0.00	
2.1	Thorough inspection of external and stabilized internal dumps to find state of its stabilization & Bio reclamation.	463.76	
2.2	Action to stabilize & vegetate uncovered patches, if any	69.56	
2.3	Inspection of garland drains & bunds around external dumps to prevent leachate water from entering natural water courses directly	463.76	
2.4	Inspection of embankment to prevent entry of uncontrolled water to mine	463.76	
2.5	Strengthening of embankment	371.01	
2.6	Quarterly sampling of water to know its quality status	18.55	
2.7	Record keeping, monitoring and reporting	324.63	
	Sub-total	2175.02	
3.0	<u>Management of Infrastructure & Mining Machineries</u>	0.00	
3.1	Decommissioning of structurals & semi-permanent constructions	284.75	


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Sandeep

3.2	Renovation of Mine/ Project office, Canteen, Training centre, Rest shelter etc.	18.55	
3.3	Cleaning of land for vegetation over the area	9.28	
3.4	Dismantling of machineries	92.75	
	Sub-total	405.32	
4.0	Actions for safety & security of local community due to abandonment of the mine or part of the mine	0.00	
4.1	Thorough inspection of the mined out area, O.B. dumps for assessing the closure job.	324.63	
4.2	Action, if required, for making safe, the drainage areas, fire areas etc.	92.75	
4.3	Making 2 metre high pucca wall on the slope of internal dumps, along the estimated water level.	148.40	
4.4	Making 2 meter high pucca wall around the top edge of the mined out area, where immediate void exists at the quarry edge.	185.50	
4.5	Making 2 meter high pucca wall around the external OB Dump	92.75	
4.6	Closing with walling and gates in the haul road, to prevent advertant entry into water lagoon.	0.46	
4.7	Filling the haul road up to ground level, from surface up to sealing gate.	4.64	


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 भारत सरकार, राँची, झारखण्ड
 राँची, झारखण्ड - 831001

4.8	Survey of the total project area for updating mine plans Under Coal Mine Regulation.	463.76	
	Sub-total	1312.90	
5.0	Social & Economic Aspects	0.00	
5.1	Approval of one time grant as corpus fund for maintenance of some C.S.R activities.	793.49	
	Sub-total	793.49	
6.0	Execution & Supervisor	0.00	
6.1	Purchasing / Hiring of equipment for closure activities etc.	92.75	
6.2	Execution & Supervision of the activities by mining personal.	463.76	
	Sub-total	556.51	
7.0	Miscellaneous charges including power cost, deployment of security personal, 3 years post closure environmental monitoring, supervision , power cost etc.	375.36	
	Total	6106.59	

11.11.2 ANNUAL CLOSURE COST

The annual closure cost has been calculated as per new guidelines issued by MoC (vide letter no 55011-01-2009-CPAM dated 27/08/2009 & 18.02.2011). As per circulated guidelines of MoC the closure cost for an opencast mine is to be modified based on the Wholesale Price Index (WPI) as notified by Govt. of India.

The WPI for all commodities Issued from Office of Economic Advisor, Ministry of Commerce and Industry, Govt. of India (Base date: 2004-05) was 129.60 in Aug'09 and 148.10 in Feb'11. The closure cost was ₹.6.00 Lakhs per ha in

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Aug'09. The current closure cost has been arrived by multiplying ₹. 6.00 Lakhs per ha by the ratio of WPI in Feb'11 and WPI in Aug'09 which comes to be ₹. 6.86 Lakhs per ha. The calculation methodology is as follows:

Total lease hold area Considered for mine closure (A)	: 890.63 ha
Mine closure cost per Ha for opencast mine in Aug'09	: ₹. 6.00 Lakhs
Mine closure cost per Ha for opencast mine in Feb'11(B)*	: ₹. 6.86 Lakhs
Life of the mine (C) (Incl. 2 years of construction period)	: 26 years
Annual base price [(A X B)/C] (for 1 st year)	: ₹. 2.35 Crores
Total closure cost for opencast mine (Compounding @ 5% annual escalation)	: ₹.120.05 Crores

The year wise closure cost is tabulated in **Table 11.10**.

**TABLE 11.10
YEAR WISE AMOUNT TO BE DEPOSITED IN ESCROW ACCOUNT**

YEAR	AV. COST PER ANNUM (₹. CRORES)	YEAR WISE EXPENDITURE WITH 5 % ESCALATION (₹.CRORES)
C1	2.35	2.35
C2	2.35	2.47
P1	2.35	2.59
P2	2.35	2.72
P3	2.35	2.85
P4	2.35	3.00
P5	2.35	3.16
P6	2.35	3.33
P7	2.35	3.47
P8	2.35	3.64
P9	2.35	3.83
P10	2.35	4.02
P11	2.35	4.22


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YEAR	AV. COST PER ANNUM (₹. CRORES)	YEAR WISE EXPENDITURE WITH 5 % ESCALATION (₹.CRORES)
P12	2.35	4.43
P13	2.35	4.65
P14	2.35	4.88
P15	2.35	5.13
P16	2.35	5.38
P17	2.35	5.65
P18	2.35	5.94
P19	2.35	6.23
P20	2.35	6.54
P21	2.35	6.87
P22	2.35	7.21
P23	2.35	7.57
P24	2.35	7.95
TOTAL	61.07	120.05

Total Estimated cost for completing the envisaged closure activities comes to ₹.120.05 Crores. Estimated cost will be modified based on WPI as notified from Govt. of India from time to time.

11.12 FINANCIAL ASSURANCE

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As per guidelines for Mine Closure Plan, NTPC shall take following actions for ensuring the financial assurance to complete the mine closure activities:

- **Opening of a Escrow Account**

The proponent shall open an escrow Account with any Scheduled Bank. The beneficiary of this account shall be Coal Controller Organisation (on behalf of central Government). The proponent shall deposit the amount detailed in previous chapter, on yearly basis into this Escrow account.

Estimated cost will be modified based on WPI as notified by Government of India from time to time.

- **Condition for operating the Escrow Account**

An agreement, outlining detailed terms and conditions of operating the Escrow account, shall be finalized and executed amongst the project owners, concerned Bank and the Coal Controller. The agreement shall



Grassing Activities along slope of Non-Active Overburden Dump.

Khapurikacchar OB Dump View



View of Khapurikacchar from OB Dump



OVER HEAD TANK



WATER TREATMENT PLANT



UV PURIFIER IN R&R COLONY

Grassing activities at Top Soil Dump



Before Grassing Activities along the slope.



After Grassing Activities along slope of Top Soil.

Garland Drains & Sedimentation Pond



Garland Drain



Garland Drain connected to settling pond



Settling Pond inside Mines

Dust Suppression Measures



Water Sprinkling on Haul Roads inside Mines



Fixed Type Sprinkling on Haul Roads Near CHP



Interlocked Dust Suppression arrangement in Surface Miner

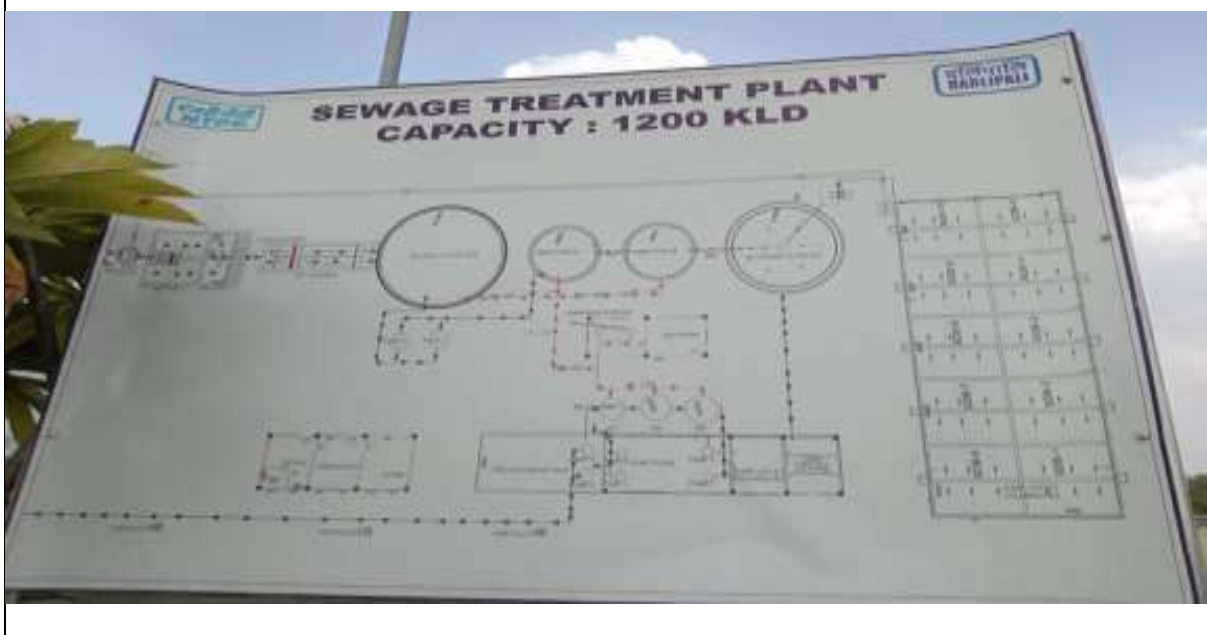


Wet Drilling Arrangement

Silo Loading System with PLC based control system and transportation through Rail Wagon



Sewage Treatment Plant of 1200 KLD at Darlipali Township



OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE)
& CHIEF WILDLIFE WARDEN, ODISHA, BDA APARTMENT, 5TH FLOOR,
PRAKRUTI BHAWAN, NILAKANTHA NAGAR, BHUBANESWAR
Ph. No.0674-2564587, FAX No.0674-2565062
(Website:odishawildlife.org, E. mail: odishawildlife@gmail.com)

Memo No. **7480**/1 WL(C)SSP-270/2012
Dated, Bhubaneswar, the **30** Sept, 2014

To

The Principal Chief Conservator of Forests, Odisha,
Bhubaneswar

Sub:

Diversion of 304.75 hectares (originally applied 323.09 hectares) 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 the safety zone area in Dulanga Coal Mining Projects spreads over Revenue villages of Dulanga, Majhapara, Manoharpur, Kathafali, Beldihi, Khuntijhria and Khapurikachhar and Dhanuadihi RF, Giripahad RF and Satparlia RF in IB valley coalfields in favour of M/s National Thermal Power Corporation Ltd. in Sundargarh Forest Division of Sundargarh District, Odisha

This is to inform you that a Site Specific Wildlife Conservation Plan at a financial outlay of ₹686.00 lakh in respect of the above Coal Mining project of M/s NTPC Ltd. has been approved and communicated to you in this office memo No.9597 dt 3.12.2013, in compliance to the Terms of Reference (TOR) No.(xv) prescribed in letter No.J-11015/1140/2007-IA.II(M) dt 17.1.2008 of Ministry of Environment & Forests, Govt. of India while considering the proposal for opening a new opencast coal mine project of 8 MTPA capacity in Ib Valley Coalfields in Sundargarh district, Odisha by M/s NTPC Ltd.

Subsequently, on the above diversion proposal, Govt. of India, MoEF vide their letter F. No.8-23/2013-FC dt 10.1.2014 granted stage-I approval alongwith some conditions to be fulfilled before grant of Stage-II forest clearance. Out of those, condition No. (xv) & (xvi) deal with deployment of watchers alongwith communication equipments to detect wild animals/elephants and warn the loco driver about movement of animals.

In the Site Specific Wildlife Conservation Plan approved for the above project, provisions have been made for engagement of watchers as well as supply of communication equipments to them. However, keeping in view of the observation of Govt. in F&E Deptt. vide their memo No.15413/F&E dt 21.8.2014, additional provisions at a cost of ₹27.29 lakh have been made in the Site Specific Wildlife Conservation Plan. These together with the financial outlay already approved comes to **₹713.29 lakh** (Rupees seven crore thirteen lakh twenty thousand) only for the following activities.

(i) For the Project Area:

(a) Activities to be implemented in project area by M/s NTPC Ltd. in Sundargarh Division as per the SSWLCP already approved	₹236.30 lakh
(b) Cost of engagement of watchers in loco cabin and supply of binoculars and search lights	₹25.13 lakh
Sub -Total:	₹261.43 lakh

P.T.O.

- (ii) For the Project Impact Area:
- (a) For activities to be implemented by DFO, Sundargarh Divn. in project impact area as per the SSWLCP already approved ₹449.70 lakh
- (b) Cost of communication equipments and search lights to be supplied to watchers ₹2.16 lakh
- Sub -Total: ₹451.86 lakh

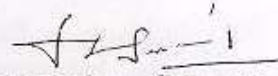
Grand Total (i + ii): ₹713.29 lakh

3. Various activities in the lease hold area will be executed by the Project proponent under the guidance of the Divisional Forest Officer, Sundargarh Divn. An additional amount of ₹2.16 lakh (already deposited ₹449.70 lakh) may be deposited in the CAMPA fund meant for the purpose for implementation of various activities within the project impact area by the Forest Deptt. as envisaged in the plan.

4. All other conditions of the approval letter issued vide this office memo No. 9597 dt 3.12.2013 remain unchanged.

5. Addendum to the already approved Site Specific Wildlife Conservation Plan incorporating the provisions of watchers and communication equipments in compliance to condition No. (xv) & (xvi) of stage-I approval order of Govt. of India, MoEF vide their letter F. No.8-23/2013-FC dt 10.1.2014 is approved herewith.

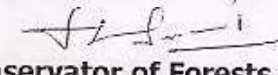
Encl: 2 copies of addenda as above


Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha

Memo No. 7481 /date 30-09-2014

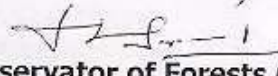
Copy forwarded to the Divisional Forest Officer, Sundargarh Division for information and necessary action in continuation of this office memo No.9598 dt 3.12.2013.

Encl: As above


Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha

Memo No. 7482 /date 30-09-2014

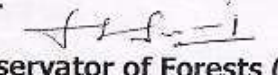
Copy forwarded to the Regional Chief Conservator of Forests, Rourkela Circle for information and necessary action in continuation of this office memo No.9599 dt 3.12.2013.


Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha

Memo No. 7483 /date 30-09-2014

Copy forwarded to the Special Secretary to Government of Odisha, F & E Deptt., Bhubaneswar for favour of information and necessary action with reference to Deptt. memo No.10F(cons)84/2014-15413/F&E dt 21.8.2014.

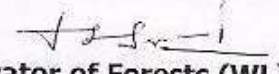
Encl: As above


Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha

Memo No. 7484 /date 30-09-2014

Copy forwarded to the Addl. General Manager (I/c), NTPC Ltd., Dulanga Coal Mining Project, Sundargarh for information and necessary action with reference to his letter dated 13.9.2014.

Encl: As above


Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha



Thermal Power Station
DEEPSHIKHA
759147

NTPC Limited
Talcher Super Thermal Power Station
P.O. DEEPSHIKHA
759147

Ref: 00100/2013269952/13.03.2014

Date: 13/03/2014

To,
AD-HOC CAMPA ACCOUNT NO SBO 1025203
CORPORATION BANK
GOI, MOEF, PARYAVARAN BHAVAN
CGO COMPLEX LODHI ROAD
NEW DELHI 110003

Dear Sir / Madam,

We are pleased to inform you that the company has arranged to remit the amount as per the following details, directly to your bank CORPORATION BANK, LODHI COMPLEX BRANCH account number SB01025222.

Total Amount Paid	44,970,000.00
-------------------	---------------

Amount (in words): Rupees Four Crore Forty-Nine Lakh Seventy Thousand Only.

The amount has been credited to your bank account as indicated above through Electronic Clearing Service (ECS) and therefore, no service charge is deductible by your bank.

If the amount is not received in your account kindly contact the person mentioned below giving the above reference number.

Your's Faithfully,

For NTPC Ltd.

Designation

[Signature]
13/03/2014

UTR No. SBIN 71407344 8783

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE)
 & CHIEF WILDLIFE WARDEN, ODISHA, BDA APARTMENT, 5TH FLOOR,
 PRAKRUTI BHAWAN, NILAKANTHA NAGAR, BHUBANESWAR
 Ph. No.0674-2564587, FAX No.0674-2565062
 (Website:odishawildlife.org, E. mail: odishawildlife@gmail.com)

Memo No. **7480**/1 WL(C)SSP-270/2012
 Dated, Bhubaneswar, the **30** Sept, 2014

To

The Principal Chief Conservator of Forests, Odisha,
 Bhubaneswar

Sub:

Diversion of 304.75 hectares (originally applied 323.09 hectares) 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 the safety zone area in Dulanga Coal Mining Projects spreads over Revenue villages of Dulanga, Majhapara, Manoharpur, Kathafali, Beldihi, Khuntijhria and Khapurikachhar and Dhanuadihi RF, Giripahad RF and Satparlia RF in IB valley coalfields in favour of M/s National Thermal Power Corporation Ltd. in Sundargarh Forest Division of Sundargarh District, Odisha

This is to inform you that a Site Specific Wildlife Conservation Plan at a financial outlay of ₹686.00 lakh in respect of the above Coal Mining project of M/s NTPC Ltd. has been approved and communicated to you in this office memo No.9597 dt 3.12.2013, in compliance to the Terms of Reference (TOR) No.(xv) prescribed in letter No.J-11015/1140/2007-IA.II(M) dt 17.1.2008 of Ministry of Environment & Forests, Govt. of India while considering the proposal for opening a new opencast coal mine project of 8 MTPA capacity in Ib Valley Coalfields in Sundargarh district, Odisha by M/s NTPC Ltd.

Subsequently, on the above diversion proposal, Govt. of India, MoEF vide their letter F. No.8-23/2013-FC dt 10.1.2014 granted stage-I approval alongwith some conditions to be fulfilled before grant of Stage-II forest clearance. Out of those, condition No. (xv) & (xvi) deal with deployment of watchers alongwith communication equipments to detect wild animals/elephants and warn the loco driver about movement of animals.

In the Site Specific Wildlife Conservation Plan approved for the above project, provisions have been made for engagement of watchers as well as supply of communication equipments to them. However, keeping in view of the observation of Govt. in F&E Deptt. vide their memo No.15413/F&E dt 21.8.2014, additional provisions at a cost of ₹27.29 lakh have been made in the Site Specific Wildlife Conservation Plan. These together with the financial outlay already approved comes to **₹713.29 lakh** (Rupees seven crore thirteen lakh twenty thousand) only for the following activities.

(i) For the Project Area:

(a) Activities to be implemented in project area by M/s NTPC Ltd. in Sundargarh Division as per the SSWLCP already approved	₹236.30 lakh
(b) Cost of engagement of watchers in loco cabin and supply of binoculars and search lights	₹25.13 lakh
Sub -Total:	₹261.43 lakh

P.T.O.

- (ii) For the Project Impact Area:
- (a) For activities to be implemented by DFO, Sundargarh Divn. in project impact area as per the SSWLCP already approved ₹449.70 lakh
- (b) Cost of communication equipments and search lights to be supplied to watchers ₹2.16 lakh
- Sub -Total: ₹451.86 lakh


Grand Total (i + ii): ₹713.29 lakh

3. Various activities in the lease hold area will be executed by the Project proponent under the guidance of the Divisional Forest Officer, Sundargarh Divn. An additional amount of ₹2.16 lakh (already deposited ₹449.70 lakh) may be deposited in the CAMPA fund meant for the purpose for implementation of various activities within the project impact area by the Forest Deptt. as envisaged in the plan.

4. All other conditions of the approval letter issued vide this office memo No. 9597 dt 3.12.2013 remain unchanged.

5. Addendum to the already approved Site Specific Wildlife Conservation Plan incorporating the provisions of watchers and communication equipments in compliance to condition No. (xv) & (xvi) of stage-I approval order of Govt. of India, MoEF vide their letter F. No.8-23/2013-FC dt 10.1.2014 is approved herewith.


Encl: 2 copies of addenda as above


**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**

Memo No. 7481 /date 30-09-2014

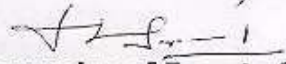
Copy forwarded to the Divisional Forest Officer, Sundargarh Division for information and necessary action in continuation of this office memo No.9598 dt 3.12.2013.

Encl: As above


**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**

Memo No. 7482 /date 30-09-2014


Copy forwarded to the Regional Chief Conservator of Forests, Rourkela Circle for information and necessary action in continuation of this office memo No.9599 dt 3.12.2013.


**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**

Memo No. 7483 /date 30-09-2014

Copy forwarded to the Special Secretary to Government of Odisha, F & E Deptt., Bhubaneswar for favour of information and necessary action with reference to Deptt. memo No.10F(cons)84/2014-15413/F&E dt 21.8.2014.

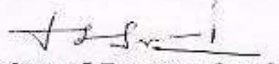
Encl: As above


**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**

Memo No. 7484 /date 30-09-2014

Copy forwarded to the Addl. General Manager (I/c), NTPC Ltd., Dulanga Coal Mining Project, Sundargarh for information and necessary action with reference to his letter dated 13.9.2014.

Encl: As above


**Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha**



Transforming lives

NTPC Limited

Talcher Super Thermal Power Station
P.O. DEEPSHIKHA
759147

Ref: 00100/2013269951/13.03.2014

Date: 13/03/2014

To,
AD-HOC CAMPA ACCOUNT NO SBO 1025203
CORPORATION BANK
GOI, MOEF, PARYAVARAN BHAVAN
CGO COMPLEX LODHI ROAD
NEW DELHI 110003

Dear Sir / Madam,

We are pleased to inform you that the company has arranged to remit the amount as per the following details, directly to your bank **CORPORATION BANK, LODHI COMPLEX BRANCH** account number **SB01025222**.

Total Amount Paid	32,784,060.00
-------------------	---------------

Amount (in words): **Rupees Three Crore Twenty-Seven Lakh Eighty-Four Thousand Sixty Only.**

The amount has been credited to your bank account as indicated above through Electronic Clearing Service (ECS) and therefore, no service charge is deductible by your bank.

If the amount is not received in your account kindly contact the person mentioned below giving the above reference number.

Your's Faithfully,

For NTPC Ltd

Designation

[Signature]
13/03/2014

UTR No. & Date of amt of RTGS is reqd. to be mentioned.

CN 21164876

UTR No. SBIN 714073453867

MONITORING REPORT

(September 2022 - March 2023)

THIRD PARTY MONITORING AND EVALUATION OF SITE SPECIFIC WILDLIFE CONSERVATION ACTIVITIES IN DULANGA COAL MINING PROJECT OF NTPC LTD, SUNDARGARH



Submitted to
Additional General Manager (Mining)
NTPC Dulanga Coal Mining Project, Sundargarh

Submitted by
Dr N. Bhol (Principal Investigator)
College of Forestry
Odisha University of Agriculture & Technology
Bhubaneswar- 751 003

MONITORING REPORT

(September 2022 - March 2023)

THIRD PARTY MONITORING AND EVALUATION OF SITE SPECIFIC WILDLIFE CONSERVATION ACTIVITIES IN DULANGA COAL MINING PROJECT OF NTPC LTD, SUNDARGARH

Odisha University of Agriculture and Technology, Bhubaneswar has been engaged by the authorities of NTPC Ltd, SSC- Coal Mining (Ranchi) as 3rd Party in February 2022 for monitoring and evaluation of site specific wildlife conservation activities in Dulanga Coal Mining Project of NTPC, Sundargarh. Dr Nirakar Bhol, I/C of Silviculture & Agroforestry Department is the Principal Investigator and Dr Kumaresh Behera, Assistant Professor, Department of Livestock Production & Management, OUAT is the Co-Principal Investigator of the monitoring team.

The monitoring and evaluation works have been carried out by OUAT scientists since March 2022 and the 1st six-monthly progress report has been submitted earlier. In the second half of the year 2022-23, a series of communication has been made with person concerned dealing the assigned activities of Dulanga Coal Mining Project, Khapuriakachhar, Sundargarh over phone and email. Also communication has been made with the Divisional Forest Office, Sundargarh regarding this work. The monitoring team has visited the sites during February 16-18, 2023 and physically verified the progress of works and documents. The team has visited the office of both Dulanga Coal Mining Project and DFO, Sundargarh and discussed with the concerned staff. The following progress of activities has been observed during September 2022 - March 2023.

A. CORE ZONE ACTIVITIES

The Core Zone activities have been undertaken by Dulanga Coal Mining Authority of NTPC itself since 2018-19. The progress of activities done by NTPC till 31.08.2022 has been reported in the 1st six-monthly report. The activities done during September 2022 - March 2023 are as follows.

1. Engagement of Van Sahayak

Three numbers of Van Sahayak have been engaged which were sanctioned in the project. The following amount has been paid to them during the assessment period.

September, 2022	Rs 47870.00
October, 20 22	Rs 44188.00
November, 20 22	Rs 46029.00
December, 20 22	Rs 49711.00
January, 2023	Rs 46029.00
February, 2023	Rs 44188.00
March, 2023	Rs 44802.00

The progress of this activity is satisfactory.

2. Engagement of Van Pal

One Van Pal has been engaged which is sanctioned in the project to supervise nursery and plantation activities. The following amount has been paid to them during the assessment period.

September, 2022	Rs 18674.00
October, 2022	Rs 17238.00
November, 2022	Rs 17956.00
December, 2022	Rs 19392.00
January, 2023	Rs 17956.00
February, 2023	Rs 17238.00
March, 2023	Rs 17238.00

The progress of this activity is satisfactory.

3. Fire watchers

The above Van Sahayak and Van Pal were assigned the additional duty of fire watching in summer months when there is chance of fire occurrence.

4. Grass seeding

There is target of grass seeding of 100 ha area in the project area. During this reported period no grass seeding has been done as it is dry period. In 2021-22, an area 2.77 ha has been covered under grass seeding. The coverage of grasses done earlier is found satisfactory.

5. Photo Voltaic Fencing

Fencing with normal barbed wire has been done for a length of 12.5 km earlier against the provision of 15 km Photo Voltaic Fencing. As per the requirement of site, the rest fencing may be done.

6. Water harvesting structure

In the current period of reporting no water harvesting structure has been made. Water harvesting structures have already been developed as per EMP. The following structures are existing in the project area.

1. WHS at Masina village: 4800 m²
2. Dulinga site pond RNR: 2900 m²
3. External pond RNR: 9600 m²
4. WHS at Beldhi: 1500 m²

7. Water pollution abatement

No fresh infrastructure for water pollution abatement has been established during the current reporting period. Previously one Effluent Treatment Plant of 50 KLD and Sewerage Treatment Plant of 500 KLD have been established for water pollution abatement and those are running successfully.

8. Minimization of man-animal conflict during road transportation

No new signboards have been erected during the present period to aware people and minimize man-animal conflict during road transportation. However, earlier some signboards have been displayed in important points for this cause.

9. Garbage control

Garbage control work is being done in every month. During the assessment period, the following amounts have been spent for this purpose.

September, 2022	Rs 47762.00
October, 2022	Rs 49354.00
November, 2022	Rs 47762.00
December, 2022	Rs 49354.00
January, 2023	Rs 49354.00
February, 2023	Rs 44577.00
March, 2023	Rs 49354.00

This has been mainly done in R&R colony.

10. Weed control

One person has been engaged for weed control and following expenditure has been done towards this.

September, 2022	Rs 9500.00
October, 2022	Rs 11000.00
November, 2022	Rs 8400.00
December, 2022	Rs 9600.00
January, 2023	Rs 10150.00
February, 2023	Rs 8500.00
March, 2023	Rs 9600.00

11. Training and awareness promotion

No fresh training and awareness promotion activity has been done during the current reporting period. Earlier the World Environment Day has been celebrated on 5th June1, 2022.

12. Protection and monitoring vehicle

No new vehicle for protection and monitoring of wildlife conservation activities has been procured. Earlier three vehicles have been provided for protection and monitoring of mechanical, electrical and mining departments. GPS tagging is required in such vehicles.

There is provision of a 8-seater non-A/C vehicle (Bolero) with a driver along with fuel and maintenance cost for the Range Officer, Hingiri for protection and monitoring work of site specific wildlife conservation activities. This item has not been yet been executed by Dulanga Coal Mining Project.

13. Maintenance of new plantations

The plantations raised in rainy season of 2022 are being watered and weeded by departmental labours and outside labours in the current monitoring period.



New Plantation (2022) inside project area of Dulanga Coal Mining Project

14. Raising of Forest Nursery

A forest nursery has been established inside the project area to raise different species of trees for plantation development. During the present monitoring period it was observed that the Van Sahayak and Van Pal are being engaged in such activities. These plants will be transplanted in the coming monsoon season.



Forest Nursery inside project area of Dulanga Coal Mining Project

Remarks

The overall progress of activities in core zone is satisfactory. One 8-seater non-A/C vehicle (Bolero) with a driver along with fuel and maintenance cost should be provided at an early date to the Range Officer, Hemgiri for protection and monitoring of site specific wildlife conservation activities as per EMP.

B. BUFFER ZONE ACTIVITIES

DFO, Sundargarh is the implementing agency for Buffer Zone activities. Dulanga Coal Mining Project authorities have deposited Rs 4,49,70,000.00 on 14.03.2014 to State Forest Department to carry out buffer zone activities. This money has been given to utilize during planned 10 years period for following activities.

1. GIS map status to monitor forest fragmentation
2. Plantation in degraded forest (ANR) over 150 ha
3. Fire line 15 km layout
4. Fire watching activities
5. Habitat improvement through bamboo plantation over 320 ha/over existing forest land including protection and enhancement of regeneration for 10 years
6. Excavation of water holes with saltlicks
7. Erosion control trenches and check dams on nallas
8. Biodiversity monitoring every alternate year and documentation
9. Elephant tracking activities
10. Watch Tower construction
11. Solar lighting status
12. Corpus fund status
13. Cattle immunization status
14. Awareness activities
15. Anti-poaching and anti-smuggling measures- secret fund and rewards

Unfortunately none of the above activities have been undertaken by the Sundargarh Forest Division till 31.03.2023. After getting this monitoring assignment, the OUAT team is pursuing the matter at the office of DFO, Sundargarh and at the office of PCCF (Wildlife), Bhubaneswar. The DFO, Sundargarh has sent the proposal to the PCCF (Wildlife) & Chief Wildlife Warden, Bhubaneswar vide letter No. 5636/ 1F (Acct.) dated 15.09.2022 to release fund for such activities. On visit of monitoring team to the office of PCCF (Wildlife), the officials have revealed that the proposal of DFO was under process.

Remarks

A large amount of money has been given to state forest department since 2014-15 for various site specific wildlife conservation activities. Unfortunately no fund has been utilized by 31.03.2023. The officials of DFO, Sundargarh have been contacted physically and through email to remind this issue, but their response is not satisfactory.

Action required

The Principal Investigator Dr N. Bhol has contacted the officials of PCCF (Wildlife) at Bhubaneswar and informed them to take necessary steps in this regard. NTPC authorities should also remind the competent authorities of Odisha Forest Department to carryout various activities without further delay for which payment has been made. As cost of every activity is escalating every year and the fund is to be utilized within 10 planned years, the objective of this fund utilization is missing. Therefore, the funding agency should pursue this matter at an early date with the Forest Department.

Bhbaneswar
Date: 31.07.2023



Dr Nirakar Bhol
Principal Investigator
College of Forestry, OUAT

Community Development Expenditure at Dulanga Coal Mining Project	
(Headwise expenditure statement for 2022-23) (in Lakh INR)	
MAJOR HEADS	FY2022-23
HEALTH	14.02
EDUCATION	2.89
WATER	10
INFRASTRUCTURE	110
SKILL DEVELOPMENT	7.08
NEED BASED	17.75
Expenditure amount (in Lakhs)	161.74

REHABILITATION AND RESETTLEMENT PLAN

of

NTPC Limited

DULANGA COAL MINING PROJECT



REHABILITATION AND RESETTLEMENT PLAN

NTPC LTD, DULANGA COAL MINING PROJECT,

SUNDARGARH, ODISHA

OFFICE OF THE LAND ACQUISITION OFFICER, HEMGIR

NO 378 / Date: 17/09/14

TO

The Addl. General Manager (I/c)
NTPC Dulanga Coal Mining Project
Sundargarh

Sub: Approval of Rehabilitation & Resettlement (R&R) plan of Dulanga Coal Mining Project, NTPC Limited, Sundargarh

Ref: Your letter dated 09.09.2013

Sir,

Please find attached herewith the R&R plan of Dulanga Coal Mining Project of NTPC Limited, Sundargarh duly approved by the competent authority.

This is for your information and necessary action.

Thanking You.

Enclosure: As above.

Yours faithfully,


Land Acquisition Officer, Hemgir
17.9.14

CONTENTS

1. INTRODUCTION	1—2
2. METHODOLOGY	2—2
3. DETAILS OF PROJECT AREA & DISPLACEMENT	3—4
4. PERCEIVED IMPACTS ON ENVIRONMENT DUE TO EXECUTION OF PROJECT	4—4
5. DETAILS OF PROJECT AFFECTED PERSONS OF THE DULANGA COAL MINING PROJECT	4—5
6. GUIDING PRINCIPLES OF RESETTLEMENT & REHABILITATION PLAN	5—6
7. DETAILS OF LAND TO BE ACQUIRED	6—7
8. COMPENSATION FOR ASSETS	7—7
9. COMPENSATION FOR TREES	7—7
10. COMPENSATION FOR HOUSES	7—8
11. COMPENSATION FOR OTHER IMMOVABLE ASSETS ATTACHED TO LAND	8—8
12. RESETTLEMENT & REHABILITATION	8—17
13. PLANNING & IMPLEMENTATION OF R&R PLAN	17—18
14. INITIAL COMMUNITY DEVELOPMENT & CSR ACTIVITIES	18—20
15. TOTAL PROPOSED FINANCIAL OUTLAY FOR R&R PLAN	20—20

1. Introduction

NTPC Limited is the largest Indian State owned electric utilities company which was set up in 1975 to accelerate power development in India. It is emerging as an integrated power major with presence across the entire energy value chain. With a current generating capacity of more than 40 GW, NTPC has embarked on plans to become a 75 GW company by 2017. NTPC Ltd has been allotted a total of Six(06) Coal Mining Blocks across three States, of which Dulanga Coal Mining Block is located in the state of Odisha. The excavated coal from the mine via railway corridor, would be used for Power generation in the Darlipalli Super Thermal Power Plant which is also located in the Sundargarh district.

While land for coal mining area for the block, shall be acquired under CBA Act-1957, the Land for OB Dump and Mine infrastructure including R&R Colony, CHP corridor, CISF colony etc shall be acquired under LA Act. It is estimated that a total of 2044.10 acres of land would be utilised for the project, which would encompass lands of 8 villages namely, Dulanga, Majhapada, Beldih, Khuntiharia, Kathali, Manoharpur, Khapurkachar and Kalamegha, spanning 3 Gram Panchayats of Sanghumda, Kanakura and Durubaga.

Due to the project, several families would be affected/ relocated and there would be loss of lands coupled with loss of livelihoods. A Socio Economic Survey was conducted by Xavier Institute of Management, Bhubaneswar, in line with the Orissa R&R Policy, in the project affected villages. As per findings obtained from the survey report, about 509 families would be displaced and about 438 families would be affected by the project.

With a view to striking a balance between the company's business initiatives and the development needs of the project affected masses, the project seeks to follow the R&R package approved by Honourable Collector and District Magistrate, the Orissa Resettlement & Rehabilitation Policy and its subsequent amendments issued from time to time. It may be mentioned here that the R&R package, draws immense strength from implementation of past policies, best practices in other States and Orissa Government's Industrial Policy Resolution, 2001.

The current intervention of policy formulation has actually taken note of the lessons learnt through these past policies, which essentially reflects Government's genuine spirit of learning and retrospection.

As mandated in the Orissa R&R Policy, emphasis has been given on the following:

- Avoiding displacement wherever possible and minimize it exercising available options
Otherwise
- Recognizing voices of displaced communities emphasizing the needs of the indigenous communities and vulnerable sections
- To ensure environmental sustainability through participatory and transparent process
- Help guiding the process of developing institutional mechanism for implementation, monitoring, conflict resolution and grievance redressal.

2. Methodology:

The Rehabilitation and Resettlement Plan emphasizes that the project shall play a positive role in the socio-economic upliftment and betterment of quality of life of the people residing in the area. In addition to providing the rightful compensation to the land owners, efforts have been made to ensure transparency in the process of planning and execution. The preparation of the plan included the following procedures:

- 1) Conducting a Socio Economic Survey of the project affected families, which included collation of Primary and Secondary data through PRA exercises, Focus Group discussions, Personal interviews, door to door survey and focus group discussions etc with a specific focus on gender participation.
- 2) Further Hemgir block falling under Scheduled areas list of the State, institutions of local self governance, especially the Panchayati raj institutions were consulted and involved during the process. To ensure participation among the people and to involve all sections of the villages, Pali Sabhas, Gram sabhas have been consulted. An Environmental public hearing has also been conducted to factor in all possible suggestions encompassing the needs and requirements of the villagers.
- 3) Discussions with the project affected families and village level micro planning has been taken up to ensure that proper weightage to issues.

3. Details of Project Area and Extent of Displacement

The Dulanga Coal Mining Block has been allocated to NTPC Ltd for developing coal mines for its upcoming Darlipalli Super Thermal power Plant. The Coal Mining Block is situated in Hemgir Block and would involve acquisition of 2044.10 acres which would comprise of 870.45 acres of private land, 424.84 acres of Govt land and 748.81 acres of forest Land. The land being acquired, would be used for setting up of the Coal Mines, OB Dump, other Infrastructure and establishing a Resettlement and Rehabilitation colony.

A total of 8 villages, namely, Dulinga, Majhapada, Beldihi, Kathfali, Khuntijharia, Khapurikachar, Manoharpur, Kalamegha would be affected by the project. Efforts have been made to minimise the requirement of land for the project and thus also minimise displacement of people from the area. In order to identify the extent of displacement and effect of the project, a socio economic survey has been taken up in the project affected villages in line with the Odisha R&R policy. This survey would assess the vulnerability and level of impoverishment of villagers, under three broad parameters viz. demographic profile, social profile and economic profile. Apart from this, it would also help in providing a base for impact monitoring subsequent to displacement.

Sl	Type of Land	Mining Area Land [CBA Act] (Acres)	Land [LA Act] (Acres)			Grand Total (Acres)
			OB Dump & Infrastructure	R&R Colony	Total	
1	Private	460.38	370.88	39.19	410.07	870.45
2	Govt./ Revenue	263.23	98.01	63.60	161.61	424.84
3	Forest	672.02	76.79	0.00	76.79	748.81
Total (Acres)		1395.63	545.68	102.79	648.47	2044.10

The land being acquired, is marked by the presence of good agricultural land and rich forest flora. The mainstay of the villagers is agriculture, mostly rainfed, with a single paddy crop. However, due to the presence of forests, there is a huge dependence for several minor forest

produces. It may be mentioned here that due to the presence of other coal mining projects in the area, the villagers are directly or indirectly involved in working in the mining area. The Dulanga coal Mining Project, which shall have an annual capacity of 7Mn tonnes per annum, shall create numerous skilled and unskilled job opportunities in the area. It is planned that the mining shall be done through (MDO) Mine Developer Cum Operator and would be highly mechanised. It is however expected that, several semi skilled and unskilled jobs would arise out of the operations. As per the OPRR-2006 and its amendments, Clause-9(II-a), nominated members of the displaced and other affected families would be given utmost preference in the matter of employment. For jobs arising out of assignments to be taken up by other vendors also, preference shall be extended to project affected masses. Adequate arrangement to provide vocational training to at least one member of each displaced/other family so as to equip him/her to start his/her own small enterprise and refine his/her skills to take advantage of new job opportunities. For those engaged in traditional occupations/handicrafts/ handlooms, suitable training shall be organized at the cost of project authority to upgrade their existing skills. Emphasis would be given by the company on the overall development of the villagers, which would take into account, up gradation of existing infrastructure, providing new infrastructure, upliftment of standard of living, improvement in the quality of living, improving access to better quality of education, health facilities etc.

4. Perceived impacts on environment due to execution of project

To assess the impacts of the Dulanga Coal Mining Project, NTPC Ltd, an Environment Impact Assessment study has been carried out and all possible/ perceived impacts have been outlined. Keeping in mind necessary guidelines issued by the MOEF, all possible impacts shall be taken care of and shall be implemented as per the Environment Management Plan approved by the MOEF. Utmost care shall be taken to avoid any adverse impact on the existing Bio diversity and overall environment, in the area.

5. Details of Project Affected Persons of the Dulanga coal mining project

A socio-cultural, resource mapping and infrastructural survey is being conducted by Xavier Institute of Management, Bhubaneswar, an independent agency identified by the Government to ensure proper benchmarking. This survey aims at identification of the Project affected families and assess the extent of impoverishment of the families apart from outlining various assets both private and government existing in the area. The details of Project affected persons is enclosed as below:

Sl.No	Name of Village	Purpose of Land Acquisition	No of Affected families
1	DULINGA	Coal Block & Infrastructure	224
2	MAJHAPADA	Coal Block & Infrastructure	267
3	BELDIHI	Coal Block & CISF colony	177
4	KATHFALI	Coal Block	28
5	MANOHARPUR	Coal Block	04
6	KHUNTIJHARIA	Coal Block	91
7	KHAPURIKACHAR	OB Dump & infrastructure	62
8	KALAMEGHA	R&R Colony	94
9	SATPARLIA Reserve Forest	Infrastructure	00
10	DHANUARDIHI Reserve Forest	Coal Block	00
11	GIRIPAHAD Reserve Forest	Coal Block	00
TOTAL			947

NB: The figures depicting the affected families are based on the Socio Economic Survey conducted by XIM, Bhubaneswar.

6. Guiding Principles of the Rehabilitation and Resettlement Plan

Eligibility: As per the Rehabilitation and Resettlement Plan, all families who have been residing for a minimum of 3 years in the project area prior to the date of publication of Section-4 (1) Notification under LA Act-1894 and Section-7 Notification under CBA Act-1957 and on account of acquisition of his/her agricultural/homeslead land are affected by the project.

Time Frame: The time frame for actualisation and implementation of this Resettlement and Rehabilitation plan would be five (05) years from the date of approval of the plan.

Impact Assessment: After implementation of the plan, a Social impact Evaluation (SIE) shall be taken up to provide a base for future interventions.

7. **Details of Land to be acquired:** Land shall be acquired for different purposes which are outlined below:

a) Land to be acquired for the Coal mining Block(Acquisition under CBA Act-1957)

Sl.No	Land Details	Area to be Acquired (In Acres)
1	Private Land	460.38
2	Revenue Land (Non Forest Land)	263.23
3	Forest Land	672.02
TOTAL		1395.63 Ac

For Land to be acquired under CBA Act- 1957, Section-11 notification has been published and the land is now vested with the NTPC Ltd. Payment for compensation for land is in process.

b) Land to be acquired for setting up of OB Dump & other Mine Infrastructure(Acquisition under LA Act- 1894)

Sl.No	Land Details	Area to be Acquired (In Acres)
1	Private Land	370.88
2	Revenue Land (Non Forest Land)	98.01
3	Forest Land	76.79
TOTAL		545.68

Land acquisition is in advanced stages.

- c) Land to be acquired for setting up of R&R Colony (Acquisition under LA Act- 1894). The land for the R&R colony has been identified in consultation with the villagers, in village Kalamegha at Kanaktura Gram Panchayat. A total of 102.79 acres of land is allocated for the purpose which shall contain the Rehabilitation Colony for the PAPs and other necessary infrastructure. The matter has been discussed in Pali sabhas, Gram Sabhas and in RPDAC meetings and the land acquisition is in advanced stages.

Sl.No	Land Details	Area to be Acquired (In Acres)
1	Private Land	39.19
2	Revenue Land (Non Forest Land)	63.60
TOTAL		102.79 Ac

Based on the approval of the 3rd RPDAC meeting of Dulanga Coal Mining Project, on 28.04.2012 and subsequent deliberation, Collector and District Magistrate, vide Letter no-1007 dated 06.09.2013, had approved the Compensation and R&R package for NTPC Ltd, Dulanga Coal Mining Project. (Copy Enclosed).

8. Compensation for Assets:

As per the Socio Economic Survey being carried out in the project affected villages, enumeration of all immovable assets, community assets as well as government assets, is being done through PWD, Sundargarh. As per the guidelines issued by the Revenue department, Rural Development Department and as approved by district authorities, the cost of assets in terms of compensation would be distributed to the villagers.

As regards "public property" like School Building, Club House, Hospital, Panchayat Ghar, electrical installation, place(s) of worship, roads etc, value of such property affected shall be deposited with the District Collector.

9. Compensation for Trees:

Compensation for trees would be paid to the individual beneficiaries as per rate fixed by the District govt authorities.

10. **Compensation for Houses:** For Houses, situated in the areas being acquired by the project, cost of the assets as ascertained by the District authorities, shall be paid to the

individual beneficiaries. For this, an Asset Valuation study is being taken up in the villages along with the Roads and Building department, Sundargarh to ascertain the cost of assets. As regards "public property" like School Building, Club House, Hospital, Panchayat Ghar, electrical installation, place(s) of worship, value of such property affected shall be deposited with the concerned District Collector. Either Project or District Administration shall take up construction at the place as would be determined in consultation with representatives of displaced persons.

- 11. Compensation for other Immovable Assets attached to land:** Compensation for all immovable assets attached to land, like Ponds, Creeks, Check Dams, Bore wells, open Wells etc shall be paid to the individual beneficiaries.

12. RESETTLEMENT AND REHABILITATION

Resettlement Benefits:

Families whose Houses would be acquired by the project and would get displaced, would be provided benefits as per the following two options:

Option-1: Families opting to resettle in R&R Colony- The eligible displaced families shall submit their consent for resettlement in the R&R colony at Kalamegha, through an irrevocable affidavit on or before the cut off date as mentioned by the NTPC.

- a) **Provision of Homestead land & house in R&R Colony:** Each displaced family, who shall opt for resettlement in the R&R colony, shall be provided with land measuring Ac.0.10 Decimal for homestead purpose. Land patta of the Homestead land, shall be provided to each family, at the time of handover of the individual house. Besides, NTPC shall provide a house of size @ 1000 sqft. Super built area, including cowshed and staircase, constructed over the homestead land allotted to the above mentioned displaced families. (As per OPRR-2006, Clause- 9(d)).
- b) **Assistance in lieu of Temporary Shed:** For families who are dismantling their house/other structures in the village, handing over possession to Gov/NTPC and evacuating the village, in lieu of assistance for temporary shed, NTPC shall pay to the person, House rent assistance @ Rs.1000/- per month from the day of physical evacuation for a period of eighteen (18) months.

- c) **Assistance for Transportation:** NTPC shall provide transportation allowance of Rs 3000/- or free transportation for shifting to the resettlement location or their new place of inhabitation. If a displaced person is unable to carry all the materials, such as wood etc immediately after dismantling his/her house in the village and willing to keep it in his/her plot for some time till he/she transports it to his/ her relocated area, NTPC will facilitate for watch and ward for a period of 15 days. NTPC shall not be responsible for this material after 15 days.
- d) **Maintenance Allowance:** NTPC shall provide " Maintenance Allowance" @ Rs.3000/- per month to all the displaced families on vacation of land/house for a period of one year from the date of vacation.

Resettlement in R&R Colony- Cost Component: Rs.86.04 Crores			
Description of Item	No of PAPs	Unit Cost (In Lakh Rs.)	Total (In Crs Rs.)
Cost of establishment of R&R Colony including plot and Basic Infrastructure	490		75.01
Corpus for of maintenance of R&R Colony@ 10% of total cost of R&R colony	490		7.501
Registration fee for transfer of plots in RC in the name individual PAP Families	490	0.15	0.735
Maintenance Allowance /family	490	0.36	1.764
Transportation Grant/family	490	0.03	0.147
Assistance for Temporary Shed	490	0.18	0.882
TOTAL			86.039

Option-2: Families opting for Self Resettlement - The eligible displaced families shall submit their consent for self relocation elsewhere, through an irrevocable affidavit on or before the cut off date as mentioned by the NTPC.

- a) **Assistance for Self Relocation:** A displaced family, who chooses by providing consent through an affidavit for self relocation elsewhere, other than R&R Colony, shall be given cash grant of Rs.75,000/- in lieu of house plot/homestead land.
- b) **Building Assistance:** A displaced family who chooses by providing consent through an affidavit for self relocation elsewhere, other than R&R Colony, shall receive House Building Assistance @ 60% of the construction cost assessed for the house constructed by NTPC in the rehabilitation habitat at Kalamegha or house building assistance provided in the R&R policy 2006, as on that date, i.e Rs.6.60 Lakhs or whichever being higher.
- c) **Assistance in lieu of Temporary Shed:** For families who are dismantling their house/other structures in the village, handing over possession to Govt/NTPC and evacuating the village, in lieu of assistance for temporary shed, NTPC shall pay to the person, House rent assistance @ Rs.1000/- per month from the day of physical evacuation for a period of six (06) months.
- d) **Assistance for Transportation:** NTPC shall provide transportation allowance of Rs 3000/- or free transportation for shifting to the resettlement location or their new place of inhabitation. If a displaced person is unable to carry all the materials, such as wood etc immediately after dismantling his/her house in the village and willing to keep it in his/her plot for some time till he/she transports it to his/ her relocated area, NTPC will facilitate for watch and ward for a period of 15 days. NTPC shall not be responsible for this material after 15 days.
- e) **Maintenance Allowance:** NTPC shall provide " Maintenance Allowance" @ Rs.3000/- per month to all the displaced families on vacation of land/house for a period of one year from the date of vacation.

**Resettlement benefits for PAPs opting for self relocation – Cost Component:
Rs.4.99 Crores**

Description of Item	No of PAPs	Unit Cost (In Lakh Rs.)	Total (In Crs Rs.)
Cash in Lieu of Homestead Land	64	0.75	0.48
House Building assistance	64	6.60	4.224
Maintenance Allowance /family	64	0.36	0.23
Transportation Grant/family	64	0.03	0.019
Assistance for Temporary Shed	64	0.06	0.038
TOTAL			4.991

Provision for Encroachers: An encroacher family, who is homestead less as defined in the Orissa Prevention of Land Encroachment Act, 1972 and is in possession of the encroached land at least for a period of ten years continuously prior to the date of notification under relevant law(s) declaring intention of land acquisition will get ex gratia, equal to compensation for the similar category of homestead land, against the encroached homestead land up to a maximum of 1/10th of an acre. While determining the extent of land for such compensation the homestead land held by him/her is to be taken into account. The ex gratia will be in addition to the actual cost of structures thereon. If the encroachment is found to be objectionable, (s)he will be entitled to the cost of structure only.

Financial outlay for Encroachers: Rs.35.25 Crores

Provisions for encroachers (Land Cost has been taken as weighted average of cost of Govt land under CBA Act @ 6.705Lacs and Govt Land under LA Act @ 1.933 Lacs			
GM Land	82	15.00	1230.00
Forest Land	153	15.00	2295.00
TOTAL			35.25 Crs

Additional Compensation for Multiple Displacement: In accordance with the provisions laid down by the Orissa R&R Policy, Clause 8(iv), additional compensation amounting to 50 % of the normal compensation payable, shall be paid to each displaced family over and above the normal compensation in the form of ex-gratia. It is assumed that about 10 original families having land to the extent of 20 acres would be covered under the above mentioned provision.

Additional compensation for multiple displacement – Cost Component:			
Rs.3.75 Crores			
Description of Item	Extent of Land	Unit Cost (In Lakh Rs.)	Total (In Crs Rs.)
Additional compensation for multiple displacement @ 50% of normal compensation over & above compensation for land	50 acres	7.50	3.75

Rehabilitation Benefits

Opportunities for Employment:

NTPC shall not provide employment in its establishment directly to a person eligible for employment owing to displacement, as the mining activity shall be carried out through a Mining Developer and Operator (MDO), for the life of the Mine. For the jobs generated by MDO, PAFs would be accommodated based on their suitability and availability.

- a) **One time Cash Assistance in-lieu of employment:** NTPC shall pay double the amount prescribed in the R&R policy 2006 for different categories, as on date of disbursement, as one time cash assistance in lieu of employment to the eligible persons as applicable to different eligible categories. The categories of PAFs shall be decided and approved by the State Govt viz:

Categories as per OPRR-2006	No of PAFs	Amount (Lakh Rs.)	Total
Category I: Displaced families losing all land including homestead land	318	14.94	47.51
Category II: Displaced families losing more than 2/3rd of agricultural land and homestead land	27	8.96	2.42

Category-III: Families losing all agricultural land but not homestead land	39	5.98	2.33
Category-IV: Displaced families losing more than 1/3rd of agricultural land and homestead land	142	3.0	4.26
Category-V: Displaced families losing only homestead land but not agricultural land	215	3.0	6.45
Category-VI: Families losing agricultural land in part but not homestead land	206	3.0	6.18
SUB-TOTAL (b)			69.15 Crores

b) Monthly Financial Assistance/ Annuity: NTPC shall provide monthly financial assistance through an approved Annuity Scheme of LIC of India or similar organization (as approved by IRDA) as a social security measure to all eligible families for employment as per the Orissa R&R policy 2006, who avail one time cash assistance in lieu of employment. The features of the scheme shall be as follows:

- i) The scheme is mandatory for all families eligible for employment and receiving one time cash compensation, in order to ensure financial security on a long term.
- ii) The scheme shall be applicable for people eligible for employment in the age group of 18 years and above. The benefit shall be available for a term of 25 years or till the life of the annuitant, whichever is earlier.
- iii) The Annuity payable shall be Rs.3000/- per month (Rupees Three Thousand per month/ Rupees Thirty Six thousands annually), as per the proposal approved by IRDA.
- iv) The scheme shall come into force, six months after the date from which eligible person dismantles his/her house/ structures, hands over possession to Govt/NTPC, hands over possession of land and evacuates the village.

No of PAPs eligible for employment	Amount (In Lakh Rs.) @ Rs.3000/- per month for 25 years	Amount (Rs.)
947	9.0	8.52 Crs

The estimated financial outlay for providing Annuity for 947 PAPs for 25 years, shall be Rs.8.52 Crores approximately.

c) **Training for Self-employment:** NTPC Ltd. DLCMP, under the guidance of the District Collector, Sundargarh concerned will make adequate arrangements for development of entrepreneurship, technical and professional skills for self employment. Vocational training shall be imparted to at least one member of each displaced/other family so as to equip him/her to start his/her own small enterprise and refine his/her skills to take advantage of new job opportunities. Training on Tailoring, Tie and Dye, Applique & Patch Work, Machine Embroidery, Computer knowledge to women and Mobile repairing, Masonary, Plumbing, Electrician, Computer knowledge, Driving etc for men, are being imparted/ planned to be imparted. For those engaged in traditional occupations/ handicrafts/ handlooms, suitable training shall be organized at the cost of project authority to upgrade their existing skills. Training on food processing, mushroom cultivation, computer courses, poultry farming, dairy farming, sewing etc could open new avenues for self employment in the region.

The NTPC shall invite applications from trainees among affected families for training on various courses. Applicants would be required to submit their applications along with certificate of land acquired from the appropriate authority, income certificates, educational qualifications and caste certificates etc. The scheme is a welfare scheme for the PAFs and would in no way confer any right on the PAF's for financial assistance. In case, provision of all infrastructural facilities are not available for conducting the training courses, concerned State Govt department, shall be consulted to facilitate training to the applicants. Necessary expertise/ Resource persons required for the training program shall be drawn from professional agencies/ State Govt departments. All expenditures amounting to the same, arising therein, shall be borne by the user agency.

d) **Merit Scholarship Scheme:** To improve and encourage the literacy and educational standards in the project area and to create a pool of potential candidates, NTPC shall introduce a Merit Scholarship scheme for the wards of the Project affected families. If the wards from the affected families are not eligible/available, the same would be extended to the wards in the vicinity villages. The scholarship so decided, shall be applicable for the duration of the course. Applicants would be required to submit their applications along with certificate of land acquired from the appropriate authority, income certificates, educational qualifications and caste certificates etc. The requiring body would reserve the right to increase/decrease the number of beneficiaries or change the no of beneficiaries in different disciplines, depending on the availability of the students etc.

Currently, scholarship is being extended to candidates of wards from affected villages, undergoing technical course in various colleges. The amount of scholarship changes depending

upon the course, Rs.1000/- per month for ITI, Rs.1200/- per month for Diploma and Rs.1500/- per month for Engineering.

Apart from this, it is being planned to set up a Polytechnic at Zinc colony, jointly with Dartipalli STPP, for the youths, for imparting Diploma in Engineering, wherein training courses shall be provided on specific industry based traits.

e) Shops and Service units:

(a) Shops and Service Units: NTPC Ltd shall also construct shops and service units at feasible locations at their own cost, which will be allotted in consultation with Collector to project displaced families opting for self employment. While allotting such units, preference will be given to physically challenged persons and members of displaced SC & ST families.

f) Proposed Rehabilitation Colony

1. The Rehabilitation and Resettlement colony has been proposed to be established in Kalamegha village.
2. Specific care has been taken to minimise the land requirement for the R&R colony, to ensure that there is no displacement arising out of acquisition of the land.
3. All displaced families having opted for resettling in the R&R colony shall be allotted land with houses in the colony.

g) Salient features of the R&R Colony

NTPC shall design and plan the resettlement villages at Kalamegha, Hemgir Tehsil and shall construct individual houses. The Rehabilitation habitat shall have all the basic amenities and facilities like Road, Drainage, Electricity, Drinking water, School, Anganwadi, Community center, Religious place of worship, Cremation ground, Market place, Shopping center, Primary health center, Veterinary clinic, Village Pond, Bus Stand, Panchayat Ghar, Park, Grazing Ground etc, for the resettlement of the displaced families of the project.

Each family shall be provided with a house of size @ 1000 sq ft super built area, including cowshed and staircase, constructed over the homestead land allotted to all displaced families who shall opt for resettlement in R&R Colony. Record of Rights of the land and houses allotted

to the displaced persons shall be handed over to the residing families by the District Administration while resettling them in the Resettlement habitat.

ESTIMATED COST OF R&R COLONY & INFRASTRUCTURE FACILITIES: Rs.75.01 Crs

SL NO	Activity	Total Est. Value (Lakhs Rs.)
1	Houses for PAFs (490 Nos) Built up area for house= 93.02 Sq.mts including Cowshed and Staircase	5390.02
2	Other Misc Building a) Primary School b) Anganwadi c) Community center d) Tribal Center e) Primary Health Center f) Veterinary Clinic g) Panchayat Ghar h) Shopping Center	568.75
3	Other Infrastructure a) Worship Places b) Play Grounds c) Park d) Community Pond e) Pasture Land f) Burial/Cremation Ground	154.93
4	Bulk Services a) Road / Drains / Bridges and Culverts b) Boundary & gate complex c) Water supply d) Sewerage system (Sewage Disposal System Network and Sewage Treatment Plan) e) External electrification	1387.00
SUB-TOTAL		7501.00

h) **Special benefits to displaced indigenous families and primitive tribal groups :**

As per the OPRR-2006, Clause- 13, special provisions have been kept for indigenous families and primitive tribal groups as mentioned below.

- While developing the resettlement plans, the socio-cultural norms of indigenous and primitive tribal groups have been kept in mind.
- All attempts are being made to resettle the indigenous communities in a compact area close to their natural habitat.
- A programme for development of alternate fuel, fodder and non-timber forest produce (NTFP) resources on non- forest lands within a period of five years sufficient to meet requirements of tribal communities

13. Planning and Implementation of R&R Plan

In order to encourage participation of displaced people and their elected representatives in implementation and monitoring of R & R package, to oversee and monitor periphery development, a Rehabilitation-cum-Periphery Development Advisory Committee (RPDAC) for the project has been formed (As per OPRR-2006, Clause-17). This committee under the chairmanship of the Revenue Divisional Commissioner, includes people's representatives, one or two leading NGOs of the affected area and select Government officers.

(a) State Level Council on Resettlement and Rehabilitation (SLCRR) :

At the State level, there will be a Council headed by the Chief Minister to advise, review and monitor implementation of Resettlement and Rehabilitation Policy. The Council may comprise of Ministers, select representatives of the people, leading social activists, academicians and experts of national and international repute and senior officials of the Government.

(b) LA and R & R Structure:

(a) State Level:

A Directorate of R & R will be constituted to discharge and oversee the implementation of the R&R Policy. Detailed structure and functions of this Directorate will be notified by the Government

(b) District / Project Level:

Depending on magnitude of the RR works at the project level, there may be a Project Director, Resettlement and Rehabilitation (PD-RR), who shall be assisted by such other officers as Government may decide. The PD-RR shall be the Chief Coordinating Officer between all the line departments in the matter of resettlement and rehabilitation. He will be responsible for implementation of the Policy and timely execution of R & R works under the over all supervision and guidance of the Collector and the Directorate of R&R. (ii) Where R & R work is of lesser magnitude, the same can be undertaken by the LAO of the Collectorate.

(c) Budgetary Provision and Allotment:

Wherever required, adequate budget provision will be kept towards land acquisition and R & R establishments to ensure effective implementation of R & R Policy. The Directorate of R&R would submit such budgetary estimate/ works by 1st January of every year. Government will ensure timely release of allotment to the concerned authorities.

(d) Grievance Redressal Mechanism:

An effective Grievance Redressal Mechanism will be set up at District and Directorate level to deal with grievance of the project displaced people relating to land acquisition, resettlement and rehabilitation. Besides, all the project authorities shall be asked to set up an effective Grievance Redressal Mechanism relating to their project. Effective participation of the displaced communities will be ensured in the process.

14. Initial Community Development and Corporate Social responsibility activities

The Community Development projects of NTPC are aimed at communities of the targeted villages, the endeavour being to improve the quality of life of the people. In order to make a long term impact, the concentration would be on providing access to basic amenities on water, sanitation, roads, health, education and relevant infrastructure.

In this regard, under the chairmanship of the Collector and District Magistrate, a Periphery Development Society, has been formed with members comprising of several govt departments and other people representatives. The funds for community development would be deposited with the Committee in the ratio of 70, 30, 20 for the project affected villages and periphery, Block level and District level respectively. A total of Rs. 30 crores (Rupees thirty Crores) is planned to be earmarked for a period of 5 years till 2016-2017.

As part of the company's commitment towards Corporate Social Responsibility, community development activities have been taken up across 5 major verticals of Education, Health, Training/Empowerment, Infrastructure Upgradation, few of which are mentioned as follows:

- Distribution of dresses to Anganwadi children
- Distribution of School Bags to children
- Distribution of Drum Set, Jersey set to schools
- Distribution of Cooking Kits to Anganwadis
- Sweaters to School and Anganwadi children
- Study kits to School students and Anganwadi kits to Anganwadi children
- Distribution of Cricket and Football kits to village clubs
- Providing Aquaguard to Govt office at block and district level
- Distribution of Durees to Anganwadis and village clubs
- Installation of Solar Street Lights in villages and govt offices
- Distribution of Solar Lanterns to meritorious students
- Distribution of Blankets and Mosquito nets to villages
- Providing assistance to education
- Organising competitions in schools
- Sponsoring Science Exhibition
- Sponsoring major sports events in the locality
- Cleaning and Deeping of village Ponds
- Organizing village Sanitation work
- Constructing temporary check dams across Nalas
- Providing Visiting Chair sets to Govt offices
- Renovation of Jagannath temple at Sundargarh
- Renovation of Cultural complex at Sundargarh
- Conducting regular Health check up camps in villages and free distribution of medicines
- Providing Water purifiers and Almirahs in Gram Panchayat offices


- Organizing Cataract operation camps
- Providing Musical instruments to cultural groups in villages
- Providing school infrastructure in schools
- Barbed wire fencing in schools
- Repair work and Whitewashing in schools
- Construction of Bridge at Kalamegha village
- Strengthening of Roads
- De-silting of Ponds
- Providing Culverts and Causeways
- Construction of Community halls/ Club houses
- Providing Drinking Water through Bore wells & Overhead tanks
- Sponsoring cultural celebrations in villages
- Providing training on Tailoring, Tie & Dye to women
- Driving Training to Men
- Computer Education training to villagers
- Summer Camps to promote extra- curricular abilities in children

Efforts are on to provide vocational training to at least one member of each displaced/other family so as to equip him/her to start his/her own small enterprise and refine his/her skills to take advantage of new job opportunities. For those engaged in traditional occupations/ handicrafts/ handlooms, suitable training shall be organized at the cost of project authority to upgrade their existing skills. As per need assessment survey conducted by the project with active participation from various govt departments, namely District Industries Commission, Women and Child welfare, etc, several areas for training have been identified, both individual and group based.

15. TOTAL PROPOSED FINANCIAL OUTLAY FOR R&R PLAN:

Resettlement Package:	Rs. 91.03 Crores
Provision for Encroachers:	Rs. 35.25 Crores
Provision for Multiple Displacement:	Rs. 3.75 Crores
Rehabilitation package:	Rs. 77.67 Crores
Community development:	Rs. 30.00 Crores
TOTAL	Rs.237.70 Crores


 सी.आर. बारिक / C.R. BARIK
 अपर महाप्रबन्धक-प्रभारी
 Addl. General Manager / IC
 एनटीपीसी लिमिटेड / NTPC Limited
 दुर्गा बॉल स्टीलिंग प्रोजेक्ट
 Dulanga Coal Mining Project


 LAND ACQUISITION OFFICER
 HEMGIR


 COLLECTOR, SUNDARGAPATI

Medical camp



ICD GALLERY (HEALTH)

Free Medical check up & Cataract Operation



ICD GALLERY (CAPACITY BUILDING)

Tailoring training at SEAM



ICD GALLERY (CAPACITY BUILDING)

Tailoring training for Women



Tie and Dye Training to project affected villages



ICD GALLEKY (CAPACITY BUILDING)

DRIVING TRAINING



ICD GALLERY (EDUCATION)

Study kit & School Dress distribution



Construction of check dam



Cooking Kit & solar lantern



ICD gallery (Need based)

Solar street light distribution and sponsorship in science exhibition



Cricket Kit distribution at Majhapada



Cricket Kit distribution at Beldihi



Mosquito net distribution and sponsorship for cricket tournament



Distribution of School infrastructures and Lantern to Students



ALL FREE NO - 18003456722
ବିଦ୍ୟାଳୟ ଓ ଗଣଶିକ୍ଷା ବିଭାଗ ଦ୍ୱାରା ଆବଣ୍ଟିତ
ଗୋପବନ୍ଧୁ ଚଷମା

At Old-age Home, Ravandihi



Art and Music Training



Veterinary Training



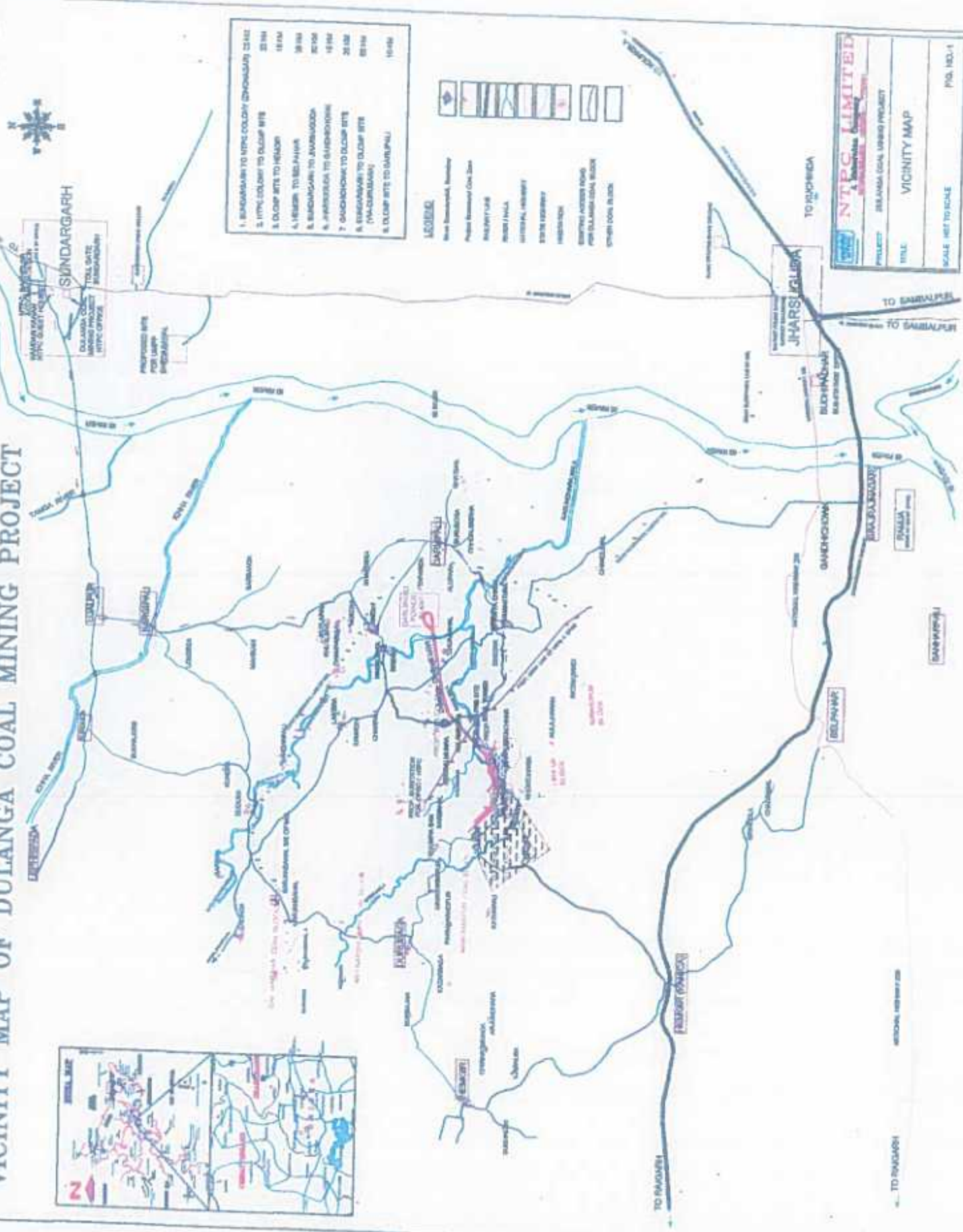
30.05.2013

ICD gallery (Need based)

Mobile Repairing Training



VICINITY MAP OF DULANGA COAL MINING PROJECT



1. SUNDARGARH TO NTPC COLLIERY (ZONAL) 12.812	23.714
2. NTPC COLLIERY TO DULANGA SITE	18.714
3. DULANGA SITE TO JHARSUGUDA	18.714
4. JHARSUGUDA TO RAJAHMUNDRY	27.705
5. RAJAHMUNDRY TO GANDHIDHAM	18.714
6. GANDHIDHAM TO DULANGA SITE	25.002
7. SUNDARGARH TO DULANGA SITE (VIA-DUMKAMARI)	55.714
8. DULANGA SITE TO RAJAHMUNDRY	18.714

LEGEND

- State Boundary, Boundary
- Project Boundary, Old Dam
- RAILWAY LINE
- ROAD PAVEMENT
- UNPAVED ROAD
- STATE BOUNDARY
- INDUSTRIAL AREA
- SETTLED AREA (NONG) FOR DULANGA COAL BLOCK
- OPEN COAL BLOCK

NTPC LIMITED
A Subsidiary of National Thermal Power Corporation

PROJECT: DULANGA COAL MINING PROJECT

TITLE: VICINITY MAP

SCALE: NET TO SCALE

PAGE NO. 1

SECTION: 18/20/18/2/28

TO RAJAHMUNDRY

TO RAJAHMUNDRY

Use of PPEs in Mines



(FORM - O)
 (See rule 29F (2) and 22L)
 Report of medical examination under rule 29B
 (To be issued in triplicate)**

795

Certificate No... 784...
 Certified that Shri/Shrimati Benukhar Kachari *employed as Working Trainee In
mine, Form B No... 725..... has been
 examined for an initial/periodical medical examination. He/she* appears to be... 22....
 years of age. The findings of the the examining authority are given in the attached sheet. It is
 considered that Shri/Shrimati*... Benukhar Kachari.....

(a)* is medically fit for any employment in mines.

(b)* is suffering from.....And is medically unfit for

- (i) any employment in mine; or
 (ii) any employment below ground; or
 (iii) any employment or work.....

©* is suffering from..... should get this disability* cured/controlled and
 should be again examined within a period ofmonths. He/She will appear for
 re-examination with the result of test of..... and the opinion
 of.....Specialist from..... He/She may be permitted/not*
 permitted to carry on his duties during this period.



Dr. HARISH CHANDRA BAGH
 Medical Officer
 Junior Class (I)

Signature of the examining authority

Name and designation in Block letters

Place :

Date : 20.3.20

* Delete whatever is not applicable.

** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent to the manager of the mine concerned by registered post; and the third copy shall be retained by the examining authority.

1 Inserted vide Notification No. GSR 656, dated 5.6.1980

Report of the examining authority

(to be filled in for every medical examination whether initial or periodical or re-examination or after cure/control of disability). Annexure to Certificate No. 780 as a result of medical examination on 20.03.2020
Identification Mark Blank white letter

Left thumb impression of The candidate

1. General development- Good / Fair / Poor

2. Height 1.67 Cms.

3. Weight 67 kg

4. Eyes :

(i) Visual acuity-Distant vision (with or without glasses)

Right eye 6/6 Left eye 6/6

(ii) Any organic disease of eyes

(iii) Night blindness

(iv) Colour blindness

(v) Squint

(* to be tested in special cases)

5. Ears :

(i) Hearing : right ear 6000m Left ear 6000m

(ii) Any organic diseases. NO

6. Respiratory system.

Chest measurement :

(i) After full inspiration 86 cms.

(ii) After full expiration 84 cms.

7. Circulatory system:

Blood Pressure 110/70 mmHg

Pulse 72

8. Abdomen :

Tenderness. NO

Liver. Normal

Spleen. Normal

Tumour. NO

7. Nervous system:

History of fits or epilepsy NO

Paralysis. NO

Mental health. Good NAD

10. Locomotory system NAD

11. Skin. Normal

12. Hydrocele. NO

13. Hernia. NO

14. Any other abnormality NO

15. Urine :

Reaction. Acidic

Albumin. (+)

Sugar. About

16. Skiagram of chest. NAD

17. Any other test considered necessary by the examining authority. NO

18. Any opinion of specialist considered necessary. NO

19. ECG: Normal

20. Liver function test: Normal

21. Spirometry: Normal

Place:

Group/Regd: B Fee

[Signature]
Junior Class II

Signature of the examining authority

FORM - C
 (See rule 24F (c) and 25L)
 Report of medical examination under rule 24B
 (To be issued in duplicate)**

Certificate No. 72
 Certified that Abdul Bari employed as Grader operator in
 _____ mine, Form B No. _____ is
 examined for an initial/periodical medical examination. He/She* appears to be 30
 years of age. The findings of the examining authority are given in the attached sheet which is
 considered that Abdul Bari

(1)* is medically fit for any employment in mines.

(2)* is suffering from _____ and is medically unfit for

- (i) any employment in mines or
- (ii) any employment below ground or
- (iii) any employment or work _____

(3)* is suffering from _____ should get this disability* cured/controlled and
 should be again examined within a period of _____ months. He/She will appear for
 re-examination with the result of fit or _____ and the opinion
 of _____ Specialist/Dr. _____ He/She may be permissively
 permitted to carry on his duties during this period.

Space for affixing
 Passport Size
 Photograph of the
 Candidate.

[Signature]

 Name and designation in block letters

Place: Abdul Bari
 Date: 07.12.21

Verified
[Signature]

* Delete whatever is not applicable.
 ** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent
 to the manager of the mine concerned by registered post; and the third copy shall be retained by the
 examining authority.
 † Inserted vide Notification No. GSR 656, dated 5.6.1980

Report of the examining authority

(to be filled in for every medical examination whether initial or periodical or re-examination or after cure/control of disability). Annexure to Certificate No. 76/2023
Identification Mark..... 02.12.21.....
Left thumb impression of The candidate

- 1. General development- Good / Fair / Poor
- 2. Height..... 167..... Cms.
- 3. Weight..... 63..... kg.
- 4 Eyes: (N)
- (i) Visual acuity-Distant vision (with or without glasses).
Right eye..... 6/6..... Left eye..... 6/6.....

- (ii) Any organic disease of eyes
- (iii) Night blindness
- (iv) Colour blindness / NO
- (v) Squint
- (* to be tested in special cases)

- 5. Ears: (N)
- (i) Hearing : right ear..... 6/10..... Left ear..... 6/10.....
- (ii) Any organic diseases. NO

- 6. Respiratory system.
- Chest measurement: (N)
- (i) After full inspiration..... 96..... cms.
- (ii) After full expiration..... 92..... cms.

7. Circulatory system: (N)
Blood Pressure 130/90 mmHg
Pulse 65 13 per min

- 8. Abdomen: (N)
- Tenderness.
- Liver.
- Spleen. / Normal
- Tumour. NO
- 9. Nervous system: (N)
- History of fits or epilepsy NO
- Paralysis. NO
- Mental health. Normal

- 10. Locomotory system. Normal
- 11. Skin. Normal
- 12. Hydrocele. NO
- 13. Hernia. NO
- 14. Any other abnormality NO

- 15. Urine:
- Reaction. Acidic
- Albumin. (A)
- Sugar. Absent

- 16. Skiagram of chest. Normal
- 17. Any other test considered necessary by the examining authority.
- 18. Any opinion of specialist considered necessary.

- 19. ECG: Normal
- 20. Liver function test: Normal
- 21. Spirometry: Normal

Place:

Group signature: B + VE

[Handwritten Signature]
21/12/21

Medical Officer
NTS
Signatory of the Candidate Project
Sundargarh

FORM - 01
(See rule 29F(2) and 221.)
Report of medical examination under rule 29F
(To be issued in triplicate)**

Certificate No. 988 Abhinash Duan
Certified that Shri/Shrimati *employed as Deputy OPI In
..... mine, Form B No. 2092..... has been
examined for an initial/periodical medical examination. He/she* appears to be 25.....
years of age. The findings of the the examining authority are given in the attached sheet. It is
considered that Shri/Shrimati* Abhinash Duan.....

(a)* is medically fit for any employment in mines.

(b)* is suffering from..... And is medically unfit for

- (i) any employment in mine; or
- (ii) any employment below ground; or
- (iii) any employment or work.....

(c)* is suffering from..... should get this disability* cured/controlled and
should be again examined within a period of months. He/She will appear for
re-examination with the result of test of..... and the opinion
of..... Specialist from..... He/She may be permitted/not*
permitted to carry on his duties during this period.

Space for affixing
Passport Size
Photograph of the
Candidate.


Signature of the examining authority
.....
Name and designation in Block letters

Place: Kalamegha Dispensary
Date: 23.11.20

* Delete whichever is not applicable.

** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent to the manager of the mine concerned by registered post; and the third copy shall be retained by the examining authority.

(FORM - O)
(See rule 29F (2) and 22L)
Report of medical examination under rule 29B
(To be issued in triplicate)**

714

Certificate No. 720... Chaitanya Deep (Chaitanya Deep)

Certified that Shri/Shrimati *employed as..... In

.....mine, Form B No..... has been

examined for an initial/periodical medical examination. He/she* appears to be... 22... years of age. The findings of the the examining authority are given in the attached sheet. It is

considered that Shri/Shrimati*... Chaitanya Deep.....

(a)* is medically fit for any employment in mines.

(b)* is suffering from.....And is medically unfit for

(i) any employment in mine; or

(ii) any employment below ground; or

(iii) any employment or work.....

* is suffering from..... should get this disability* cured/controlled and

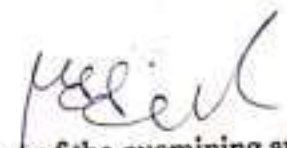
should be again examined within a period ofmonths. He/She will appear for

re-examination with the result of test of..... and the opinion

of.....Specialist from..... He/She may be permitted/not*

permitted to carry on his duties during this period.

Space for affixing
Passport Size
Photograph of the
Candidate.


Signature of the examining authority
Dr. U. S. Jaiswal

Reg. No. 1116
Name and Designation in Block letters

Place: Kalamegha Dispensary

Date: 27/11/2020

* Delete whatever is not applicable.

** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent to the manager of the mine concerned by registered post; and the third copy shall be retained by the examining authority.

I Inserted vide Notification No. GSR 656, dated 5.6.1980

(FORM O - Cont.)

Report of the examining authority

(to be filled in for every medical examination whether initial or periodical or re-examination or after cure/control of disability). Annexure to Certificate No.....722...as a result of medical examination on...27/11/2020... Identification Mark...by... Left thumb impression of The candidate

1. General development- Good / Fair / Poor

2. Height.....1.62.....Cms.

3. Weight.....61.....kg.

4 Eyes :

(i) Visual acuity-Distant vision (with or without glasses).
Right eye.....6/6.....Left eye.....6/6.....

(ii) Any organic disease of eyes

(iii) Night blindness

(iv) Colour blindness

(v) Squint

(* to be tested in special cases)

5. Ears :

(i) Hearing - right ear.....6.0..... Left ear.....6.0.....

(ii) Any organic diseases. NO

6. Respiratory system.

Chest measurement
(i) After full inspiration97.....cms.

(ii) After full expiration.....94.....cms.

7. Circulatory system:

Blood Pressure 130/90 mm Hg

Pulse 72 P.M

8. Abdomen :

Tenderness. NO

Liver.

Spleen.

Tumour.

7. Nervous system:

History of fits or epilepsy NO

Paralysis. NO

Mental health. Normal

10. Locomotory system. NAD

11. Skin. Normal

12. Hydrocele. NO

13. Hernia. NO

14. Any other abnormality NO

15. Urine :

Reaction. Acidic

Albumin. (+)

Sugar. Absent

16. Skiagram of chest. NAD

17. Any other test considered necessary by the examining authority. NO

18. Any opinion of specialist considered necessary. NO

19. ECG: Normal

20. Liver function test: Normal

21. Spirometry: Normal

22. Lipid-profile - Normal

Place: Kalamnagar Dispensary

27-27/1/2020

Groupis Rhty :- B five

Signature of the examining authority
Reg No. - 1116

252

(FORM - O)
(See rule 29F (2) and 22L)
Report of medical examination under rule 29B
(To be issued in triplicate)**

Certificate No. 336... Kusha Rohidas
Certified that Shri/Shrimati *employed as..... In
.....mine, Form B No..... has been
examined for an initial/periodical medical examination. He/she* appears to be...23...
years of age. The findings of the the examining authority are given in the attached sheet. It is
considered that Shri/Shrimati*...Kusha Rohidas.

- (a)* is medically fit for any employment in mines.
(b)* is suffering from.....And is medically unfit for
(i) any employment in mine; or
(ii) any employment below ground; or
(iii) any employment or work.....

* is suffering from..... should get this disability* cured/controlled and
should be again examined within a period ofmonths. He/She will appear for
re-examination with the result of test of..... and the opinion
of.....Specialist from..... He/She may be permitted/not*
permitted to carry on his duties during this period.



Dr. BIPLAV KESHARI NAIK
Signature of the examining authority
SMASL

Name and designation in Block letters

Place: Kalamgha Dispensary.
Date: 07.02.19

* Delete whatever is not applicable.
** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent
to the manager of the mine concerned by registered post; and the third copy shall be retained by the
examining authority,
I Inserted vide Notification No. GSR 656, dated 5.6.1980

(FORM O-Cont.)

Report of the examining authority

(to be filled in for every medical examination whether initial or periodical or reexamination or after control of disability) Annexure to certificate No. 336 as a result of medical examination on 07.2.19

Identification Mark. Black mole on neck.

Left thumb impression of the candidate

1. General development- Good/Fair/Poor

2. Height 160 Cms.

3. Weight 51.8 kg.

4. Eyes:

(i) Visual acuity-Distance vision (with or without glasses)

Right eye 6/6 (N) Left eye 6/6 (N)

(ii) Any organic disease of eyes

(iii) Night blindness

(iv) Color blindness

(v) Squint

(* to be tested in special cases)

} NO

5. Ears:

(i) Hearing: right ear 6000 Hz Left ear 6000 Hz

(ii) Any organic diseases. NO

6. Respiratory system:

Chest measurement:

(i) After full inspiration 88 cms.

(ii) After full expiration 83 cms.

7. Circulatory system:

Blood Pressure 120/80 mmHg

Pulse 73 bpm

8. Abdomen

Tenderness

Liver

Spleen

Tumor

} Normal

NO

Group Rhz: O' fine

9. Nervous system:

History of fits or epilepsy NO

Paralysis NO

Mental health. Normal

10. Locomotory system. Normal

11. Skin. Normal

12. Hydrocele NO

13. Hernia NO

14. Any other abnormality NO

15. Urine:

Reaction. Acidic

Albumin. Nil

Sugar. Nil

16. Skiagram of chest.

17. Any other test considered necessary by the examining authority. NO

18. Any opinion of specialist considered necessary. Consult cardiologist

19. ECG: Abnormal

20. Liver function test: Normal

21. Spirometry: Normal

Place: Kalamegha Dispensary

Dr. BIPLAV KESHARI NAIK
Signature of the examining authority
SMASL

(FORM-O)

(See rule 29 F(2) and 22L)

Report of medical examination under rule 29B

(To be issued in triplicate)**

Certificate No. 1462

Certified that Shri/Shrimati M.D. Sabanukh employed asin

.....Mine, Form B No.has been examined
For an Initial/Periodical Medical examination. He/she* appears to be 24 Years of age. The Findings of the
the Examining Authority Are given in The attached sheet. It is Considered That
Shri/Shrimati* M.D. Sabanukh

(A)* is medically fit for any employment in mines.

(b)* is suffering from And is medically unfit for

- (I) Any Employment in Mine; or
- (II) Any Employment below ground; or
- (III) Any Employment or Work.....

(c)* is suffering From should get this disability* cured/controlled and should be again
examined Within a period of month. He/She Will appear For re Examination With the result of test
of and the opinion of Specialist from He/she may
be permitted/not* permitted to carry on his duties during this period.



[Signature]
Signature of the Examining authority

Dr. SRUTI SOURAV MOHAPATRA
MEDICAL OFFICER
Name and designation in block letters
Regd.No.26569/2021

Place: First Aid centre

Date: 28.3.22

*Delete whatever is not applicable

**One copy of the certificate shall be handed over to the person concerned and another copy shall be sent to the manager of the mine concerned by registered post; and the third copy shall be retained by The Examining authority.

Inserted vide Notification no GSR656, dated 5.6.1980

Report of the Examining authority

(To be filled in for every medical examination whether initial or periodical or re-examination, or after cure/control of disability). Annexure to certificate No. 1142
A result of medical examination on 28.2.22
Identification Mark Place male and Hand

Left thumb impression of the candidate

1. General development Good/fair/poor
2. Height 163 cm.
3. Weight 79 kg.
4. Eyes
(i) Visual acuity-Distant Vision (with or without glasses)
Right eye 6/6 left eye 6/6
(ii) organic diseases
(iii) Night blindness NO
(iv) Colour blindness
(v) Squint
(*to be tested in special cases)
5. Ears
(i) Hearing: right ear 6000m left ear 6000m
(ii) Any organic diseases
6. Respiratory system:
Chest measurements:
(i) After full inspiration 115 cm.
(ii) After full expiration 110 cm.
7. Circulatory system:
Blood pressure 120/80 mmHg
Pulse 76
8. Abdomen:
Tenderness Normal
Liver
Spleen
Tumour.
9. Nervous system: NO
History of fits or epilepsy. NO
Paralysis. NO
Mental health Good
10. Locomotory system NO
11. skin Normal
12. Hydrocele NO
13. Hernia NO
14. Any other abnormality NO
15. Urine:
Reaction Acidic
Albumin. present
Sugar. Trace
16. X-Ray.P & (PA)
17. Any other test considered necessary by examining authority.
18. Any opinion of specialist considered necessary.
19. ECG: Normal
20. Liver function tests
21. Spirometry
22. Lipid profile tests (Normal)
23. Renal Function tests

Grouped Rhty: O +ve

Place: Heart Aid Centre

Signature of the examining authority

[Signature]
Medical Officer
NTPC/SMASL Dispensary
Julanga Coal Mining Project
Sundargarh

507

(FORM - O)
(See rule 29F (2) and 22L)
Report of medical examination under rule 29B
(To be issued in triplicate)**

Certificate No. 492
Certified that Shri/Umesh Singh employed as Dumper Operator In
mine, Form B No. 507 has been
examined for an initial/periodical medical examination. He/she appears to be 32
years of age. The findings of the the examining authority are given in the attached sheet. It is
considered that Shri/Umesh Singh

- (a)* is medically fit for any employment in mines.
(b)* is suffering from.....And is medically unfit for
(i) any employment in mine; or
(ii) any employment below ground; or
(iii) any employment or work.....

©* is suffering from..... should get this disability* cured/controlled and
should be again examined within a period ofmonths. He/She will appear for
re-examination, with the result of test of..... and the opinion
of.....Specialist from..... He/She may be permitted/not*
permitted to carry on his duties during this period.



Signature of the examining authority
S. M. K. NAD
Name and designation-in Block letters

Place: Kalamegha Dispensary
Date: 17-10-19

* Delete whatever is not applicable.
** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent
to the manager of the mine concerned by registered post; and the third copy shall be retained by the
examining authority.
† Inserted vide Notification No. GSR 656, dated 5.6.1980

(FORM O-Cont.)

Report of the examining authority

(to be filled in for every medical examination whether initial or periodic) or reexamination or after /control of disability) Annexure to certificate No. 492 as a result of medical examination on 17.11.19 Identification Mark. black mole on cheek.

Left thumb impression of the candidate

1. General development: Good/Fair/Poor
2. Height: 164 Cms.
3. Weight: 64kg.
4. Eyes: 6/4
 - (i) Visual acuity-Distance vision (with or without glasses)
 - Right eye.....6/4..... Left eye.....6/6.....
 - (ii) Any organic disease of eyes
 - (iii) Night blindness
 - (iv) Color blindness
 - (v) Squint
 - (* to be tested in special cases)
5. Ears: (u)
 - (i) Hearing: right ear.....6.50..... Left ear.....6.50.....
 - (ii) Any organic diseases. NO
6. Respiratory system:
 - Chest measurement: (u)
 - (i) After full inspiration ... 92 cms.
 - (ii) After full expiration ... 90 cms.
7. Circulatory system:
 - Blood Pressure 130/90 mmHg
 - Pulse 74/min.
8. Abdomen:
 - Tenderness:
 - Liver: Normal
 - Spleen: NO
 - Tumor: NO
9. Nervous system: (u)
 - History of fits or epilepsy. NO
 - Paralysis. NO
 - Mental health. normal
10. Locomotory system: (u)
11. Skin: normal
12. Hydrocele: NO
13. Hernia: NO
14. Any other abnormality: NO
15. Urine:
 - Reaction: Acidic
 - Albumin: trace
 - Sugar: absent
16. Skiagram of chest. (u)
17. Any other test considered necessary by the examining authority. NO
18. Any opinion of specialist considered necessary. NO
19. ECG: normal
20. Liver function test: (u)
21. Spirometry: mild restriction

Group: B. Fee

Place: Kalamogha Dispensary

Dr. BIPLAV KESHARI NAIK
Signature of the examining authority
SMASL

461

(FORM - O)
(See rule 29F (2) and 22L)
Report of medical examination under rule 29B
(To be issued in triplicate)**

Certificate No. 470
Certified that Shri/Shrimati Vinay Kumar *employed as In
..... mine, Form B. No. has been
examined for an initial/periodical medical examination. He/she* appears to be 27
years of age. The findings of the the examining authority are given in the attached sheet. It is
considered that Shri/Shrimati* Vinay Kumar

- (a)* is medically fit for any employment in mines. yes
(b)* is suffering from And is medically unfit for
(i) any employment in mine; or
(ii) any employment below ground; or
(iii) any employment or work.....

C* is suffering from should get this disability* cured/controlled and
should be again examined within a period of months. He/She will appear for
re-examination with the result of test of and the opinion
of Specialist from He/She may be permitted/not*
permitted to carry on his duties during this period.



Dr. BIPLAV KESHARI NAIK
(M.B.B.S.)
S.M.A.S.I.
Signature of the examining authority

.....
Name and designation in Block letters

Place: Kalamnagha Dispensary
Date: 28.8.19

* Delete whatever is not applicable.
** One copy of the certificate shall be handed over to the person concerned and another copy shall be sent
to the manager of the mine concerned by registered post, and the third copy shall be retained by the
examining authority.
† Inserted vide Notification No. GSR 656, dated 5.6.1980

(FORM O-Cont.)

Report of the examining authority

(to be filled in for every medical examination whether initial or periodical or reexamination or after /control of disability) Annexure to certificate No. 470 as a result of medical examination on Date 28/08/19
Identification Mark place mole at side below nose

Left thumb impression of the candidate

- 1. General development- Good/Fair/Poor
- 2. Height..... 170 Cms.
- 3. Weight..... 70 kg.
- 4. Eyes:
 - (i) Visual acuity Distance vision (with or without glasses)
Right eye..... 6/6 Left eye..... 6/6
 - (ii) Any organic disease of eyes
 - (iii) Night blindness
 - (iv) Color blindness
 - (v) Squint
 - (* to be tested in special cases)
- 5. Ears:
 - (i) Hearing: right ear..... 6000m Left ear..... 6000m
 - (ii) Any organic diseases. NO
- 6. Respiratory system:
 - Chest measurement:
 - (i) After full inspiration 97 cms.
 - (ii) After full expiration 92 cms.
- 7. Circulatory system:
 - Blood Pressure 120/80 mmHg
 - Pulse 72 BPM
- 8. Abdomen
 - Tenderness NO
 - Liver Normal
 - Spleen NO
 - Tumor NO
- 9. Nervous system:
 - History of fits or epilepsy NO
 - Paralysis NO
 - Mental health. Normal
- 10. Locomotory system NO
- 11. Skin. Normal
- 12. Hydrocele NO
- 13. Hernia NO
- 14. Any other abnormality NO
- 15. Urine:
 - Reaction. Acidic
 - Albumin. NO
 - Sugar NO
- 16. Skiagram of chest. NO
- 17. Any other test considered necessary by the examining authc NO
- 18. Any opinion of specialist considered necessary. NO
- 19. ECG: - Normal
- 20. Liver function test: Normal
- 21. Spirometry: Normal

Group & RHtz: B. Fine

Dr. BIPLAV KESHARI NAIK
(M.B.B.S.)
SMAS
Signature of the examining authority

Place: Kalamnagha Dnyaneshwari

SAFETY ZONE FENCING & GAP PLANTATION

Annexure - XIX



SAFETY ZONE FENCING & GAP PLANTATION



Dust Suppression Activities in CHP Operation



Dust Suppression at Receiving Hopper



Dust suppression on haul roads near CHP



Dust suppression near MGR

Use of Wet Operated Drill in Mining





Annexure - XVI
 एन टी पी सी लिमिटेड
 (भारत सरकार का उद्यम)
NTPC Limited
 (A Govt. of India Enterprise)

दुलंगा / Dulanga

Ref.: 1070/NTPC/DLCMP/CCO/12

Date: 30/06/2023

To
 The Coal Controller,
 Office of the Coal Controller,
 1, Council House Street,
 Kolkata-700001.

Sub : Submission of Annual Mine Closure Activity Report for the period 2022-23 of Dulanga Coal Mining Project of NTPC Limited, Sundargarh, Odisha

Sir,
 Please find attached herewith the Annual Mine Closure Activity Report for the period 2022-23 of Dulanga Coal Mining Project of NTPC Limited, Sundargarh, Odisha

Thanking You.

Yours Faithfully,

for

 (Krovvidi Chandrasekhar)
 General Manager

Encl: as above

Copy to: The OSD,
 Sambalpur Regional Office,
 Sambalpur, Odisha.

श्रीधर जेना / SRIDHAR JENA
 अपर महाप्रबंधक (परियोजना) / AGM (Proj.)
 दुलंगा सी.म.प. / Dulanga C.M.P.
 खापुरिकछार, सुन्दरगढ़,
 Khapurikachhar, Sundargarh
 In charge - HOP.

Dulanga Coal Mining Project, Khapurikachhar, PO – Sanghumuda, Tehsil-Hemgir, Dist- Sundargarh 770013

दुलंगा कोल माइनिंग प्रोजेक्ट, खापुरिकछार, पोस्ट - संघुमुदा, तहसील - हेमगीर, जिला - सुंदरगढ़ ७७००१३

पंजिकृत कार्यालय: एन टी पी सी भवन, स्कोप कॉम्प्लेक्स, 7 इंस्टीट्यूशनल एरिया, लोधी रोड, नई दिल्ली ११०००३

कॉर्पोरेट पहचान नंबर: L40101DL1975GOI007966, टेलीफोन नं: 011-24387333, फैक्स नं: 011-24361018, ई मेल: ntpccc@ntpc.co.in, वेबसाइट: www.ntpc.co.in

Registered Office: NTPC Bhavan, Scope Complex, 7 Institutional Area, Lodhi Road, New Delhi – 110003

Corporate Identification No: L40101DL1975GOI007966, Telephone No: 011-24387333, Fax No: 011-24361018, Email: ntpccc@ntpc.co.in, Website: www.ntpc.co.in

YEARLY REPORT OF MINE CLOSURE ACTIVITIES

1	Name of the coal/lignite mine/block	Dulanga Coal Mining Project
	a) Type: OC/UG/Mixed	Open Cast
	b) Total life of mine:	24 years of operation (additional 6 years for mine closure including filling of void)
	c) Balance life of the mine:	20 Yrs
2	Name of the Owner:	NTPC Limited (Nominated Owner: Sh. Shivam Srivastava , Director (Fuel))
3	Address of the Owner:	NTPC Limited, NTPC Bhawan, SCOPE Complex, 7 Institutional Area, Lodhi Road, New Delhi 110003
4	i. Leasehold Area of the Mine: ii. Project Area of the Mine:	i. 762.42 Ha ii. 7.62 Sq. Km.
5	Mine Closure Plan approved by.....on(date)	Ministry of Coal, Dated 14.08.2012 (along with mining plan)
6	Escrow Account number:	A/c No: 35611468943
7	Name & Address of Escrow Agent:	State Bank of India 1. Corporate Office address – State Bank Bhawan, Corporate Centre, Madam Kama Marg, Nariman Point, Mumbai 400021) 2. Branch Address – CAG Branch, New Delhi, 11th and 12th Floor, Jawahar Vyapar Bhawan, 1 Tolstoy Marg, New Delhi 110001
	Closure Cost deposited for the year 2022-23	Rs. 3,67,00,000.00 (2022-23)
9	Cumulative Balance including interest in the account:	Rs. 21,46,03,008.84 (as on 31.03.2023) Certified Statement attached as Annexure-A
10	Report being submitted for: (Progressive or Final Mine Closure)	Progressive for Dulanga Coal Mining Project of NTPC Limited for 2022-23
11	Specific condition imposed .(if any, by Government agency):	NIL
12	Reserve of Coal/Lignite(as per Mining Plan):	Mineable Reserve - 152 Million Tonnes
	Coal/Lignite actually mined out during last year (2022-23)	Coal Production in FY 2022-23 – 70,00,000 Tonne against the permitted coal production of 70,00,000 Tonne.
13	Method of Mining:	Mechanized Opencast mining with Shovel Dumper combination and Surface Miner
14	Area Mined out (Ha): (Till March'22)	Mining Operations started from 28th February, 2018. Approximately 150 Ha is broken for coal excavation as on 31.03.2023.
15	Area reclaimed:	i) Physical – During 2022-23, 14,74,700 m3 of Solid waste has been dumped in the void created after mining.

YEARLY REPORT OF MINE CLOSURE **ACTIVITIES**

		ii) Biological – After attaining final height of physical reclamation, this will be taken up.
16	Details of afforestation:	The project has undertaken plantation activities from initial stage. During 2022-23, Total 10,147 no of sapling has been carried out during monsoon period. Cumulatively, about 42,500 Nos of saplings have been planted/ distributed in and around the ML area. (Photographs of Plantation Activities in different region has been attached in Annexure-I).
17	Water Quality Management	
	a) Water bodies available in leasehold area:	Garia Nalla and its tributaries flow within the block boundary, which are seasonal in nature. The diversion of Garia Nallah is in progress as per the diversion plan approved by Water Resources Department, Govt. of Odisha (Copy attached as Annexure-II).
	b) Measures taken for protection: (Control of erosion, sedimentation, siltation, water treatment, diversion of water courses if any, measure for protection of contamination of groundwater from leaching etc shall be described)	Measures taken for protection: Garland drain around topsoil dump, overburden dump, embankment along nalla, plantation for erosion control, settling pond for sedimentation, ETP for wastewater treatment. The photographs of Garland Drains & Settling Ponds is attached as Annexure-III . To manage soil erosion and to maintain the quality of the topsoil, garland drain provided near the toe of dump. About 10.00 Km of garland drain having width varying from 1.5m – 2 m and depth 2 m-4m have been excavated to protect mine workings/ to arrest the siltation of drained water from dumps, which is ultimately connected to sedimentation pond/ settling pit for collection of channelized run-off water. The drains and sedimentation ponds/ pits are regularly de-silted and maintained properly. ETP of 50 KLD capacity has been constructed for the treatment of vehicle washing water before reusing. The photograph of ETP is attached as Annexure-IV .

YEARLY REPORT OF MINE CLOSURE ACTIVITIES

		The water so collected is being utilized for watering the mine area, roads, green belt development, etc.
	c) Quantity of water pumped out from mine/Quarry:	NA All the mine seepage water / Effluent generated are being reused
	d) Quality of water (as per test result):	Water quality parameters are within the prescribed limits as per the test result of the water samples collected from the open well from the villages. For water sampling and analysis, NABL accredited lab, M/s Environmental Research & Services (India) Pvt. Ltd., Bhubaneswar has been engaged. Water Quality report for 2022-23 is enclosed as Annexure-V .
	e) Corrective measures taken confronting to the permissible limit:	The test results shows the water quality parameters are within the permissible limit.
	f) Is there any acid mine drainage? if yes, the treatment method taken:	None
18	Air Quality Management:	
	i) Existing air quality parameters:	The existing air quality parameters being monitored are SPM, PM10, PM2.5, SO2, Nox, CO, Hg, Pb, Cr, As etc being tested by the NABL accredited laboratory M/s Environmental Research and Services (India) Pvt Ltd, Bhubaneswar. All the air quality parameters are within the permissible limit. Air Quality report for 2022-23 is enclosed as Annexure-VI .
	ii) Corrective measures taken for prevention of air pollution:	<ol style="list-style-type: none"> 1. Water sprinkling in the mine area is being done by 3 nos. of water tankers with 18KL capacity and 3 nos. of water tanker with 14KL capacity are working for dust suppression in the haul road, working area etc. 2. Fixed Sprinkler of about 900 m has been installed along the haul roads towards CHP and Mines View Point. 3. 02 Nos. Fog Cannons have been deployed for dust suppression. 4. Drilling machines with wet drilling arrangements are being used. 5. Surface Miners used for coal cutting are having interlocked water spraying arrangements at cutting drum. 6. Regular Air quality monitoring is being done regularly as per MoEF&CC guidelines. 7. Plantation has been done in the safety zone area along the boundary and diversion road and plantation in the mine area will be continued concurrent to mining operations.
19	Waste Management	

YEARLY REPORT OF MINE CLOSURE **ACTIVITIES**

	a) Quantity of overburden removal:	Overburden removal during FY 2022-23: 1,13,51,239 Cum (including Topsoil). Cumulative OB removal since inception is 2,69,76,128 Cum (including Topsoil).
	b) Quantity of Coal/Lignite reject generated:	NIL
	c) Utilization of Waste Material done:	Waste materials are being used for making of haul roads and levelling of siding area. Rest all the wastes has been dumped in the dump yard.
	d) Protective Measures taken from prevention of siltation, erosion and dust generator for waste material:	Garland Drains made around the entire dump yard. Dust suppression carried out regularly for controlling fugitive emission and air-borne.
	e) Quantity of waste material re-handled/back-filled:	None
	f) Height of dump and its stability measures taken:	Dump Height of dump is 30m. The stability measures taken are: <ul style="list-style-type: none"> - Dedicated dozer deployed for proper dozing and compaction. - Dumping carried out under constant supervision. - Garland drain prepared to guide rainwater away from dump area. - Scientific studies for stability carried out through NIT Rourkela and all recommendations thereof are followed. - One Slope monitoring Officer has been deployed for monitoring of slope and dump management.
20	Topsoil Management	
	a) Topsoil available at site:	Topsoil available at site is 3,95,000 m ³ (approx.) upto March 2023.
	b) Utilization of topsoil during 2022-23	4,963.78 m ³ of topsoil was spread over inactive Overburden dump of 1.5 Ha during 2021-22 and has stabilised with Grassing and Sapling Plant over the Dump. In year 2022-23
21	a) Coal beneficiation facilities adopted:	No beneficiation is being done
	b) Maintenance of coal washeries being done:	Not applicable
	c) Dismantling of structure of washery (describe briefly):	Not applicable

22. Subsidence management (for UG mine): Not Applicable as the subject mine is an opencast mine.

23. Infrastructure:

Existing infrastructural facilities available	Future Utilisation	Maintenance
Roads	Yes	Being maintained
Aerial Ropeways	None	Not applicable
Conveyor Belts	Yes	Under Commissioning

YEARLY REPORT OF MINE CLOSURE **ACTIVITIES**

Railways	Yes	Being maintained
Bridges, Culverts	Yes	Being repaired and maintained
Power lines	Yes	Being maintained
Building & Structures	Yes	Being maintained
Water Treatment Plant	Yes	Being maintained
Water Supply Sources	Nil	Not applicable
Gas Pipeline	None	Not applicable
Sewer Line	Nil	Not applicable
Telephone Cable	Yes	Being maintained
Underground Tanks	Nil	Not applicable
Electric Cable	Yes	Being maintained
Transformers	yes	Being maintained
Describe if decommissioning, dismantling or disposal is done of above items during 2022-23 (if any): No dismantling, decommissioning or disposal done during 2022-23		

24. Disposal of Machinery: Decommissioning of Mining Machinery and their possible post mining utilization:	Not applicable during FY 2022-23
--	----------------------------------

25. Safety and Security:

a	Safety measures implemented to prevent access to surface opening for Underground working (barbed wire fencing done):	Not applicable
b	Safety measures implemented to prevent access to surface opening for excavation:	<p>Safety measures implemented to prevent access to surface opening for excavation:</p> <ul style="list-style-type: none"> • Barbed wire fencing at the top of excavation area • Bund all along the excavation area with garland drain/ Trench cutting. • Installation of barriers and posting of security guards at the entry point/ check gates. • Photograph of Safety Zone Fencing & is attached as Annexure-VII.
c	Arrangement made up to the site being opened for general public:	Visitors are being allowed to enter in mines only after the permission of Mine Manager and are assisted by competent person during their visit.
d	Sealing of mine entries:	Not applicable

26. Economic Repercussions of Closure of Mine:

a	Number of local residents employed in the mine:	About 300 Nos. of local residents have been appointed through different associated agencies till March 2023.
b	Compensation given to the employees concerning their sustenance:	Not applicable
c	Vocational / Skill development training for sustainable income of affected people:	Various skill development programmes are being undertaken. Training to employed persons for different skills

YEARLY REPORT OF MINE CLOSURE ACTIVITIES

		like fitter, electrician, driving, welding, surface disinfectant making etc. are being taken up for the project affected people before employment in mine. Various other income generation schemes like Tie & dye training, mushroom cultivation, skill development etc. have been taken up. Project has spent a total of approx. Rs. 1.61 Cr under different head like health, education, infrastructure, drinking water, capacity building / skill development in FY 2022-23.
--	--	---

26. Any other closure activities as per approved Mine Closure Plan: Manpower has been engaged in Mining, Survey, Environment, Geology, Chemist for executing the mine closure activities.

OTHER CLOSURE ACTIVITIES AS PER APPROVED MINE CLOSURE PLAN

1. Mined area and waste management

- 1.1 Topsoil has been staked separately and will be spread over the slopes and dump area before plantation and garland drain made around topsoil dump. Photograph has been attached. Photograph of Topsoil Slope Grassing is attached as **Annexure-VIII**.
- 1.2 Overburden excavated from the mine is being dumped in the earmarked external dump Yard, partly over the coal bearing area after due approval of MoEF&CC which will be re-handled afterwards to extract coal and partly over the De-Coaled area of mine. After completion of external dump yard, this waste dump will be completely vegetated.
- 1.3 Hazardous waste authorization for Workshop & store obtained from SPCB. Used oil storage yard is provided at workshop with corner collection pit. Disposal of hazardous waste is being done as per statute.
- 1.4 Barbed wire fencing has been done along the mine boundary for about 12.5 Km till Mar'2023 and under progress for balance area. Safety Zone Fencing & Plantation is attached as **Annexure-VII**.

2. Environmental Management

- 2.1 Plantation done / distributed during various occasions of environment and social functions inside the site office/ Pit Office, mine boundary and other vacant patches. During 2022-23 total 10,157 no of saplings has been carried out during monsoon period. (Plantation Activities in different region. Cumulatively, about 42,500 No's of saplings have been planted/ distributed in and around the ML area.
- 2.2 Regular pollution monitoring of all vehicles involved in the mining project are in practice to control emission during operation of the mine.
- 2.3 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.
- 2.4 Water sprinkling is being done through 6 nos. of mobile water sprinkling tankers (i.e. 3nos 18 KL and 3nos of 14 KL) in the coal transportation and Mine Haul road route.
- 2.5 0.9 km length of fixed water sprinkling system has been installed.
- 2.6 Water sprinkling through spray nozzles installed and under operation at Interim Crusher.

YEARLY REPORT OF MINE CLOSURE

ACTIVITIES

- 2.7 Proper maintenance of haul road and other roads in around the mine is being taken up.
- 2.8 Wet drilling is being practiced for drilling OB benches for OB removal.
- 2.9 Surface Miner used for coal extraction are equipped with Water suppression measures through nozzles at cutting drum.
- 2.10 Transporting vehicles carrying the loaded materials are fully covered with tarpaulins covers to avoid dust generation and spillage.
- 2.11 Water seepage from the benches is drained to the sump in the bottom of the mine pit. Clear water from this sump is used in mining activity.
- 2.12 To reduce the mine working/ OB dump, Catchment water drain / Garland drain has been made which are connected to the Sedimentation Pond /Settling Ponds. The details of garland drains are as follows:

Garland/catch drains having width and depth of 1.5m to 2.0m have been constructed along OB Dumps. Details of the same is as under:

- OB dump-1A : 2350 m
 - OB dump-1B : 2840 m
 - Khuntijharia OB dump : 257 m
 - Beldihi OB dump : 860 m
 - Up-side of the mine : 2350 m (This prevents entry of outside storm water into the mine pit)
- 2.13 ETP having 50KLD capacity has been started operational from January'20 onwards and is being used for treatment of Effluent water generated during Washing of Wheel.
 - 2.14 For offices a septic tank followed by a soak pit has been provided. The township of NTPC Dulanga is integrated with NTPC Darlipalli and STP of 1200 KLD is provided in the integrated township.
 - 2.15 The treated effluents are as per prescribed standards and are being reused for horticultural purpose.
 - 2.16 The water so collected is being utilized for watering the mine area, roads, green belt development, etc.
 - 2.17 The project has de-silted 08 nos. ponds in the surrounding villages.
 - 2.18 The post project air / water / noise quality/ ground water level is being monitoring through a NABL Accredited laboratory.

3. Management of Infrastructure and Mining Machineries

- 3.1. The site office/ Pit office has been established and is being maintained as per requirement of DGMS.
- 3.2. Coal handling plant and Silo for rapid loading has is operational.

4. Action for safety and security of local community around the mine or part of the mine

- 4.1. For regular inspection of the OB Dumps, drains, a safety officer assisted with the mine overman has been posted.
- 4.2. OISF has been deployed to keep access control in the Mine area.

5. Social and Economic Aspects.

- 5.1. 300 No's of local residents have been appointed through different associated agencies till March 2022.
- 5.2. Project has spent a total of approx. Rs. 1.61 Cr under different head like health,

YEARLY REPORT OF MINE CLOSURE **ACTIVITIES**

education, infrastructure, drinking water, capacity building / skill development in FY 2022-23 towards CD / CSR activities.

6. Execution and supervision

- 6.1. Two Nos. of JCBs have been hired for the toe wall and garland drains and de-silting.
 - 6.2. Environment Management Cell has been formed for execution of the progressive closure and environment related works in addition to ensure compliance of Environment & Forest related compliance.
 - 6.3. For catchment drain survey, boundary survey and demarcation of total project area and updating the quarterly plans, one Mine surveyor assisted with 02 nos of Asstt Surveyor, 01 nos chainman and 2 Nos Survey helper have been posted for survey related work for execution of the closure work.
 - 6.4. For regular inspection of the OB Dumps, peripheral and internal drains, a safety officer assisted with the mine overman has been posted.
 - 6.5. Towards CD / CSR activities a dedicated team under the leadership of E-6 executive assisted with 5 executives has been formed to execute community development activities. Additionally, 02 nos. doctors led by CMO and assisted by dresser and attendants have been posted for regular medical camps and also 24x7 two no's of ambulance has been deployed for the above.
 - 6.6. Security personnel from Odisha Industrial security Force (OISF) have been deployed to keep access control in the mine and also for security of local communities.
27. Post Environmental Monitoring for 3 years (to be given after closure of mine): Will be submitted after closure of the mine.



(Signature of Competent Authority)

Name: Krovvidi Chandrasekhar

Designation: General Manager

Date with seal: 30.06.2023

श्रीधर जेना / SRIDHAR JENA
अपर महाप्रबंधक (परियोजना) / AGM (Proj.)
दुलंगा सी.म.प. / Dulanga C.M.P.
खपुरिकछार, सुन्दरगढ़,
Khapurikachhar, Sundargarh
In charge - HEP

NTPC LIMITED
Detail of ESCROW deposits for the FY 2022-23:

Unit name	FY 2022-23						Bis as on 31.03.2023
	Bis as on 01.04.2022	Deposit	Reimbursement	Miscellaneous Withdrawal (if any)	Interest	TDS	
NTPC Limited Pakri Barwadih CMP	45,17,23,380.72	7,60,00,000.00	-	-	1,58,75,231.05	15,80,564.00	57,20,09,027.77
NTPC Limited Dulempa CMP	17,21,06,846.79	3,67,00,000.00	-	-	64,90,074.08	6,44,012.00	21,45,03,008.84
NTPC Limited Telkuchi CMP	10,29,15,860.88	4,11,08,000.00	-	-	75,51,015.24	7,55,100.00	24,08,15,777.12
NTPC Limited Chaiti Barhwa CMP	2,74,90,392.00	2,88,00,000.00	-	-	30,55,043.47	1,05,506.00	5,72,39,629.47
Total	82,42,32,569.36	38,26,08,000.00	-	-	3,09,21,963.84	30,94,150.00	1,03,46,07,743.20

Carthika

12/12/23

आरिन्द्र कुमार

Arindendra Kumar

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NTPC LIMITED

FDR wise detail of ESCROW deposits:

Unit name	ESCROW A/c no.	Deposit year	FDR no.	Bis as on 31.03.2023
NTPC Limited Pakri Barwadih CMP	33442821033	Year 1	40090493683	7,78,78,716.81
NTPC Limited Pakri Barwadih CMP	33442821033	Year 2	37586891314	7,41,70,764.89
NTPC Limited Pakri Barwadih CMP	33442821033	Year 3	38362493876	7,29,06,719.04
NTPC Limited Pakri Barwadih CMP	33442821033	Year 4	39251620740	7,27,92,090.99
NTPC Limited Pakri Barwadih CMP	33442821033	Year 5	40093060756	7,33,33,951.32
NTPC Limited Pakri Barwadih CMP	33442821033	Year 6	40882360751	7,48,26,924.96
NTPC Limited Pakri Barwadih CMP	33442821033	Year 7	41784725699	7,61,03,368.74
Subtotal				52,20,09,027.77
NTPC Limited Dulanga CMP	35611468943	Year 1	40090852042	3,50,50,572.90
NTPC Limited Dulanga CMP	35611468943	Year 2	38355057702	3,52,28,520.96
NTPC Limited Dulanga CMP	35611468943	Year 3	39251621230	3,51,17,984.83
NTPC Limited Dulanga CMP	35611468943	Year 4	40093069576	3,53,91,600.67
NTPC Limited Dulanga CMP	35611468943	Year 5	40882086754	3,51,65,852.22
NTPC Limited Dulanga CMP	35611468943	Year 6	41784722723	3,57,48,467.26
Subtotal				21,46,03,008.84
NTPC Limited Talajpali CMP	33769593025	Year 1	37327968517	4,07,78,613.88
NTPC Limited Talajpali CMP	33769593025	Year 2	38355093025	3,94,51,275.13
NTPC Limited Talajpali CMP	33769593025	Year 3	39251621401	3,93,44,290.66
NTPC Limited Talajpali CMP	33769593025	Year 4	40093278585	3,96,22,651.64
NTPC Limited Talajpali CMP	33769593025	Year 5	40882261164	4,04,56,656.29
NTPC Limited Talajpali CMP	33769593025	Year 6	41784707593	4,11,62,288.52
Subtotal				24,08,15,777.12
NTPC Limited Chhoti Barhau CMP	33769593988	Year 1	40882261595	2,84,01,895.60
NTPC Limited Chhoti Barhau CMP	33769593988	Year 2	41784727017	2,68,38,033.87
Subtotal				5,72,39,929.47
Grand total				1,03,46,67,743.20

Certified

 12/4/23

Antarendra Kumar
 अवर महाप्रबन्धक (वित्त) एवं एन सी
 Addl. General Manager (Finance) ESC
 एनटीपीसी लिमिटेड / झारखंड खनन क्लबहाउस-101
 NTPC Limited / Coal Mining HQ-Ranchi

Avenue Plantation



Plantation in Infra Office



Vacant Area Plantation



Plantation Near View Point



Plantation along MGR



Sapling Distribution





Government of Odisha
Department of Water Resources

No. 21250 /WR,
WR-MAJII-WRC-0009/2016 (OSWAS),
Irr.-II-WRC-161/21 (Physical)

Date: 23/8/2021

COPY
- AGM (Civil)
- AGM (Mining)
- DUM. (TS)

From

Ms Archana Patnaik, IAS,
Special Secretary to Government.

To

The General Manager, M/s NTPC Ltd.,
Dulanga Coal Mining Project, 2nd Floor,
Megha Mallahar, Mission Road, Sundargarh.

Sub: Permission for diversion of Garia Nalla and its tributaries (Baidhar Nallah and Nallah -B) flowing within the coal block boundary of Dulanga Coal Mining Project allotted to NTPC Ltd.

Sir,

In inviting reference to your Correspondence No-0100/ NTPC/DLCMP/MDO/2017/17 dated 05.04.2017 on the subject noted above I am directed to say that Government in Water Resources Department have been pleased to accord permission in favour of your industry for diversion of Garia Nalla and its tributaries (Baidhar Nallah and Nallah -B) flowing within the coal block boundary of Dulanga Coal Mining Project allotted to NTPC Ltd. with the following terms & conditions:-

Terms & Conditions:-

1. NTPC shall divert the Garia Nalla and its tributaries (Baidhar Nallah and Nalla -B) in accordance with the provisions made in the mining plan of Dulanga Coal Block which has been approved by Ministry of Coal, Government of India and as per the condition(s) stipulated in the Environment clearance granted for Dulanga Coal Block by MOEF&CC.
2. NTPC shall divert the Garia Nalla and its tributaries namely Baidhar Nallah and Nalla -B within the land under their possession on its own cost. All direct or indirect and annual expenditure on maintenance of the above said nallahs shall be borne by NTPC.
3. Any adverse impact noticed due to the diversion must be set right by NTPC at its own cost.
4. The gradient of the original nallah shall be maintained in the proposed diverted route by NTPC.
5. The regime channel section shall be maintained in the proposed diversion alignment by NTPC. Smooth transition shall be provided between diversion and original nallah section by NTPC.

R.T.O.

6. Safe distance shall be maintained by NTPC from the diversion channel to the mining operation boundary for safety point of view following Govt. norms.
7. NTPC shall ensure that riparian rights of the people residing in the downstream area shall not be affected upon diversion of Garia Nallah and its tributaries namely Baidhar Nallah and Nallah - B.
8. The water quality shall be maintained in the nallah by NTPC to ensure the protection of the riparian right of people living in the d/s of the diversion channel. NTPC shall not discharge/dispose any untreated and contaminated waste material into the nallahs so that the flora and fauna will be in peril.
9. Ecological and environmental damages, if any, arising during and after diversion of nallahs shall be the sole responsibility of NTPC for which they shall be treated as per law. NTPC shall have to obtain permission or clearance from Competent Authorities on ecology, environment and forest aspects as necessary.
10. The diverted nallahs shall be treated as public property.
11. Any construction activities /interference should be consistent with the hydraulic compulsions and structural safety standards.
12. NTPC shall ensure that diversion portion of nallah is adequate to carry design flood discharge. In case of failure, change of path of nallahs is noticed after diversion, NTPC is liable for reconstruction at their cost and pay compensation if damages occur to public/private properties.
13. Necessary safety arrangement shall be the responsibility of NTPC while executing the diversion work of nallahs. The Company shall have to provide barricading, display boards and other necessary caution boards while executing the work.
14. Cutting of any tree or removal of any utility services along the proposed diversion alignment if required, NTPC shall have to obtain clearances from concerned approving authorities.
15. NTPC shall procure insurance from reputed insurance Company against damages during execution. In case of damage caused to any assets due to diversion of nallahs, DoWR shall not be accountable or liable in any manner whatsoever.
16. NTPC shall intimate Revenue official's viz. Tahasildar & Collector of the district regarding such diversion in order to incorporate it in the cadastral map & ROR.
17. DoWR shall reserve the right to review/modify/evolve the permission in case of violation of terms and conditions of the permission.
18. NTPC shall construct peripheral drains for discharge of flood water of the catchments Mining Lease area if required.
19. The diverted nallahs are to be properly fenced and protected against accidents.
20. The interest of the local villagers is to be suitably addressed in the event of diversion.

- 21. NTPC shall make necessary arrangement so that seepage water from diverted Nallah shall not enter into the mining area.
- 22. The work should be executed in accordance with the Codal Provision with the overall objective of environmental safeguards. Latest codal provision and National/International best practices must be followed. DoWR shall not be responsible for any breach of the safeguards.
- 23. DoWR shall have the right to order such works as may be necessary to maintain the integrity of the nallahs at any time during or after the execution not covered in approved scheme. NTPC shall be bound to execute the same as per instruction of DoWR at their own cost.

Yours faithfully

[Handwritten Signature]

Special Secretary to Government

Memo No. 21251 /WR, Dtd. 23/8/2021

Copy forwarded to the E.I.C., Odisha, Bhubaneswar/ CE & BM, Mahanadi Basin, Burla/ CE Designs, Bhubaneswar for information and necessary action.

[Handwritten Signature]
23/08/2021

Under Secretary to Government

Memo No. 21252 /WR, Dtd. 23/8/2021

Copy forwarded to Industries Department / Steel & Mines Department/ IPICOL / IDCO for information and necessary action.

[Handwritten Signature]
23/08/2021

Under Secretary to Government

Memo No. 21253 /WR, Dtd. 23/8/2021

Copy forwarded to Collector & District Magistrate, Sundargarh for information and necessary action.

[Handwritten Signature]
23/08/2021

Under Secretary to Government

Memo No. 21254 /WR, Dtd. 23/8/2021

Copy forwarded to Executive Engineer, Sundargarh Irrigation Division, Sundargarh for information and necessary action.

[Handwritten Signature]
23/08/2021

Under Secretary to Government

Garland Drains & Sedimentation Pond



Garland Drain



Garland Drain connected to settling pond



Settling Pond inside Mines

Dust Suppression Measures



Water Sprinkling on Haul Roads inside Mines



Fixed Type Sprinkling on Haul Roads Near CHP

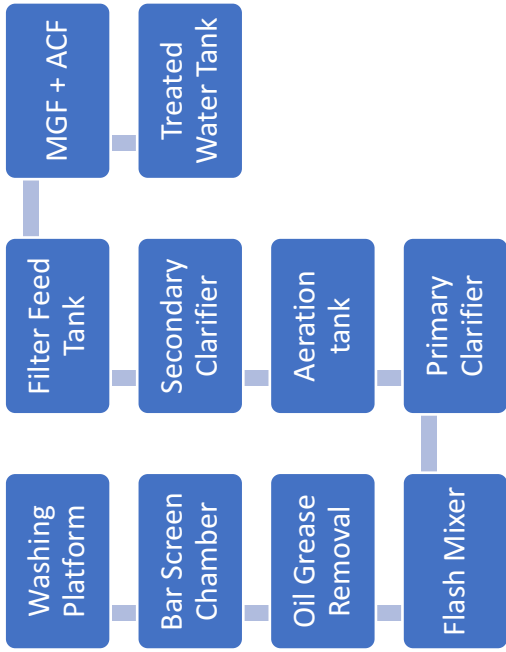


Interlocked Dust Suppression arrangement in Surface Miner



Wet Drilling Arrangement

ZERO DISCHARGE EFFLUENT TREATMENT PLANT OF 50 KLD



Washing Platform



Clarifier



Filter Feed Tank



Activated Charcoal Filter(ACF)

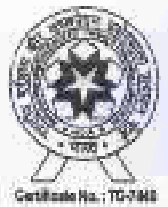
Flow Chart of ETP

GSTIN : 21AAACE6224D1ZE



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (NABL) Accredited Laboratory, OSCPB Empanelled Laboratory and ISO 9001:2015 Certified Company)



Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC74402200000453F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 01 Nov 2022

Test Report No: ERSIPL/TR/WA/248

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 11.10.2022
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 21.10.2022
Analysis Started on : 21.10.2022
Analysis Completed on : 01.11.2022
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/546
2. ERSIPL/WA/547
3. ERSIPL/WA/548
4. ERSIPL/WA/549

Locations

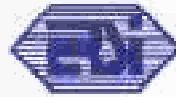
1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Bengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/546	ERSIPL/WA/547	ERSIPL/WA/548	ERSIPL/WA/549
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	7.17	6.86	6.54	7.25
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.66	0.57	0.48	0.63
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	216.0	26.0	92.0	282.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.06	0.07	0.09
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	53.22	16.75	35.48	84.75
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	599.0	52.6	237.0	761.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	35.27	5.61	22.41	28.86
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	27.44	3.72	16.92	25.77
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	416.0	38.0	74.0	466.0

..END OF TEST REPORT...

(Authorized Signatory)
S.P.Pattanayak

**Environmental Research and Services (India) Pvt. Ltd.**

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ ~~Waste Water~~)**

Pg No: 1 of 2

Date: 01 Nov 2022**Test Report No: ERSIPL/TR/WA/T-248**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 11.10.2022

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 21.10.2022

Analysis Started on : 21.10.2022

Analysis Completed on : 01.11.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/546
2. ERSIPL/WA/547
3. ERSIPL/WA/548
4. ERSIPL/WA/549

Locations

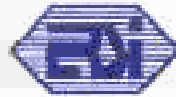
1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharla
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/546	ERSIPL/WA/547	ERSIPL/WA/548	ERSIPL/WA/549
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND	ND



LIN : 0731000K1995P1L003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001:2015 Certified Company)

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Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected

(Authorized Signatory)
S.P.Pattanayak
Tech.Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory, USPEB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC744022000000454F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 01 Nov 2022

Test Report No: ERSIPL/TR/WA/249

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 10-11.10.2022

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 21.10.2022

Analysis Started on : 21.10.2022

Analysis Completed on : 01.11.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/550

2. ERSIPL/WA/551

Locations

1. Open well in Village Bendrichua

2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/550	ERSIPL/WA/551
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	5.87	6.89
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.60	0.48
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	38.0	142.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.08
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	20.70	22.67
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	47.0	277.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	6.41	32.06
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	3.59	18.85
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	40.0	184.0

(Authorized Signatory)
S.P. Parlanayak
Tech. Manager



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERS/PL/FM/40 TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 2

Date: 01 Nov 2022 **Test Report No: ERSIPL/TR/WA/T-249**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 10-11.10.2022

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 21.10.2022

Analysis Started on : 21.10.2022

Analysis Completed on : 01.11.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/550
2. ERSIPL/WA/551

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/550	ERSIPL/WA/551
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND



CIN - U73100DR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001:2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/l	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/l	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/l	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (HABL) Accredited Laboratory, DSPCB Empanelled Laboratory and ISO 9001:2015 Certified Company)



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ULR-TC744022000000518F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 02 Dec 2022

Test Report No: ERSIPL/TR/WA/282

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 07.11.2022

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 24.11.2022

Analysis Started on : 24.11.2022

Analysis Completed on : 02.12.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/612
2. ERSIPL/WA/613
3. ERSIPL/WA/614
4. ERSIPL/WA/615

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfai
3. Open well in Village Khuntjaria
4. Bore well in Village Bengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible limit as per IS:10500, 2012	Result			
					ERSIPL/WA/612	ERSIPL/WA/613	ERSIPL/WA/614	ERSIPL/WA/615
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	-	6.5 to 8.5	7.02	6.89	6.74	7.05
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.51	0.37	0.28	0.33
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	210.0	20.0	86.0	280.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.09	0.08	0.05	0.06
05	Chloride	IS 3025:Part 54: 1986 Reaffirmed-2019	mg/L	250.0	52.23	14.78	33.51	83.77
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/l	500.0	587.0	49.6	217.0	736.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	33.67	4.81	20.84	27.25
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	26.15	2.69	15.51	25.38
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/l	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	402.0	32.0	72.0	460.0

SP

..END OF TEST REPORT..

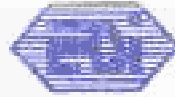
(Authorized Signatory)

S. P. Pattanayak
Tech. Manager



CIN - U73100OR1995PTC003889

GSTIN : 21AAACE6224D1ZE



Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste Water)

Pg No: 1 of 2

Date: 02 Dec 2022

Test Report No: ERSIPL/TR/WA/T-282

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 07.11.2022
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 24.11.2022
Analysis Started on : 24.11.2022
Analysis Completed on : 02.12.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of sample : 2lrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/612
2. ERSIPL/WA/613
3. ERSIPL/WA/614
4. ERSIPL/WA/615

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/612	ERSIPL/WA/613	ERSIPL/WA/614	ERSIPL/WA/615
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1985 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 50: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1996 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1990 Reaffirmed-2019	mg/L	0.003	ND	ND	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : Z1AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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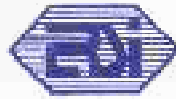
Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/l	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/l	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/l	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/l	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 43: 1994 Reaffirmed-2019	mg/l	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 15428:2005 Reaffirmed-2019	mg/l	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/l	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/l	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory, USPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)



Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
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U/R-TC74402200000519F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ ~~Waste Water~~)

Pg No: 1 of 1

Date: 02 Dec 2022

Test Report No: ERSIPL/TR/WA/283

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 07.11.2022
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 24.11.2022
Analysis Started on : 24.11.2022
Analysis Completed on : 02.12.2022
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
Quantity of Sample : 2lrs
Type of Container : Glass Bottle & HDPE bottles
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/616
2. ERSIPL/WA/617

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

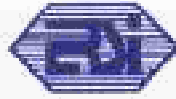
Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/616	ERSIPL/WA/617
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	-	6.5 to 8.5	5.99	5.98
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.37	0.38
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	28.0	138.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	19.71	20.70
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/l	500.0	45.0	257.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/l	75.0	5.61	31.26
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/l	200.0	2.82	17.31
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/l	200.0	36.0	175.0

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

TEST REPORT Format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste Water)

Pg No: 1 of 2

Date: 02 Dec 2022 Test Report No: ERSIPL/TR/WA/T-283

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 07.11.2022

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 24.11.2022

Analysis Started on : 24.11.2022

Analysis Completed on : 02.12.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2litrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/616
2. ERSIPL/WA/617

Locations

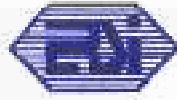
1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalameygha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limits		
				per IS:10400, 2012	ERSIPL/WA/616	ERSIPL/WA/617
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	—	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	—	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001: 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2002 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13478: 2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2006 Reaffirmed-2017	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND: Not Detected


(Authorized Signatory)
S.P. Paltanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001:2015 Certified Company) Certificate No.: TC-1449

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UJA-TC744022000000582F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 29 Dec 2022

Test Report No: ERSIPL/TR/WA/318

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12-13.12.2022

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 22.12.2022

Analysis Started on : 22.12.2022

Analysis Completed on : 29.12.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/690
2. ERSIPL/WA/691
3. ERSIPL/WA/692
4. ERSIPL/WA/693

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjaria
4. Bore well in Village Bengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/690	ERSIPL/WA/691	ERSIPL/WA/692	ERSIPL/WA/693
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	-	6.5 to 8.5	7.01	6.94	6.77	7.11
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.48	0.31	0.29	0.35
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	206.0	22.0	84.0	276.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.07	0.07	0.06	0.08
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	50.26	16.75	32.32	80.81
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	579.0	48.8	211.0	727.1
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	32.06	5.61	17.64	26.45
08	Sulphate as SO ₄	IS 3025:Part 24: 1988 Reaffirmed-2019	mg/L	200.0	25.26	2.95	15.13	19.74
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	390.0	34.0	66.0	442.0

..END OF TEST REPORT..

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



CIN - U73100OR1995PTC003869



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 2

Date: 29 Dec 2022

Test Report No: ERSIPL/TR/WA/T-318

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12-13.12.2022
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 22.12.2022
Analysis Started on : 22.12.2022
Analysis Completed on : 29.12.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/690
2. ERSIPL/WA/691
3. ERSIPL/WA/692
4. ERSIPL/WA/693

Locations

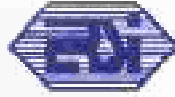
1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/690	ERSIPL/WA/691	ERSIPL/WA/692	ERSIPL/WA/693
01	Colour	IS 3025:Part 04: 1988 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed 2017	-	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	-	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/l	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/l	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 55: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/l	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/l	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/l	0.003	ND	ND	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.


(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

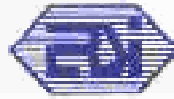
Pg No: 2 of 2

Sl. No.	Parameter	Method	Unit	Limit	Result	Remarks	Unit	Result
11	Selenium	IS 3025:Part 36: 2015 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/l	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428: 2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/l	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.. END OF TEST REPORT ..



Environmental Research and Services (India) Pvt. Ltd.

(As ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory, DPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company) Certificate No.: TC-298

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

UJA-TC24402200000583F

Test Report Format No.: ERSIPL/ FM/ 40

TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 1

Date: 29 Dec 2022

Test Report No: ERSIPL/TR/WA/319

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 12-13.12.2022
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 22.12.2022
Analysis Started on : 22.12.2022
Analysis Completed on : 29.12.2022
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
Quantity of Sample : 2krs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/694
2. ERSIPL/WA/695

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kojamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/694	ERSIPL/WA/695
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	-	6.5 to 8.5	6.00	6.91
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.41	0.37
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	26.0	134.0
04	Total Iron	IS 3025:Part 58: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.08
05	Chloride	IS 3025:Part 52: 1986 Reaffirmed-2019	mg/L	250.0	20.70	22.67
06	Total Dissolved Solids	IS 3025:Part 06: 1994 Reaffirmed-2019	mg/L	500.0	43.4	241.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	6.41	30.46
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/l	200.0	4.23	16.41
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/l	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025: Part 23: 1986 Reaffirmed-2019	mg/L	200.0	38.0	170.0

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



CIN - U73100OR1905PTC003889



GSTIN : Z1AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001: 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibsr@gmail.com

Test Report format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste Water)

Pg No: 1 of 2

Date: 29 Dec 2022

Test Report No: ERSIPL/TR/WA/T-319

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 17-18.12.2022

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 22.12.2022

Analysis Started on : 22.12.2022

Analysis Completed on : 29.12.2022

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/694
2. ERSIPL/WA/695

Locations

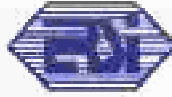
1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/694	ERSIPL/WA/695
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	—	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	—	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 36: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 48: 1997 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001:2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 36: 2003 Reaffirmed-2015	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2015	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1985 Reaffirmed-2015	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2015	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2015	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428:2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2015	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2015	mg/L	0.5	ND	ND
20	Pesticides	USPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2015	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2015	mg/L	0.02	ND	ND

ND-Not Detected

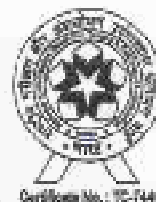

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (NABL) Accredited Laboratory, USPCB Empanelled Laboratory and ISO 9001:2015 Certified Company)



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Tel: +91-9437021932, +91-9937690329, E-mail: erslbb@gmail.com

QIR-TC744023000000006F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 27 Jan 2023

Test Report No: ERSIPL/TR/WA/002

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 13.01.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 16.01.2023
Analysis Started on : 16.01.2023
Analysis Completed on : 23.01.2023
Method of Sampling : IS 3025, Part 1: 1987, Reaffirmed 2019
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/005
2. ERSIPL/WA/006
3. ERSIPL/WA/007
4. ERSIPL/WA/008

Locations

1. Open well in Village Kalamogha
2. Open well in Village Kathfali
3. Open well in Village Khuntjaria
4. Bore well in Village Bengalmunra

TEST FINDINGS:

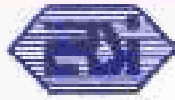
Sl	Parameters Analysed	Test Method	Unit	Permissible Unit as per IS:10500, 2012	Result			
					ERSIPL/WA/005	ERSIPL/WA/006	ERSIPL/WA/007	ERSIPL/WA/008
01	pH value	IS 3025:Part 11: 1985 Reaffirmed-2017	--	6.5 to 8.5	6.97	6.91	6.72	7.02
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.57	0.48	0.39	0.54
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	205.0	26.0	88.0	276.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.08	0.08	0.06	0.08
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	52.23	20.70	34.49	82.78
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	591.0	52.9	217.0	738.1
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	33.67	7.21	19.24	28.06
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	27.05	3.72	16.41	20.64
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 29: 1986 Reaffirmed-2019	mg/L	200.0	394.0	38.0	70.0	446.0

..END OF TEST REPORT..

(Authorized Signatory)
S. P. Pattanayak
Tech. Manager



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001: 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste Water)

Pg No: 1 of 2

Date: 27 Jan 2023

Test Report No: ERSIPL/TR/WA/T-002

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.01.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 16.01.2023

Analysis Started on : 16.01.2023

Analysis Completed on : 23.01.2023

Method of Sampling : IS 3025: Part 1:1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/005
2. ERSIPL/WA/006
3. ERSIPL/WA/007
4. ERSIPL/WA/008

Locations

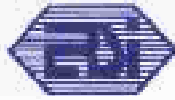
1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/005	ERSIPL/WA/006	ERSIPL/WA/007	ERSIPL/WA/008
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/l	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/l	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1984 Reaffirmed-2019	mg/l	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/l	0.003	ND	ND	ND	ND



CIN - U73100OR1995PTC003689



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

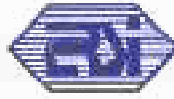
11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 57: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1988 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428: 2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USLPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

(An ISO 9001:2015 Certified Laboratory) Accredited Laboratory for Environmental Laboratory and ISO 9001:2015 Certified Company; Certificate No.-TC346



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ULR-TC244023000000007F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 27 Jan 2023

Test Report No: ERSIPL/TR/WA/003

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.01.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 16.01.2023

Analysis Started on : 16.01.2023

Analysis Completed on : 23.01.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2litrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/009
2. ERSIPL/WA/010

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:-

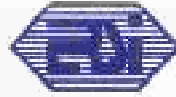
Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/009	ERSIPL/WA/010
01	pH value	IS 3025:Part 11: 1983 Reaffirmed 2017	---	6.5 to 8.5	6.12	6.87
02	Turbidity	IS 3025:Part 10: 1994 Reaffirmed 2017	NTU	1.0	0.53	0.47
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	30.0	140.0
04	Total Iron	IS 3025:Part 58: 2013 Reaffirmed-2019	mg/L	0.3	0.07	0.07
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	22.67	25.62
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	52.4	258.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	8.02	33.67
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	5.51	17.31
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	42.0	174.0

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager

...END OF TEST REPORT...



CIN : U73100OR1995PTC003889



GSTIN : Z1AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
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Test Report Format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste Water)

Pg No: 1 of 2

Date: 27 Jan 2023 Test Report No: ERSIPL/TR/WA/T-003

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.01.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 16.01.2023

Analysis Started on : 16.01.2023

Analysis Completed on : 23.01.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2litrs

Type of Container : Glass Bottle & HDPE bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/009
2. ERSIPL/WA/010

Locations

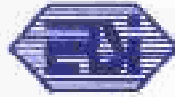
1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/009	ERSIPL/WA/010
01	Colour	IS 3025:Part 04: 1983 Reaffirmed 2017	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1981 Reaffirmed-2019	mg/l	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/l	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1982 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1990 Reaffirmed-2019	mg/l	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/l	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND



CIN - U73100OR1995PTC003689



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

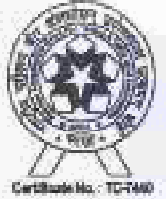
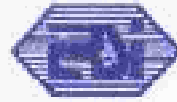
Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2013	mg/l	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2013	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2013	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2013	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2013	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428-2005 Reaffirmed-2013	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2013	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2013	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 53: 2003 Reaffirmed-2013	mg/L	0.03	ND	ND
22	Baron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2013	mg/L	0.02	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

END OF TEST REPORT



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001:2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

URL-TC744023000000090F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 27 Feb 2023

Test Report No: ERSIPL/TR/WA/047

Name and Address of the Customer

: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling

: 13.02.2023

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer

Sample Received on

: 21.02.2023

Analysis Started on

: 21.02.2023

Analysis Completed on

: 27.02.2023

Method of Sampling

: IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample

: 2ltrs

Type of Container

: Glass Bottle & HDPE Bottle

Environment Condition

: All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/106
2. ERSIPL/WA/107
3. ERSIPL/WA/108
4. ERSIPL/WA/109

Locations

1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharla
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/106	ERSIPL/WA/107	ERSIPL/WA/108	ERSIPL/WA/109
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	7.04	6.97	6.77	7.11
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.51	0.43	0.35	0.51
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	206.0	24.0	88.0	276.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.08	0.06	0.08	0.08
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	50.26	18.72	32.52	80.81
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	588.0	51.8	215.0	728.4
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	33.67	5.61	18.44	26.45
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	25.77	3.33	15.64	20.13
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	390.0	34.0	68.0	440.0

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

END OF TEST REPORT...



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste Water)

Pg No: 1 of 2

Date: 27 Feb 2023

Test Report No: ERSIPL/TR/WA/T-047

Name and Address of the Customer

: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling

: 13.02.2023

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer

Sample Received on

: 21.02.2023

Analysis Started on

: 21.02.2023

Analysis Completed on

: 27.02.2023

Method of Sampling

: IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample

: 2ltrs

Type of Container

: Glass Bottle & HDPE Bottle

Environment Condition

: All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/106
2. ERSIPL/WA/107
3. ERSIPL/WA/108
4. ERSIPL/WA/109

Locations

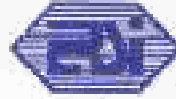
1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharla
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/106	ERSIPL/WA/107	ERSIPL/WA/108	ERSIPL/WA/109
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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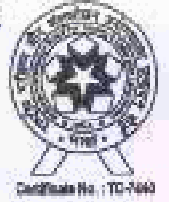
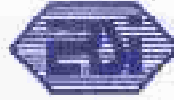
Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/l	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/l	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC74402300000091F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 27 Feb 2023

Test Report No: ERSIPL/TR/WA/048

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 13.02.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 21.02.2023
Analysis Started on : 21.02.2023
Analysis Completed on : **27.02.2023**
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
Quantity of Sample : **2litrs**
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/110
2. ERSIPL/WA/111

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/110	ERSIPL/WA/111
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	6.21	6.91
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.43	0.40
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	30.0	140.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.08
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	20.70	24.64
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	50.4	249.0
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	8.02	32.87
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	5.26	16.03
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	40.0	172.0

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ Waste-Water)**

Pg No: 1 of 2

Date: 27 Feb 2023 Test Report No: ERSIPL/TR/WA/T-048

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.02.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 21.02.2023

Analysis Started on : 21.02.2023

Analysis Completed on : 27.02.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/110
2. ERSIPL/WA/111

Locations

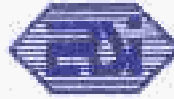
1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/110	ERSIPL/WA/111
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 06: 1983 Reaffirmed-2017	—	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	—	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	NII	NII
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2005 Reaffirmed-2017	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



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ULR-TC744023000000117F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 27 Mar 2023

Test Report No: ERSIPL/TR/WA/061

Name and Address of the customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.03.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 21.03.2023

Analysis Started on : 21.03.2023

Analysis Completed on : 27.03.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/144
2. ERSIPL/WA/145
3. ERSIPL/WA/146
4. ERSIPL/WA/147

Locations

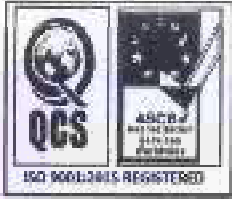
1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharla
4. Bore well in Village Rengalmunra

TEST FINDINGS:

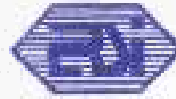
Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/144	ERSIPL/WA/145	ERSIPL/WA/146	ERSIPL/WA/147
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	6.99	6.81	6.79	7.01
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.49	0.53	0.39	0.46
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	210.0	30.0	96.0	278.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.07	0.06	0.08	0.06
05	Chloride	IS 3025:Part 32: 1988 Reaffirmed-2019	mg/L	250.0	52.23	20.70	34.49	82.78
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	598.0	52.8	222.0	731.4
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	36.07	8.02	20.04	28.06
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	27.05	4.62	16.92	21.41
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	394.0	38.0	70.0	442.0

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/40 TEST REPORT (Water/ Waste-Water)

Pg No: 1 of 2

Date: 27 Mar 2023

Test Report No: ERSIPL/TR/WA/T-061

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.03.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 21.03.2023

Analysis Started on : 21.03.2023

Analysis Completed on : 27.03.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID, No.

1. ERSIPL/WA/144
2. ERSIPL/WA/145
3. ERSIPL/WA/146
4. ERSIPL/WA/147

Locations

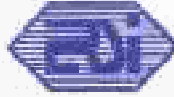
1. Open well in Village Kalamegha
2. Open well in Village Kathfali
3. Open well in Village Khuntjharia
4. Bore well in Village Rengalmunra

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result			
					ERSIPL/WA/144	ERSIPL/WA/145	ERSIPL/WA/146	ERSIPL/WA/147
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/l	0.2	ND	ND	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/l	0.5	ND	ND	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND	ND	ND

ND-Not Detected

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...



Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744023000000118F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (Water/ Waste Water)

Pg No: 1 of 1

Date: 27 Mar 2023

Test Report No: ERSIPL/TR/WA/062

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Sampling : 14.03.2023
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Sample Received on : 21.03.2023
Analysis Started on : 21.03.2023
Analysis Completed on : 27.03.2023
Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019
Quantity of Sample : 2ltrs
Type of Container : Glass Bottle & HDPE Bottle
Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/148
2. ERSIPL/WA/149

Locations

1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

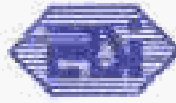
Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/148	ERSIPL/WA/149
01	pH value	IS 3025:Part 11: 1983 Reaffirmed-2017	--	6.5 to 8.5	6.34	6.95
02	Turbidity	IS 3025:Part 10: 1984 Reaffirmed-2017	NTU	1.0	0.48	0.44
03	Total Hardness as CaCO ₃	IS 3025:Part 21: 2009 Reaffirmed-2019	mg/L	200.0	34.0	144.0
04	Total Iron	IS 3025:Part 53: 2003 Reaffirmed-2019	mg/L	0.3	0.06	0.07
05	Chloride	IS 3025:Part 52: 1988 Reaffirmed-2019	mg/L	250.0	22.67	26.61
06	Total Dissolved Solids	IS 3025:Part 16: 1984 Reaffirmed-2019	mg/L	500.0	65.4	259.1
07	Calcium as Ca	IS 3025:Part 40: 1991 Reaffirmed-2019	mg/L	75.0	8.82	34.47
08	Sulphate as SO ₄	IS 3025:Part 24: 1986 Reaffirmed-2019	mg/L	200.0	6.54	18.59
09	Fluoride	IS 3025:Part 60: 2008 Reaffirmed-2019	mg/L	1.0	<0.1	<0.1
10	Total Alkalinity as CaCO ₃	IS 3025:Part 23: 1986 Reaffirmed-2019	mg/L	200.0	42.0	172.0

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/40
TEST REPORT (Water/ Waste Water)**

Pg No: 1 of 2

Date: 27 Mar 2023 Test Report No: ERSIPL/TR/WA/T-062

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 14.03.2023

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Sample Received on : 21.03.2023

Analysis Started on : 21.03.2023

Analysis Completed on : 27.03.2023

Method of Sampling : IS 3025: Part 1: 1987, Reaffirmed 2019

Quantity of Sample : 2ltrs

Type of Container : Glass Bottle & HDPE Bottle

Environment Condition : All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/148
2. ERSIPL/WA/149

Locations

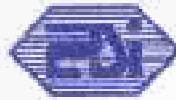
1. Open well in Village Bendrichua
2. Bore Well R & R Colony, Kalamegha

TEST FINDINGS:

Sl	Parameters Analysed	Test Method	Unit	Permissible Limit as per IS:10500, 2012	Result	
					ERSIPL/WA/148	ERSIPL/WA/149
01	Colour	IS 3025:Part 04: 1983 Reaffirmed-2017	Hazen	5.0	<5.0	<5.0
02	Odour	IS 3025:Part 05: 1983 Reaffirmed-2017	--	Agreeable (A)	A	A
03	Taste	IS 3025:Part 07,08: 1984 Reaffirmed-2017	--	Agreeable (A)	A	A
04	Nitrate as NO ₃	IS 3025:Part 34: 1983 Reaffirmed-2019	mg/L	45.0	<5.0	<5.0
05	Residual Free Chlorine	IS 3025:Part 26: 1986 Reaffirmed-2019	mg/L	0.2 (min)	Nil	Nil
06	Copper	IS 3025:Part 42: 1992 Reaffirmed-2019	mg/L	0.05	ND	ND
07	Manganese	IS 3025:Part 59: 2006 Reaffirmed-2017	mg/L	0.1	ND	ND
08	Phenolic Compound	IS 3025:Part 43: 1992 Reaffirmed-2019	mg/L	0.001	ND	ND
09	Mercury	IS 3025:Part 48: 1994 Reaffirmed-2019	mg/L	0.001	ND	ND
10	Cadmium	IS 3025:Part 41: 1992 Reaffirmed-2019	mg/L	0.003	ND	ND



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Pg No: 2 of 2

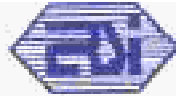
11	Selenium	IS 3025:Part 56: 2003 Reaffirmed-2019	mg/L	0.01	ND	ND
12	Total Arsenic	IS 3025:Part 37: 1988 Reaffirmed-2019	mg/L	0.01	ND	ND
13	Cyanide	IS 3025:Part 27: 1986 Reaffirmed-2019	mg/L	0.05	ND	ND
14	Lead	IS 3025:Part 47: 1994 Reaffirmed-2019	mg/L	0.01	ND	ND
15	Zinc	IS 3025:Part 49: 1994 Reaffirmed-2019	mg/L	5.0	ND	ND
16	Anionic detergents	IS 13428 :2005 Reaffirmed-2019	mg/L	0.2	ND	ND
17	Total Chromium	IS 3025:Part 52: 2003 Reaffirmed-2019	mg/L	0.05	ND	ND
18	Polynuclear aromatic hydrocarbons	APHA 6440	mg/L	0.0001	ND	ND
19	Mineral Oil	IS 3025:Part 39: 1991 Reaffirmed-2019	mg/L	0.5	ND	ND
20	Pesticides	USEPA gas-liquid chromatography	mg/L	---	ND	ND
21	Aluminium	IS 3025:Part 55: 2003 Reaffirmed-2019	mg/L	0.03	ND	ND
22	Boron	IS 3025:Part 57: 2005 Reaffirmed-2017	mg/L	0.5	ND	ND
23	Nickel	IS 3025:Part 54: 2003 Reaffirmed-2019	mg/L	0.02	ND	ND

ND-Not Detected


(Authorized Signatory)S.P. Pattanayak
Tech. Manager

...END OF TEST REPORT...

GSTIN : 21AAACE6224D1ZE



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 [NABL] Accredited Laboratory, OISPEB Empanelled Laboratory and ISO 9001:2015 Certified Company)

Certificate No.: TC-2448

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DER-TC744022000000448F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 01 Nov 2022

Test Report No: ERSIPL/TR/AA/168

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 10-11.10.2022

Sample Received on : 21.10.2022

Analysis Started on : 21.10.2022

Analysis Completed on : 01.11.2022

Method of Sampling : ERSIPL/MSP/06

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

Sample ID. No. : Locations (Core Zone)

1. ERSIPL/AA/599

1. Near Site Office (NTPC), Kapurikachhar

2. ERSIPL/AA/600

2. Near Coal Lab

3. ERSIPL/AA/601

3. Near Work Shop

4. ERSIPL/AA/602

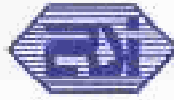
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQS Standards CPCB Nov-2009	Results			
					ERSIPL/AA/599	ERSIPL/AA/600	ERSIPL/AA/601	ERSIPL/AA/602
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	199.24	201.39	188.42	189.70
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	74.35	70.17	73.80	67.55
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	31.37	28.76	32.32	32.26
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.88	9.03	7.51	8.84
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	12.13	11.26	12.07	14.20

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
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ULR-TC744022000000449F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 01 Nov 2022

Test Report No: ERSIPL/TR/AA/169

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 11-12.10.2022
Sample Received on : 21.10.2022
Analysis Started on : 21.10.2022
Analysis Completed on : 01.11.2022
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/603
2. ERSIPL/AA/604
3. ERSIPL/AA/605
4. ERSIPL/AA/606

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharia
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NABL Standards CPCB Nov-2009	Results			
					ERSIPL/AA/603	ERSIPL/AA/604	ERSIPL/AA/605	ERSIPL/AA/606
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1993, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	183.77	192.14	186.08	181.05
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	72.75	72.50	66.70	72.22
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	30.39	31.37	33.16	33.60
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.92	9.43	8.32	6.42
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	13.27	12.56	12.98	10.70

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6Z24D1ZE

Environmental Research and Services (India) Pvt. Ltd.

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37 TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 01 Nov 2022
Test Report No: ERSIPL/TR/AA/T:168-169
Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 10-12.10.2022
Sample Received on : 21.10.2022
Analysis Started on : 21.10.2022
Analysis Completed on : 01.11.2022
Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

Locations

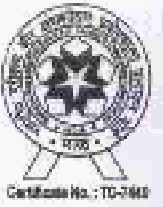
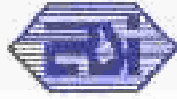
1. ERSIPL/AA/599
2. ERSIPL/AA/600
3. ERSIPL/AA/601
4. ERSIPL/AA/602
5. ERSIPL/AA/603
6. ERSIPL/AA/604
7. ERSIPL/AA/605
8. ERSIPL/AA/606

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunn
7. Near Village Khuntjharia
8. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/599	<1.14
2	ERSIPL/AA/600	<1.14
3	ERSIPL/AA/601	<1.14
4	ERSIPL/AA/602	<1.14
5	ERSIPL/AA/603	<1.14
6	ERSIPL/AA/604	<1.14
7	ERSIPL/AA/605	<1.14
8	ERSIPL/AA/606	<1.14
	Permissible Limit	2.0

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (NABL) Accredited Laboratory, DSPCB Empanelled Laboratory and ISO 9001:2015 Certified Company)

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ULR-TC744022000000450F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 01 Nov 2022

Test Report No: ERSIPL/TR/AA/170

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 26-27.10.2022
Sample Received on : 29.10.2022
Analysis Started on : 29.10.2022
Analysis Completed on : 01.11.2022
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Clody/Rainy

Sample ID. No.

1. ERSIPL/AA/663
2. ERSIPL/AA/664
3. ERSIPL/AA/665
4. ERSIPL/AA/666

Locations (Core Zone)

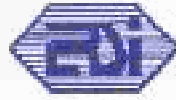
1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/663	ERSIPL/AA/664	ERSIPL/AA/665	ERSIPL/AA/666
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	xxx	131.79	133.39	141.93	132.11
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	63.38	51.01	53.73	59.55
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	27.76	25.21	28.34	24.15
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	7.16	7.89	6.67	7.31
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	µg/m ³	80.0	10.64	11.62	12.09	10.67


(Authorized Signatory)
S.P. Pattanayek
Tech. Manager

..... END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
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ULR-TC744022000000451F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 01 Nov 2022

Test Report No: ERSIPL/TR/AA/171

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 27-28.10.2022
Sample Received on : 29.10.2022
Analysis Started on : 29.10.2022
Analysis Completed on : 01.11.2022
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Rainy

Sample ID. No.

1. ERSIPL/AA/667
2. ERSIPL/AA/668
3. ERSIPL/AA/669
4. ERSIPL/AA/670

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunr
3. Near Village Khuntjharia
4. Near Village Kathfall

TEST FINDINGS:

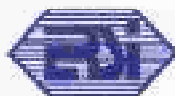
Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per MAAS Standards CPCB Nov-2009	Results			
					ERSIPL/AA/667	ERSIPL/AA/668	ERSIPL/AA/669	ERSIPL/AA/670
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	146.19	132.58	139.51	126.14
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	65.25	54.76	62.62	55.82
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	22.44	25.74	26.59	28.36
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	6.13	6.32	8.08	7.18
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	11.14	10.09	10.27	12.27

S.P. Pattanayak
(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/37 TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 01 Nov 2022

Test Report No: ERSIPL/TR/AA/T:170-171

Name and Address of the Customer

: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer.

Date of Sampling/Monitoring

: 26-28.10.2022

Sample Received on

: 29.10.2022

Analysis Started on

: 29.10.2022

Analysis Completed on

: 01.11.2022

Method of Sampling

: ERSIPL/MSP/06

Quantity of Sample

: 01 sample for each parameter

Environment Condition

: Cloudy,Rainy

Sample ID. No.

1. ERSIPL/AA/663
2. ERSIPL/AA/664
3. ERSIPL/AA/665
4. ERSIPL/AA/666
5. ERSIPL/AA/667
6. ERSIPL/AA/668
7. ERSIPL/AA/669
8. ERSIPL/AA/670

Locations

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunr
7. Near Village Khuntjaria
8. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID.No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/663	<1.14
2	ERSIPL/AA/664	<1.14
3	ERSIPL/AA/665	<1.14
4	ERSIPL/AA/666	<1.14
5	ERSIPL/AA/667	<1.14
6	ERSIPL/AA/668	<1.14
7	ERSIPL/AA/669	<1.14
8	ERSIPL/AA/670	<1.14
	<u>Permissible Limit</u>	2.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(A-100), G-17074-PC-7 (HAF), A, Sector-10, Connaught Place, GPO Building, Connaught Place, New Delhi-110028, India. (ISO 9001:2015 Certified Company) Certificate No.: TC-649

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ULR-TC74402200000513F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 02 Dec 2022
Test Report No: ERSIPL/TR/AA/193
Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 07-08.11.2022
Sample Received on : 24.11.2022
Analysis Started on : 24.11.2022
Analysis Completed on : 02.12.2022
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny
Sample ID, No. **Locations (Core Zone)**

1. ERSIPL/AA/689
2. ERSIPL/AA/690
3. ERSIPL/AA/691
4. ERSIPL/AA/692

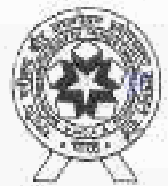
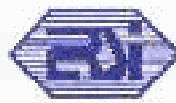
1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 689	ERSIPL/ AA/ 690	ERSIPL/ AA/ 691	ERSIPL/ AA/ 692
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)-1995, Reaffirmed-2015, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	183.01	190.45	184.83	178.92
2	Particulate Matter (size less than 10 μm) or PM ₁₀	IS 5182 (Part 23)- 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	71.17	67.58	70.18	69.09
3	Particulate Matter (size less than 2.5 μm) or PM _{2.5}	IS 5182 (Part 24)- 2010, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	32.11	29.38	31.14	31.17
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2)- 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.49	9.38	8.14	7.25
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6)- 2005, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	12.11	10.84	11.92	12.60

(Authorized Signatory)
S.P. Pattanayek
Tech. Manager

END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (NABL) Accredited Laboratory, BSPCB Empanelled Laboratory and ISO 9001:2015 Certified Company)

Certificate No.: TC-2448

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UIN-TC74402200000514F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No. 1 of 1

Date: 02 Dec 2022	Test Report No: ERSIPL/TR/AA/194
Name and Address of the Customer :	Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by :	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of :	Representative of Customer
Date of Sampling/Monitoring :	08-09-11-2022
Sample Received on :	21.11.2022
Analysis Started on :	24.11.2022
Analysis Completed on :	02.12.2022
Method of Sampling :	ERSIPL/MSP/06
Quantity of Sample :	01 sample for each parameter
Environment Condition :	Sunny

Sample ID. No.

1. ERSIPL/AA/693
2. ERSIPL/AA/694
3. ERSIPL/AA/695
4. ERSIPL/AA/696

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharie
4. Near Village Kathfali

TEST FINDINGS:

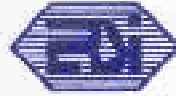
Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2020	Results			
					ERSIPL/AA/693	ERSIPL/AA/694	ERSIPL/AA/695	ERSIPL/AA/696
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1996, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	189.31	182.07	186.01	196.00
2	Particulate Matter (size less than 10 μm) or PM 10	IS: 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	68.58	70.88	68.63	70.15
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS: 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	33.93	30.76	28.08	32.32
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed 2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.61	8.99	8.84	7.63
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 5): 2006, Reaffirmed 2017	$\mu\text{g}/\text{m}^3$	80.0	13.55	11.97	11.20	13.59


 (Authorized Signatory)
 S.P. Kantanayak
 Tech. Manager

..... END OF TEST REPORT.....



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/37 TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 02 Dec 2022
Test Report No: ERSIPL/TR/AA/T:193-194
Name and Address of the Customer: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by: Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of: Representative of Customer.
Date of Sampling/Monitoring: 07-09.11.2022
Sample Received on: 24.11.2022
Analysis Started on: 24.11.2022
Analysis Completed on: 02.12.2022
Method of Sampling: As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009) CPCB
Quantity of Sample: 01 sample for each parameter
Environment Condition: Sunny

Sample ID. No.

Locations

1. ERSIPL/AA/689
2. ERSIPL/AA/690
3. ERSIPL/AA/691
4. ERSIPL/AA/692
5. ERSIPL/AA/693
6. ERSIPL/AA/694
7. ERSIPL/AA/695
8. ERSIPL/AA/696

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Bengalmunr
7. Near Village Khuntjharia
8. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/689	<1.14
2	ERSIPL/AA/690	<1.14
3	ERSIPL/AA/691	<1.14
4	ERSIPL/AA/692	<1.14
5	ERSIPL/AA/693	<1.14
6	ERSIPL/AA/694	<1.14
7	ERSIPL/AA/695	<1.14
8	ERSIPL/AA/696	<1.14
	Permissible Limit	2.0

(Authorized Signatory)

S.P.Pattanayak
Tech.Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

Reg. No. EE 17025, 35/7, Plot No. 10, Sector-1, U.P. Industrial Estate, Chandaka, Bhubaneswar-751024, Odisha. Laboratory and ISO 9001:2015 Certified Company. **Lab. No.: TC-202**

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ULR-TC744022000000516F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 02 Dec 2022	Test Report No: ERSIPL/TR/AA/196
Name and Address of the Customer :	Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by :	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of :	Representative of Customer
Date of Sampling/Monitoring :	24-25.11.2022
Sample Received on :	28.11.2022
Analysis Started on :	28.11.2022
Analysis Completed on :	02.12.2022
Method of Sampling :	ERSIPL/MSP/06
Quantity of Sample :	01 sample for each parameter
Environment Condition :	Cloudy

Sample ID. No.

1. ERSIPL/AA/753
2. ERSIPL/AA/754
3. ERSIPL/AA/755
4. ERSIPL/AA/756

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2019	Results			
					ERSIPL/AA/753	ERSIPL/AA/754	ERSIPL/AA/755	ERSIPL/AA/756
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1989, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	190.75	189.67	206.90	198.11
2	Particulate Matter (size less than 10 μm) or PM 10	IS: 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	71.39	68.26	69.71	70.27
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS: 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	33.70	28.10	29.40	31.95
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed 2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.75	7.50	8.03	7.82
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6): 2006, Reaffirmed 2017	$\mu\text{g}/\text{m}^3$	80.0	12.72	10.81	11.05	10.77

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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UICR-TC74402200000515F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 02 Dec 2022

Test Report No: ERSIPL/TR/AA/195

Name and Address of the Customer :

Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by :

Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of :

Representative of Customer.

Date of Sampling/Monitoring :

25-26.11.2022

Sample Received on :

28.11.2022

Analysis Started on :

28.11.2022

Analysis Completed on :

02.12.2022

Method of Sampling :

ERSIPL/MSP/06

Quantity of Sample :

01 sample for each parameter

Environment Condition :

Sunny

Sample ID. No.

Locations (Buffer Zone)

1. ERSIPL/AA/757

1. Near Village Bendrichua

2. ERSIPL/AA/758

2. Near Village Bengolmunra

3. ERSIPL/AA/759

3. Near Village Khuatjharla

4. ERSIPL/AA/760

4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards (SPC 2008)	Results			
					ERSIPL/AA/757	ERSIPL/AA/758	ERSIPL/AA/759	ERSIPL/AA/760
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1995, Reaffirmed-2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	193.03	181.10	196.91	201.47
2	Particulate Matter (Size less than 10 μm) or PM 10	IS: 5182 (Part 23): 2006, Reaffirmed-2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	69.49	74.07	67.22	72.39
3	Particulate Matter (Size less than 2.5 μm) or PM 2.5	IS: 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	32.70	30.62	31.16	27.94
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeze Method	$\mu\text{g}/\text{m}^3$	80.0	7.68	8.23	7.91	8.20
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6): 2006, Reaffirmed-2017	$\mu\text{g}/\text{m}^3$	80.0	11.97	12.69	10.18	12.01

(Authorized Signatory)
S. P. Pattnayak
Tech. Manager

..... END OF TEST REPORT.....



CIN - U73100OR1995PTC003869



GSTIN : 21AAACE6224D1ZE

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Test Report Format No.: ERSIPL/FM/37 TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 02 Dec 2022	Test Report No: ERSIPL/TR/AA/T:195-196
Name and Address of the Customer	Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	Representative of Customer.
Date of Sampling/Monitoring	24-26.11.2022
Sample Received on	28.11.2022
Analysis Started on	28.11.2022
Analysis Completed on	02.12.2022
Method of Sampling	ERSIPL/MSP/06
Quantity of Sample	01 sample for each parameter
Environment Condition	Cloudy/Sunny

Sample ID. No.

1. ERSIPL/AA/753
2. ERSIPL/AA/754
3. ERSIPL/AA/755
4. ERSIPL/AA/756
5. ERSIPL/AA/757
6. ERSIPL/AA/758
7. ERSIPL/AA/759
8. ERSIPL/AA/760

Locations

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunr
7. Near Village Khuntgharla
8. Near Village Kythfaji

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/753	<1.14
2	ERSIPL/AA/754	<1.14
3	ERSIPL/AA/755	<1.14
4	ERSIPL/AA/756	<1.14
5	ERSIPL/AA/757	<1.14
6	ERSIPL/AA/758	<1.14
7	ERSIPL/AA/759	<1.14
8	ERSIPL/AA/760	<1.14
	Permissible Limit	2.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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Certificate No.: TC-0466

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ULR-TC744022000000577F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 Dec 2022

Test Report No: ERSIPL/TR/AA/214

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 12-13.12.2022

Sample Received on : 22.12.2022

Analysis Started on : 22.12.2022

Analysis Completed on : 29.12.2022

Method of Sampling : ERSIPL/MSP/06

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/784

1. Near Site Office (NTPC), Kapurikachhar

2. ERSIPL/AA/785

2. Near Coal Lab

3. ERSIPL/AA/786

3. Near Work Shop

4. ERSIPL/AA/787

4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NABL Standards CPCB Nov-2009	Results			
					ERSIPL/AA/784	ERSIPL/AA/785	ERSIPL/AA/786	ERSIPL/AA/787
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed -2019, Gravimetric Method	µg/m ³	XX	211.03	205.61	201.80	205.77
2	Particulate Matter (size less than 10 µm) or PM ₁₀	IS 5182 (Part 23)- 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	74.02	77.48	71.48	74.09
3	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	35.73	34.34	31.88	32.30
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	8.12	8.26	7.40	7.88
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	µg/m ³	80.0	13.28	13.27	11.51	11.71

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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ULR-TC744022000000578F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 Dec 2022

Test Report No: ERSIPL/TR/AA/215

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 13-14.12.2022
Sample Received on : 22.12.2022
Analysis Started on : 22.12.2022
Analysis Completed on : 29.12.2022
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/788
2. ERSIPL/AA/789
3. ERSIPL/AA/790
4. ERSIPL/AA/791

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharla
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit under NAAG Standards CPCB, NDQ-1989	Results			
					ERSIPL/AA/788	ERSIPL/AA/789	ERSIPL/AA/790	ERSIPL/AA/791
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	196.52	219.37	200.80	201.95
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	70.21	75.16	74.09	72.28
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	29.26	31.81	32.28	31.05
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 21): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.35	8.71	9.50	8.03
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed 2017	$\mu\text{g}/\text{m}^3$	80.0	10.76	11.60	13.53	11.25

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 29 Dec 2022
Test Report No: ERSIPL/TR/AA/T:214-215
Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 12-14.12.2022
Sample Received on : 22.12.2022
Analysis Started on : 22.12.2022
Analysis Completed on : 29.12.2022
Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009) CPCB
Quantity of Sample : 01 sample for each parameter.
Environment Condition : Sunny

Sample ID. No.


1. ERSIPL/AA/784
2. ERSIPL/AA/785
3. ERSIPL/AA/786
4. ERSIPL/AA/787
5. ERSIPL/AA/788
6. ERSIPL/AA/789
7. ERSIPL/AA/790
8. ERSIPL/AA/791

Locations

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Bengalmunr
7. Near Village Khuntjaria
8. Near Village Karhali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/784	<1.14
2	ERSIPL/AA/785	<1.14
3	ERSIPL/AA/786	<1.14
4	ERSIPL/AA/787	<1.14
5	ERSIPL/AA/788	<1.14
6	ERSIPL/AA/789	<1.14
7	ERSIPL/AA/790	<1.14
8	ERSIPL/AA/791	<1.14
Permissible Limit		2.0


 (Authorized Signatory)
 S.P. Pattanayak
 Tech. Manager



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ULR-TC74402200000579F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 Dec 2022
Test Report No: ERSIPL/TR/AA/216
Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 22-23, 12, 2022
Sample Received on : 26.12.2022
Analysis Started on : 26.12.2022
Analysis Completed on : 29.12.2022
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/832
2. ERSIPL/AA/833
3. ERSIPL/AA/834
4. ERSIPL/AA/835

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/832	ERSIPL/AA/833	ERSIPL/AA/834	ERSIPL/AA/835
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed -2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	KK	196.64	194.13	203.77	189.40
2	Particulate Matter (size less than 10 μm) or PM ₁₀	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	71.63	69.87	72.64	69.66
3	Particulate Matter (size less than 2.5 μm) or PM _{2.5}	IS 5182 (Part 24)- 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	31.55	30.64	34.88	30.19
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.80	7.50	8.60	7.44
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6)- 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	11.05	12.71	11.68	10.91


 (Authorized Signatory)
 S.P. Pattanayek
 Tech. Manager

.....END OF TEST REPORT.....



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ULR-TC744022000000580F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 Dec 2022

Test Report No: ERSIPL/TR/AA/217

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Date of Sampling/Monitoring : 23-24.12.2022

Sample Received on : 26.12.2022

Analysis Started on : 26.12.2022

Analysis Completed on : 29.12.2022

Method of Sampling : ERSIPL/MSP/06

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/836

2. ERSIPL/AA/837

3. ERSIPL/AA/838

4. ERSIPL/AA/839

Locations (Buffer Zone)

1. Near Village Bendrichua

2. Near Village Rengalmunra

3. Near Village Khuntjharla

4. Near Village Kathfall

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAG Standards CPCB Nov-2009	Results			
					ERSIPL/AA/836	ERSIPL/AA/837	ERSIPL/AA/838	ERSIPL/AA/839
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	RM	207.56	196.23	206.35	199.48
2	Particulate Matter (size less than 10 μm) or PM 10	IS: 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	68.87	70.38	68.02	68.49
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS: 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	33.51	28.86	33.35	32.28
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.20	9.35	8.43	8.22
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	12.77	10.59	10.84	12.53

(Authorized Signatory)

S.P.Pattanayak
Tech Manager



Environmental Research and Services (India) Pvt. Ltd.

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Test Report Format No.: ERSIPL/FM/37 TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 29 Dec 2022 Test Report No: ERSIPL/TR/AA/T:216-217
Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 22-24.12.2022
Sample Received on : 26.12.2022
Analysis Started on : 26.12.2022
Analysis Completed on : 29.12.2022
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/832
2. ERSIPL/AA/833
3. ERSIPL/AA/834
4. ERSIPL/AA/835
5. ERSIPL/AA/836
6. ERSIPL/AA/837
7. ERSIPL/AA/838
8. ERSIPL/AA/839

Locations

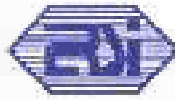
1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunr
7. Near Village Khuntjharua
8. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/832	<1.14
2	ERSIPL/AA/833	<1.14
3	ERSIPL/AA/834	<1.14
4	ERSIPL/AA/835	<1.14
5	ERSIPL/AA/836	<1.14
6	ERSIPL/AA/837	<1.14
7	ERSIPL/AA/838	<1.14
8	ERSIPL/AA/839	<1.14
	Permissible Limit	2.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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ULR-TC744023000000001F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Jan 2023

Test Report No: ERSIPL/TR/AA/001

Name and Address of the Customer :	Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by :	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of :	Representative of Customer.
Date of Sampling/Monitoring :	12-13.01.2023
Sample Received on :	16.01.2023
Analysis Started on :	16.01.2023
Analysis Completed on :	23.01.2023
Method of Sampling :	ERSIPL/MSP/06
Quantity of Sample :	01 sample for each parameter
Environment Condition :	Sunny

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/001
2. ERSIPL/AA/002
3. ERSIPL/AA/003
4. ERSIPL/AA/004

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/001	ERSIPL/AA/002	ERSIPL/AA/003	ERSIPL/AA/004
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed -2019, Gravimetric Method	µg/m ³	XX	207.29	219.01	217.51	201.23
2	Particulate Matter (size less than 10 µm) or PM 10	IS: 5182 (Part 23)- 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	74.38	75.81	70.54	72.57
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS: 5182 (Part 24)- 2019, Gravimetric Method	µg/m ³	60.0	33.52	35.33	32.92	35.22
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 21)- 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	8.49	9.21	7.90	7.48
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6)- 2000, Reaffirmed -2017	µg/m ³	80.0	13.73	13.96	12.72	11.24

(Authorized Signatory)

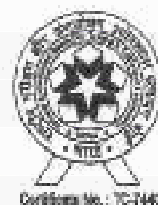
S.P.Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
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ULR-TC744023000000002F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Jan 2023

Test Report No: ERSIPL/TR/AA/002

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Date of Sampling/Monitoring : 13-14.01.2023

Sample Received on : 16.01.2023

Analysis Started on : 16.01.2023

Analysis Completed on : 23.01.2023

Method of Sampling : ERSIPL/MSP/06

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/005
2. ERSIPL/AA/006
3. ERSIPL/AA/007
4. ERSIPL/AA/008

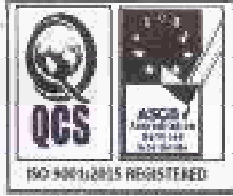
Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharia
4. Near Village Kathfali

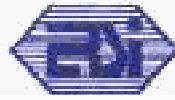
TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per N/AACQ Standards CPCB reg-2015	Results			
					ERSIPL/ AA/ 005	ERSIPL/ AA/ 006	ERSIPL/ AA/ 007	ERSIPL/ AA/ 008
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1995, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	192.45	198.41	201.18	196.92
2	Particulate Matter (size less than 10 μm) or PM 10	IS: 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	69.77	69.32	70.09	71.38
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS: 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	29.19	29.22	34.73	27.91
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.35	9.41	8.07	6.75
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6): 2006, Reaffirmed 2017	$\mu\text{g}/\text{m}^3$	80.0	12.58	12.27	14.55	12.53

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



CIN : U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg. 1/1


Date: 27 Jan 2023	Test Report No: ERSIPL/TR/AA/T:001-002
Name and Address of the Customer	: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by	: Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	: Representative of Customer.
Date of Sampling/Monitoring	: 12-14.01.2023
Sample Received on	: 16.01.2023
Analysis Started on	: 16.01.2023
Analysis Completed on	: 23.01.2023
Method of Sampling	: As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB
Quantity of Sample	: 01 sample for each parameter
Environment Condition	: Sunny

Sample ID. No.Locations

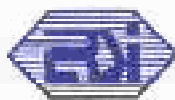
1. ERSIPL/AA/001	1. Near Site Office (NTPC), Kapurikachhar
2. ERSIPL/AA/002	2. Near Coal Lab
3. ERSIPL/AA/003	3. Near Work Shop
4. ERSIPL/AA/004	4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. ERSIPL/AA/005	5. Near Village Bendrichua
6. ERSIPL/AA/006	6. Near Village Bengalmun
7. ERSIPL/AA/007	7. Near Village Khuntjharua
8. ERSIPL/AA/008	8. Near Village Kathali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (In mg/m ³)
1	ERSIPL/AA/001	<1.14
2	ERSIPL/AA/002	<1.14
3	ERSIPL/AA/003	<1.14
4	ERSIPL/AA/004	<1.14
5	ERSIPL/AA/005	<1.14
6	ERSIPL/AA/006	<1.14
7	ERSIPL/AA/007	<1.14
8	ERSIPL/AA/008	<1.14
Permissible Limit		2.0

(Authorized Signatory)

 D.P. Pattnayak
 Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001:2015 Certified Company)



Certificate No.: TC17440

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ULR-TC/44023000000003F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Jan 2023

Test Report No: ERSIPL/TR/AA/003

Name and Address of the Customer	:	Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of Customer
Date of Sampling/Monitoring	:	16-17.01.2023
Sample Received on	:	24.01.2023
Analysis Started on	:	24.01.2023
Analysis Completed on	:	27.01.2023
Method of Sampling	:	ERSIPL/MSP/06
Quantity of Sample	:	01 sample for each parameter
Environment Condition	:	Sunny

Sample ID. No.

1. ERSIPL/AA/033
2. ERSIPL/AA/034
3. ERSIPL/AA/035
4. ERSIPL/AA/036

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit As per NAAQ Standard CPCB Nov-2009	Results			
					ERSIPL/ AA/ 033	ERSIPL/ AA/ 034	ERSIPL/ AA/ 035	ERSIPL/ AA/ 036
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1999, Reaffirmed -2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	208.72	204.08	203.55	211.43
2	Particulate Matter (size less than 10 μm) or PM ₁₀	IS: 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	71.36	74.30	70.61	74.63
3	Particulate Matter (size less than 2.5 μm) or PM _{2.5}	IS: 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	32.32	33.59	31.33	34.36
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 21): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.50	7.48	8.34	7.56
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	11.80	14.57	11.21	12.56

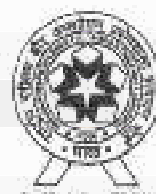
(Authorized Signatory)
S.P. Pattenayak
Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

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ULR-TG744023000000004F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Jan 2023	Test Report No: ERSIPL/TR/AA/004
Name and Address of the Customer: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.	
Sample Collected by: Representative of ERS (I) Pvt. Ltd.	
Sample Collected In presence of: Representative of Customer.	
Date of Sampling/Monitoring: 17-18.01.2023	
Sample Received on: 24.01.2023	
Analysis Started on: 24.01.2023	
Analysis Completed on: 27.01.2023	
Method of Sampling: ERSIPL/MSP/06	
Quantity of Sample: 01 sample for each parameter	
Environment Condition: Sunny	

Sample ID. No.

1. ERSIPL/AA/037
2. ERSIPL/AA/038
3. ERSIPL/AA/039
4. ERSIPL/AA/040

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharis
4. Near Village Kathtali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB New 2009	Results			
					ERSIPL/AA/037	ERSIPL/AA/038	ERSIPL/AA/039	ERSIPL/AA/040
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1993, Reaffirmed 2019, Gravimetric Method	µg/m ³	XX	199.53	190.76	192.17	200.89
2	Particulate Matter (size less than 10 µm) or PM ₁₀	IS: 5182 (Part: 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	71.14	67.93	70.56	72.72
3	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	IS: 5182 (Part: 24): 2019, Gravimetric Method	µg/m ³	60.0	34.43	31.39	31.36	33.20
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part: 2): 2001, Reaffirmed 2017, improved West & Gaekle Method	µg/m ³	80.0	9.41	8.38	7.56	8.03
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part: 6): 2006, Reaffirmed -2017	µg/m ³	80.0	10.47	13.40	13.35	12.11

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager

..... END OF TEST REPORT.....



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/37 TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 27 Jan 2023

Test Report No: ERSIPL/TR/AA/T:003-004

Name and Address of the Customer

: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer.

Date of Sampling/Monitoring

: 16-18.01.2023

Sample Received on

: 24.01.2023

Analysis Started on

: 24.01.2023

Analysis Completed on

: 27.01.2023

Method of Sampling

: ERSIPL/MSP/06

Quantity of Sample

: 01 sample for each parameter

Environment Condition

: Sunny

Sample ID. No.

1. ERSIPL/AA/033
2. ERSIPL/AA/034
3. ERSIPL/AA/035
4. ERSIPL/AA/036
5. ERSIPL/AA/037
6. ERSIPL/AA/038
7. ERSIPL/AA/039
8. ERSIPL/AA/040

Locations

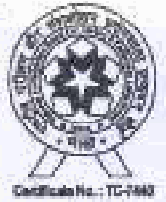
1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Bengalmunr
7. Near Village Khuntjharia
8. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/033	<1.14
2	ERSIPL/AA/034	<1.14
3	ERSIPL/AA/035	<1.14
4	ERSIPL/AA/036	<1.14
5	ERSIPL/AA/037	<1.14
6	ERSIPL/AA/038	<1.14
7	ERSIPL/AA/039	<1.14
8	ERSIPL/AA/040	<1.14
	Permissible Limit	2.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
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ULR-TC744023000000085F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Feb 2023
Test Report No: ERSIPL/TR/AA/030
Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-14.02.2023
Sample Received on : 21.02.2023
Analysis Started on : 21.02.2023
Analysis Completed on : 27.02.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny
Sample ID. No. Locations (Core Zone)

1. ERSIPL/AA/112
2. ERSIPL/AA/113
3. ERSIPL/AA/114
4. ERSIPL/AA/115

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/112	ERSIPL/AA/113	ERSIPL/AA/114	ERSIPL/AA/115
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed -2019, Gravimetric Method	ug/m ³	xx	203.95	207.70	192.20	208.99
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	ug/m ³	100.0	75.39	73.30	72.40	74.11
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	ug/m ³	60.0	34.02	32.96	33.74	34.16
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 7): 2001, Reaffirmed-2017, Improved West G Gas Method	ug/m ³	80.0	9.11	8.95	8.91	7.68
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	ug/m ³	80.0	13.54	12.75	13.77	11.41


 (Authorized Signatory)
 S.P. Pattanayak
 Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

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LJA-TC744023000000086F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Feb 2023
Test Report No: ERSIPL/TR/AA/031
Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 14-15.02.2023
Sample Received on : 21.02.2023
Analysis Started on : 21.02.2023
Analysis Completed on : 27.02.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/116
2. ERSIPL/AA/117
3. ERSIPL/AA/118
4. ERSIPL/AA/119

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengaimunra
3. Near Village Khuntjharla
4. Near Village Kathfali

TEST FINDINGS:

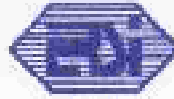
Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/116	ERSIPL/AA/117	ERSIPL/AA/118	ERSIPL/AA/119
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	197.67	198.02	192.65	198.49
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	70.81	69.67	70.58	71.95
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	28.36	29.41	30.64	31.05
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.43	8.31	7.48	8.41
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	10.99	11.07	12.47	11.67

(Authorized Signatory)
S.P.Pattanayak
 Tech. Manager

..... END OF TEST REPORT.....



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 27 Feb 2023
Test Report No: ERSIPL/TR/AA/T:030-031
Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-15.02.2023
Sample Received on : 21.02.2023
Analysis Started on : 21.02.2023
Analysis Completed on : 27.02.2023
Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.**Locations**

- | | |
|-------------------------|--|
| 1. ERSIPL/AA/112 | 1. Near Site Office (NTPC), Kapurikachhar |
| 2. ERSIPL/AA/113 | 2. Near Coal Lab |
| 3. ERSIPL/AA/114 | 3. Near Work Shop |
| 4. ERSIPL/AA/115 | 4. Near Weigh Bridge 3 & 4 (Village Dulanga) |
| 5. ERSIPL/AA/116 | 5. Near Village Bendrichua |
| 6. ERSIPL/AA/117 | 6. Near Village Rengalmurr |
| 7. ERSIPL/AA/118 | 7. Near Village Khuntjharia |
| 8. ERSIPL/AA/119 | 8. Near Village Kathal |

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/112	<1.14
2	ERSIPL/AA/113	<1.14
3	ERSIPL/AA/114	<1.14
4	ERSIPL/AA/115	<1.14
5	ERSIPL/AA/116	<1.14
6	ERSIPL/AA/117	<1.14
7	ERSIPL/AA/118	<1.14
8	ERSIPL/AA/119	<1.14
	Permissible Limit	2.0


 (Authorized Signatory)
S.P. Pattanayak
 Tech. Manager

..... END OF TEST REPORT



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2005 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
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ULR-TC744023000000087F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Feb 2023
 Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of Customer
 Date of Sampling/Monitoring : 19-20.02.2023
 Sample Received on : 21.02.2023
 Analysis Started on : 22.02.2023
 Analysis Completed on : 27.02.2023
 Method of Sampling : ERSIPL/MSP/06
 Quantity of Sample : 01 sample for each parameter
 Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/131
2. ERSIPL/AA/132
3. ERSIPL/AA/133
4. ERSIPL/AA/134

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAG Standards CPCB Rev-2009	Results			
					ERSIPL/AA/131	ERSIPL/AA/132	ERSIPL/AA/133	ERSIPL/AA/134
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1998, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	208.55	212.23	196.62	208.74
2	Particulate Matter (size less than 10 μm) or PM 10	IS: 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	70.84	73.67	69.28	74.64
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS: 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	30.41	31.92	32.67	33.58
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.22	7.37	8.17	8.89
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	11.66	13.76	11.38	13.63

(Authorized Signatory)
 S.P.Pattanayak
 Tech. Manager

---END OF TEST REPORT---



Environmental Research and Services (India) Pvt. Ltd.

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ULR-TC744023000000088F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Feb 2023

Test Report No: ERSIPL/TR/AA/033

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 20-21.02.2023

Sample Received on : 21.02.2023

Analysis Started on : 22.02.2023

Analysis Completed on : 27.02.2023

Method of Sampling : ERSIPL/MSP/06

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

Sample ID. No.

Locations (Buffer Zone)

1. ERSIPL/AA/135

1. Near Village Bendrichua

2. ERSIPL/AA/136

2. Near Village Rengalmunra

3. ERSIPL/AA/137

3. Near Village Khuntjharla

4. ERSIPL/AA/138

4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB No-2008	Results			
					ERSIPL/AA/135	ERSIPL/AA/136	ERSIPL/AA/137	ERSIPL/AA/138
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	202.08	199.40	205.09	208.12
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	72.05	72.51	69.47	71.86
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	31.57	31.61	29.34	32.19
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 7): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.27	7.73	8.28	7.60
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	12.30	10.59	13.14	11.70

(Authorized Signatory)

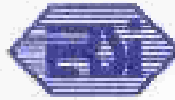
S.P. Pattanayak

Tech. Manager

..... END OF TEST REPORT.....



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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Test Report Format No.: ERSIPL/FM/37 TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 27 Feb 2023

Test Report No: ERSIPL/TR/AA/T:032-033

Name and Address of the Customer

: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer.

Date of Sampling/Monitoring

: 19-21.02.2023

Sample Received on

: 21.02.2023

Analysis Started on

: 22.02.2023

Analysis Completed on

: 27.02.2023

Method of Sampling

: ERSIPL/MSP/06

Quantity of Sample

: 01 sample for each parameter

Environment Condition

: Sunny

Sample ID. No.

1. ERSIPL/AA/131
2. ERSIPL/AA/132
3. ERSIPL/AA/133
4. ERSIPL/AA/134
5. ERSIPL/AA/135
6. ERSIPL/AA/136
7. ERSIPL/AA/137
8. ERSIPL/AA/138

Locations

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunr
7. Near Village Khuntjharia
8. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/131	<1.14
2	ERSIPL/AA/132	<1.14
3	ERSIPL/AA/133	<1.14
4	ERSIPL/AA/134	<1.14
5	ERSIPL/AA/135	<1.14
6	ERSIPL/AA/136	<1.14
7	ERSIPL/AA/137	<1.14
8	ERSIPL/AA/138	<1.14
Permissible Limit		2.0

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (NABL) Accredited Laboratory, DSPCB Empanelled Laboratory and ISO 9001:2015 Certified Company)

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744023000000112F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Mar 2023

Test Report No: ERSIPL/TR/AA/042

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected In presence of : Representative of Customer
Date of Sampling/Monitoring : 13-14.03.2023
Sample Received on : 21.03.2023
Analysis Started on : 21.03.2023
Analysis Completed on : 27.03.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/161
2. ERSIPL/AA/162
3. ERSIPL/AA/163
4. ERSIPL/AA/164

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

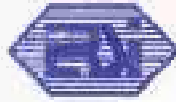
TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov- 2009	Results			
					ERSIPL/ AA/ 161	ERSIPL/ AA/ 162	ERSIPL/ AA/ 163	ERSIPL/ AA/ 164
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	XX	210.44	201.53	208.25	201.35
2	Particulate Matter (size less than 10 µm) or PM ₁₀	IS 5182 (Part 23): 2006, Reaffirmed 2017, Gravimetric Method	µg/m ³	100.0	74.14	74.27	72.37	70.20
3	Particulate Matter (size less than 2.5 µm) or PM _{2.5}	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	35.43	33.23	35.05	32.40
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	9.44	8.38	8.19	8.09
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	µg/m ³	80.0	13.25	13.53	14.33	11.30

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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ULR-TC744023000000113F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Mar 2023

Test Report No: ERSIPL/TR/AA/043

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 14-15.03.2023
Sample Received on : 21.03.2023
Analysis Started on : 21.03.2023
Analysis Completed on : 27.03.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/165
2. ERSIPL/AA/166
3. ERSIPL/AA/167
4. ERSIPL/AA/168

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharia
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NABQ Standards CPCB Nov-2022	Results			
					ERSIPL/AA/165	ERSIPL/AA/166	ERSIPL/AA/167	ERSIPL/AA/168
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	200.59	201.37	199.88	199.29
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	74.82	71.12	70.59	69.47
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	31.85	30.60	30.89	30.46
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.06	7.98	8.47	7.76
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	11.34	13.61	11.34	10.94

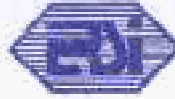
(Authorized Signatory)

S.P. Pattanayak
Tech. Manager

END OF TEST REPORT



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.**(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)**Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No. : ERSIPL/FM/37
TEST REPORT (AMBIENT AIR)**

Pg-1/1

Date: 27 Mar 2023
Test Report No: ERSIPL/TR/AA/T:042-043
 Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha
 Sample Collected by : Representative of ERS (I) Pvt. Ltd.
 Sample Collected in presence of : Representative of Customer.
 Date of Sampling/Monitoring : 13-15.03.2023
 Sample Received on : 21.03.2023
 Analysis Started on : 21.03.2023
 Analysis Completed on : 27.03.2023
 Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB
 Quantity of Sample : 01 sample for each parameter
 Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/161
2. ERSIPL/AA/162
3. ERSIPL/AA/163
4. ERSIPL/AA/164
5. ERSIPL/AA/165
6. ERSIPL/AA/166
7. ERSIPL/AA/167
8. ERSIPL/AA/168

Locations

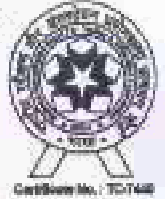
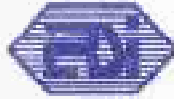
1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunr
7. Near Village Khuntjharia
8. Near Village Kathfali

TEST FINDINGS:

Place of Monitoring	Result of Parameters Analyzed					
	Mercury (Hg) (in $\mu\text{g}/\text{m}^3$)	Arsenic (As) (in ng/m^3)	Nickel (Ni) (in ng/m^3)	Cadmium (Cd) (in $\mu\text{g}/\text{m}^3$)	Chromium (Cr) (in $\mu\text{g}/\text{m}^3$)	Carbon Monoxide (CO) (in mg/m^3)
ERSIPL/AA/161	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/162	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/163	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/164	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/165	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/166	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/167	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/168	ND	ND	ND	ND	ND	<1.14
Permissible Limit	-	06	20.0	-	-	2.0

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC744023000000114E

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Mar 2023
Test Report No: ERSIPL/TR/AA/044
Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 17-18.03.2023
Sample Received on : 21.03.2023
Analysis Started on : 21.03.2023
Analysis Completed on : 27.03.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Mostly cloudy

Sample ID. No.

1. ERSIPL/AA/169
2. ERSIPL/AA/170
3. ERSIPL/AA/171
4. ERSIPL/AA/172

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/169	ERSIPL/AA/170	ERSIPL/AA/171	ERSIPL/AA/172
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4): 1999, Reaffirmed -2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	NA	212.82	208.55	208.16	205.47
2	Particulate Matter (size less than 10 μm) or PM 10	IS: 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	73.68	72.39	73.35	74.48
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS: 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	34.50	35.03	34.29	34.24
4	Sulphur Dioxide (SO ₂)	IS: 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.75	7.10	8.95	9.55
5	Oxides of Nitrogen (NO _x)	IS: 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	13.89	13.24	12.30	14.35


(Authorized Signatory)

S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025:2017 (NABL) Accredited Laboratory, OSPEB Empanelled Laboratory and ISO 9001:2015 Certified Company)

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ULR-TC744023000000115F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 27 Mar 2023

Test Report No: ERSIPL/TR/AA/045

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 18-19.03.2023

Sample Received on : 21.03.2023

Analysis Started on : 21.03.2023

Analysis Completed on : 27.03.2023

Method of Sampling : ERSIPL/MSP/06

Quantity of Sample : 01 sample for each parameter

Environment Condition : Mostly Cloudy

Sample ID. No.

1. ERSIPL/AA/173

2. ERSIPL/AA/174

3. ERSIPL/AA/175

4. ERSIPL/AA/176

Locations (Buffer Zone)

1. Near Village Bendrichua

2. Near Village Rengalmunra

3. Near Village Khuntjharia

4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/ AA/ 173	ERSIPL/ AA/ 174	ERSIPL/ AA/ 175	ERSIPL/ AA/ 176
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	216.80	201.53	209.72	196.34
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	72.96	76.11	74.50	71.80
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	36.97	32.65	31.31	33.87
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.84	8.45	8.87	7.07
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 5): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	14.91	13.40	14.09	10.87

(Authorized Signatory)

S.P. Pattanayak
Tech. Manager

..... END OF TEST REPORT.....



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329 , E-mail: ersibbsr@gmail.com

Test Report Format No.: ERSIPL/FM/37 TEST REPORT (AMBIENT AIR)

Pg. 1/1

Date: 27 Mar 2023**Test Report No: ERSIPL/TR/AA/T:044-045**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 17-19.03.2023

Sample Received on : 21.03.2023

Analysis Started on : 21.03.2023

Analysis Completed on : 27.03.2023

Method of Sampling : ERSIPL/MSP/06

Quantity of Sample : 01 sample for each parameter

Environment Condition : Mostly Cloudy

Sample ID. No.

1. ERSIPL/AA/169
2. ERSIPL/AA/170
3. ERSIPL/AA/171
4. ERSIPL/AA/172
5. ERSIPL/AA/173
6. ERSIPL/AA/174
7. ERSIPL/AA/175
8. ERSIPL/AA/176

Locations

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunr
7. Near Village Khuntjharia
8. Near Village Kathfali

TEST FINDINGS:

Place of Monitoring	Result of Parameters Analyzed					
	Mercury (Hg) (in $\mu\text{g}/\text{m}^3$)	Arsenic (As) (in ng/m^3)	Nickel (Ni) (in ng/m^3)	Cadmium (Cd) (in $\mu\text{g}/\text{m}^3$)	Chromium (Cr) (in $\mu\text{g}/\text{m}^3$)	Carbon Monoxide (CO) (in mg/m^3)
ERSIPL/AA/169	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/170	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/171	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/172	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/173	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/174	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/175	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/176	ND	ND	ND	ND	ND	<1.14
Permissible Limit	-	06	20.0	-	-	2.0

(Authorized Signatory)

S.P. Pattanayak
Tech. Analyst

END OF TEST REPORT



SAFETY ZONE FENCING & GAP PLANTATION

SAFETY ZONE FENCING & GAP PLANTATION



Grassing activities at Top Soil Dump



Before Grassing Activities along the slope.



After Grassing Activities along slope of Top Soil.

**Annexure - XXIII**

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

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र)

NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION

Project Name:	M/s Ntpc Ltd.		
Project Address:	M/s Ntpc Ltd., Dulanga Coal Mining Project		
Village:	Dulinga	Block:	Hemgir
District:	Sundargarh	State:	Odisha
Pin Code:			
Communication Address:	M/s Ntpc Ltd, Dulanga Coal Mining Project, At- Khapurikachhar , P.o: Sanghumuda, Hemgir, Sundargarh, Odisha - 770013		
Address of CGWB Regional Office :	Central Ground Water Board South Eastern Region, Bhujal Bhawan, Khandagiri Square, Nh-5, Bhubaneshwar, Khordha, Odisha - 750001		

1. NOC No.:	CGWA/NOC/MIN/REN/2/2022/7124												
2. Application No.:	21-4/513/OR/MIN/2013	3. Category: (GWRE 2020)	Safe										
4. Project Status:	Existing Ground Water	5. NOC Type:	Renewal										
6. Valid from:	04/12/2021	7. Valid up to:	03/12/2023										
8. Ground Water Abstraction Permitted:													
Fresh Water		Saline Water		Dewatering		Total							
m ³ /day	m ³ /year	m ³ /day	m ³ /year	m ³ /day	m ³ /year	m ³ /day	m ³ /year						
91.00	33215.00			318.00	116070.00								
9. Details of ground water abstraction /Dewatering structures													
Total Existing No.:4							Total Proposed No.:2						
	DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu	
Abstraction Structure*	0	0	3	0	0	0	0	0	2	0	0	0	
Dewatering Structure*	0	0	0	0	1	0	0	0	0	0	0	1	
*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mine Pit;MPu-Mine Pumps													
10. Ground Water Abstraction/Restoration Charges paid (Rs.):				304569.50									
11. Number of Piezometers(Observation wells) to be constructed/ monitored & Monitoring mechanism.				No. of Piezometers				Monitoring Mechanism					
								Manual	DWLR**	DWLR With Telemetry			
**DWLR - Digital Water Level Recorder				1				0	1	0			

(Compliance Conditions given overleaf)

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

18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jamnagar House, Mansingh Road, New Delhi-110011

Phone: (011) 23383561 Fax: 23382051, 23386743

Website: cgwa-noc.gov.in

पानी बचाये - जीवन बचाये
SAVE WATER - SAVE LIFE

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

Mandatory conditions:

- 1) Installation of tamper proof digital water flow meter with telemetry on all the abstraction structure(s) shall be mandatory for all users seeking No Objection Certificate and intimation regarding their installation shall be communicated to the CGWA within 30 days of grant of No Objection Certificate.
- 2) Proponents shall mandatorily get water flow meter calibrated from an authorized agency once in a year.
- 3) Construction of purpose-built observation wells (piezometers) for ground water level monitoring shall be mandatory as per Section 14 of Guidelines. Water level data shall be made available to CGWA through web portal. Detailed guidelines for construction of piezometers are given in Annexure-II of the guidelines.
- 4) Proponents shall monitor quality of ground water from the abstraction structure(s) once in a year. Water samples from bore wells/ tube wells / dug wells shall be collected during April/May every year and analysed in NABL accredited laboratories for basic parameters (cations and anions), heavy metals, pesticides/ organic compounds etc. Water quality data shall be made available to CGWA through the web portal.
- 5) In case of mining projects, additional key wells shall be established in consultation with the Regional Director, CGWB for ground water level monitoring four (4) times a year (January, May, August and November) in core as well as buffer zones of the mine.
- 6) In case of mining project the firm shall submit water quality report of mine discharge/ seepage from Govt. approved/ NABL accredited lab.
- 7) The firm shall report compliance of the NOC conditions online in the website (www.cgwa-noc.gov.in) within one year from the date of issue of this NOC.
- 8) Industries abstracting ground water in excess of 100 m³/d shall undertake annual water audit through certified auditors and submit audit reports within three months of completion of the same to CGWA. All such industries shall be required to reduce their ground water use by at least 20% over the next three years through appropriate means.
- 9) Application for renewal can be submitted online from 90 days before the expiry of NOC. Ground water withdrawal, if any, after expiry of NOC shall be illegal & liable for legal action as per provisions of Environment (Protection) Act, 1986.
- 10) This NOC is subject to prevailing Central/State Government rules/laws/norms or Court orders related to construction of tube well/ground water abstraction structure / recharge or conservation structure/discharge of effluents or any such matter as applicable.

General conditions:

- 11) No additional ground water abstraction and/or de-watering structures shall be constructed for this purpose without prior approval of the Central Ground Water Authority (CGWA).
- 12) The proponent shall seek prior permission from CGWA for any increase in quantum of groundwater abstraction (more than that permitted in NOC for specific period).
- 13) Proponents shall install roof top rain water harvesting in the premise as per the existing building bye laws in the premise.
- 14) The project proponent shall take all necessary measures to prevent contamination of ground water in the premises failing which the firm shall be responsible for any consequences arising thereupon.
- 15) In case of industries that are likely to contaminate the ground water, no recharge measures shall be taken up by the firm inside the plant premises. The runoff generated from the rooftop shall be stored and put to beneficial use by the firm.
- 16) Wherever feasible, requirement of water for greenbelt (horticulture) shall be met from recycled / treated waste water.
- 17) Wherever the NOC is for abstraction of saline water and the existing wells (s) is /are yielding fresh water, the same shall be sealed and new tubewell(s) tapping saline water zone shall be constructed within 3 months of the issuance of NOC. The firm shall also ensure safe disposal of saline residue, if any.
- 18) Unexpected variations in inflow of ground water into the mine pit, if any, shall be reported to the concerned Regional Director, Central Ground Water Board.
- 19) In case of violation of any NOC conditions, the applicant shall be liable to pay the penalties as per Section 16 of Guidelines.
- 20) This NOC does not absolve the proponents of their obligation / requirement to obtain other statutory and administrative clearances from appropriate authorities.
- 21) The issue of this NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and take decisions independently of the NOC.
- 22) In case of change of ownership, new owner of the industry will have to apply for incorporation of necessary changes in the No Objection Certificate with documentary proof within 60 days of taking over possession of the premises.
- 23) This NOC is being issued without any prejudice to the directions of the Hon'ble NGT/court orders in cases related to ground water or any other related matters.
- 24) Proponents, who have installed/constructed artificial recharge structures in compliance of the NOC granted to them previously and have availed rebate of upto 50% (fifty percent) in the ground water abstraction charges/ground water restoration charges, shall continue to regularly maintain artificial recharge structures.
- 25) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, pharmaceutical, other hazardous units etc. (as per CPCB list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution as per Annexure III of the guidelines.
- 26) In case of new infrastructure projects having ground water abstraction of more than 20 m³/day, the firm/entity shall ensure implementation of dual water supply system in the projects.
- 27) In case of infrastructure projects, paved/parking area must be covered with interlocking/perforated tiles or other suitable measures to ensure groundwater infiltration/harvesting.
- 28) In case of coal and other base metal mining projects, the project proponent shall use the advance dewatering technology (by construction of series of dewatering abstraction structures) to avoid contamination of surface water.
- 29) The NOC issued is conditional subject to the conditions mentioned in the Public notice dated 27.01.2021 failing which penalty/EC/cancellation of NOC shall be imposed as the case may be.
- 30) This NOC is issued subject to the clearance of Expert Appraisal Committee (EAC) (if applicable).

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



CIN - U73100OR1995PTC003889



GSTIN : 21AAACE6224D1ZE

Annexure - XXIV

Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329 , E-mail: ersibbsr@gmail.com

DEPTH OF GROUND WATER TABLE

Date: 30 May 2023


Name and Address of the Customer : Dulanga Coal Mine of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Measurement : 15-16/05/2023

Measurement Taken by : Representative of ERS (I) Pvt. Ltd.

Measurement carried out in presence of: Representative of the Customer

Sl. No.	Location	Depth (Below Surface level in meter)
01	Bore well inside NTPC Site Office (Canteen)	6.73
02	Bore Well R & R Colony, Kalamegha (near Market Complex)	10.77
03	Open well in Village Khuntjharua	7.77
04	Open well in Village Bendrichua	5.00
05	Open well in Village Kathfali	1.93
06	Open well in Village Kalamegha	4.75
07	Bore well inside SMASL Office Premises	5.03
08	Bore well near Labour Barrack	26.08


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(OSPCB 'A' Category Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

DEPTH OF GROUND WATER TABLE

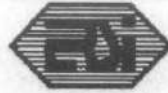
Date: 30 Aug 2023

Name and Address of the Customer : Dulanga Coal Mine of M/s NTPC Limited in Sundargarh district, Odisha.
Date of Measurement : 13-14/08/2023
Measurement Taken by : Representative of ERS (I) Pvt. Ltd.
Measurement carried out in presence of: Representative of the Customer

Sl. No.	Location	Depth (Below Surface level in meter)
01	Bore well inside NTPC Site Office (Canteen)	5.60
02	Bore Well R & R Colony, Kalamegha (near Market Complex)	8.57
03	Open well in Village Khuntjharua	4.52
04	Open well in Village Bendrichua	3.85
05	Open well in Village Kathfali	1.83
06	Open well in Village Kalamegha	2.42
07	Bore well inside SMASL Office Premises	4.83
08	Bore well near Labour Barrack	23.93



.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com



Certificate No.: TC-7440

ULR-TC744023000000391F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (WATER/WASTE WATER)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/WA/201

Name and Address of the Customer

: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling

: 13.07.2023

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer

Sample Received on

: 15.07.2023

Analysis Started on

: 15.07.2023

Analysis Completed on

: 24.07.2023

Method of Sampling

: IS 17614: Part 1: 2021

Quantity of Sample

: 2ltrs

Type of Container

: Glass Bottle & HDPE Bottle

Environment Condition

: All Tests carried out in Room Temperature

Sample ID. No.

1. ERSIPL/WA/472

2. ERSIPL/WA/473

Location

1. ETP Inlet Water

2. ETP Outlet Water

TEST FINDINGS:

S. No.	Test Parameters	Test Method	Unit	Result		Permissible Limit As per CTO Issued by SPCB
				ERSIPL/ WA/ 472	ERSIPL/ WA/ 473	
1	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	7.31	7.41	6.5 – 8.5
2	Oil & Grease	IS 3025:Part 39: 2021	mg/L	2.56	2.01	10.0
3	Total Suspended Solids	IS 3025:Part 17: 1984 Reaffirmed-2022	mg/L	15.6	5.2	50.0
4	COD	IS 3025:Part 58:2006 Reaffirmed-2022	mg/L	24.0	8.0	150.0

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory)

Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com



ULR-TC744023000000454F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (WATER/WASTE WATER)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/WA/231

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 13.08.2023

Sample Collected by : T Mohanta, Dy. QM of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of the Customer.

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 3 ltrs

Type of Container : Glass Bottle, HDPE Bottle & BOD Bottle

Weather Condition : Overcast

Atmospheric Temperature : 33 °C

Sample ID. No.

1. ERSIPL/WA/530

2. ERSIPL/WA/531

Location

1. ETP Inlet Water

1. ETP Outlet Water

TEST FINDINGS:

S. No.	Test Parameters	Test Method	Unit	Result		Permissible Limit As per CTO Issued by SPCB
				ERSIPL/WA/530	ERSIPL/WA/531	
1	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	7.37	7.43	6.5 – 8.5
2	Oil & Grease	IS 3025:Part 39: 2021	mg/L	2.16	1.11	10.0
3	Total Suspended Solids	IS 3025:Part 17: 1984 Reaffirmed-2022	mg/L	18.6	6.3	50.0
4	COD	IS 3025:Part 58:2006 Reaffirmed-2022	mg/L	20.0	16.0	150.0

- Note-
1. The test results relate only to the items sampled and tested.
 2. Total Liability of ERS (I) Pvt. Ltd. is limited to the Invoice Amount.
 3. This certificate shall not be reproduced fully or in part without prior written consent of ERS (I) Pvt. Ltd.
 4. Samples (Filter Papers & Thimbles) received shall be destroyed after 01 year & Gaseous/liquid samples received shall be destroyed after 07 days from the date of issue of the test report, unless otherwise specified.
 5. This report shall not used in any advertising media or as evidence in the court of law without prior written consent of ERS (I) Pvt. Ltd.





Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory)



Plot No: B-22, Sector-B, Industrial Estate Chandaka, Infocity Road, Bhubaneswar-751024, Odisha
Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com

ULR-TC744023000000525F

Test Report Format No.: ERSIPL/FM/40

TEST REPORT (WATER/WASTE WATER)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/WA/271

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Date of Sampling : 12.09.2023
Sample Collected by : S. Samantaray, Field assistant, ERS(I) Pvt. Ltd.
Sample Collected in presence of : Representative of the Customer.
Sample Received on : 16.09.2023
Analysis Started on : 16.09.2023
Analysis Completed on : 26.09.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 3 ltrs
Type of Container : Glass Bottle, HDPE Bottle
Weather Condition : Overcast
Atmospheric Temperature : 31 °C

Sample ID. No.

1. ERSIPL/WA/623
2. ERSIPL/WA/624

Location

1. ETP Inlet Water
1. ETP Outlet Water

TEST FINDINGS:

S. No.	Test Parameters	Test Method	Unit	Result		Permissible Limit As per CTO Issued by SPCB
				ERSIPL/ WA/ 623	ERSIPL/ WA/ 624	
1	pH value	IS 3025:Part 11: 1983 Reaffirmed-2022	--	7.25	7.32	6.5 – 8.5
2	Oil & Grease	IS 3025:Part 39: 2021	mg/L	2.56	2.1	10.0
3	Total Suspended Solids	IS 3025:Part 17: 1984 Reaffirmed-2022	mg/L	15.4	5.7	50.0
4	COD	IS 3025:Part 58:2006 Reaffirmed-2022	mg/L	16.0	12.0	150.0

- Note-
1. The test results relate only to the items sampled and tested.
 2. Total Liability of ERS (I) Pvt. Ltd. is limited to the Invoice Amount.
 3. This certificate shall not be reproduced fully or in part without prior written consent of ERS (I) Pvt. Ltd.
 4. Samples (Filter Papers & Thimbles) received shall be destroyed after 01 year & Gaseous/liquid samples received shall be destroyed after 07 days from the date of issue of the test report, unless otherwise specified.
 5. This report shall not used in any advertising media or as evidence in the court of law without prior written consent of ERS (I) Pvt. Ltd.

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



एन टी पी सी लिमिटेड
(भारत सरकार का उद्यम)
NTPC Limited
(A Govt. of India Enterprise)

Ref: 0100/NTPC/DLCMP/MIN/DGMS/01/122

दुलंगा / Dulanga
Dated: 01.02.2018

To,

The Director General of Mine Safety,
O/o the DGMS, Hirapur,
Dhanbad, Jharkhand- 826001

Sub: Notice of opening under Sec.16 of Mines Act 1952 and Regulation 3 of the Coal Mines Regulation (CMR), 2017 for Dulanga Coal Mining Project.

Ref.: (1) NTPC Letter No-0100/NTPC/DLCMP/MIN/DGMS/01/59 dated 22.08.2017 for Notice of Opening of Dulanga Coal Mining Project.

(2) DGMS Letter No:S-29020/35/2017/CR/11121/3046/ Chaibasa dated 26/12/2017

Sir,

Vide NTPC letter cited in Ref. (1), the Notice of Opening for commencement of mining operations in Dulanga Coal Mining project of NTPC Limited under Section 16 of the Mines Act, 1952 & Reg. 3 of CMR, 1957 had been submitted in Form-I to your good office. The Mine is about to open shortly.

DGMS vide Ref. (2), have communicated to take suitable action as per the provisions of CMR-2017 enforced vide Gazette notification No. G.S.R. 1449 (E) dated 27th November, 2017.

In compliance to the requirement of **Reg. 3 of the CMR, 2017** pertaining to the **Notice of Opening for Commencement of Mining Operations**, we are hereby submitting the following documents along with Form-I (as prescribed in CMR 1957):

1. A copy of the **Surface Plan** No- NTPC/DLCMP/MIN/2017/SP-02, prepared under Clause (a) of Sub-regulation (1) of Reg. 65.
2. A copy of **Safety Management Plan** prepared under Reg. 104.

Further, as the Notice of opening in compliance to Section 16 of Mines Act and Reg.3 of erstwhile CMR 1957 had already been submitted to the DGMS vide Ref (1), we request your good office that the notice period of one month before the commencement of any mining operation shall be deemed to have been complied with under Sub-section 16(2) of Mines Act 1952.

This is for your information and kind consideration please.

Thanking you,

Yours faithfully,

(Vickram Chandra Dubey)

Agent

Designation: Addl. General Manager

Enclosure: As above

CC:

1. **The Dy. Director General of Mine Safety**, South Eastern Zone, CMPDIL Campass, 3rd floor, old building, Kanke Road, Ranchi, Jharkhand-834002.
2. **The Director of Mine Safety**, Chaibasa Region, Chaibasa, West Singbhum, Jharkhand-833201.
3. **The Collector and District Magistrate**, Sundargarh, Odisha-770001

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
कारपोरेट 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

Cont....2/-

No.13016/27/2012-CA-I
Government of India
Ministry of Coal

....
New Delhi, the 14 August, 2012

To,

Shri A.K. Dash,
Addl GM (PE-Mine Planning & Design)
5th Floor, Engineering Officer Complex,
Sector-24
NTPC Limited,
NOIDA- 201 301

Subject: Approval of Revised Mining Plan including Mine Closure Plan (1st Revision) (April 2012) of Dulanga coal block of IB Valley Coalfield, Distt. Sundergarh, Orissa -Reg.

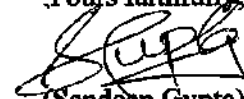
Sir,

I am directed to refer to your letter no. CC:PEM:7015:MP:30 dated 17th October, 2011 submitting therewith Revised Mining Plan including Mine Closure Plan (1st Revision) (April 2012) of Dulanga coal block of IB Valley coalfield, Distt Sundergarh, Orissa and to say that the matter has been considered and the approval of the Central Government thereon is hereby conveyed under Section 5(2)(b) of the Mines & Minerals (Development & Regulation) Act, 1957 subject to the following conditions:-

- (i) The mining company shall take all necessary precautions regarding safety of mine workings, persons deployed therein.
- (ii) Mining Lease to be acquired shall not encroach into any other coal block.
- (iii) The approval of the Mining Plan is without prejudice to the requirement of approvals from competent/prescribed authority under the relevant rules/regulations etc.

2. Two copies of the approved Revised Mining Plan including Mine Closure Plan (1st Revision) duly signed by the competent authority are returned herewith with the request that a copy of the approved Revised Mining Plan including Mine Closure Plan (1st Revision) may be submitted to the concerned State Government for necessary action and also a photocopy of the approved Revised Mining Plan including Mine Closure Plan (1st Revision) may be sent to the Coal Controller for monitoring the block.

Yours faithfully,


(Sandeep Gupta)

Under Secretary to the Govt. of India

Encl: as above

Copy to:

The Under Secretary, CPAM Section, Ministry of Coal for information and record.

Public Hearing Commitments

The Public Hearing of Dulanga Coal Mining project of M/s NTPC Ltd. for production of 7 MTPA was held at Gram Panchayat Office, Sanghumuda, Sundargarh on 02.07.2010. The points raised by the public during the hearing and its compliance status are as follows:

Sl. No.	Points raised in Public Hearing	Compliance status
1	The mine authority should submit a specific plan for development of Hemgir block	<p>Complied.</p> <p>Plan for carrying out developmental activities in Project affected villages and peripheral villages within Hemgir block is being prepared on an annual basis and is being implemented after getting the same duly approved by the Collector and District Magistrate, Sundargarh. These activities are being carried out by NTPC under its ICD banner.</p>
2	The mine authority should inform the public about mitigative measures to be adopted to address the problem due to blasting	<p>Complied.</p> <p>It is clarified herein that NTPC is carrying out Controlled Blasting methods so as to reduce the environmental nuisances due to generation of dusts, noises and also for controlling ground vibrations within specified levels.</p> <p>It is further clarified that such blasting is being carried out under the approval of DGMS based on a scientific study to be carried out through an Institute / Agency of repute.</p>
3	The mine authority should inform the public about peripheral development programme proposed for the area	<p>Complied.</p> <p>It is to state that all peripheral development activities undertaken by NTPC Dulanga CMP under its ICD banner over the years has been finalized based on requests from local villagers.</p> <p>Villagers have been actively made a part of our peripheral development activities and were well informed of the same.</p>
4	The mine authority should go for massive plantation and develop an artificial forest in region	<p>Complied / Being complied.</p> <p>NTPC Dulanga has already committed to the State Forest Department and the MoEF for carrying out plantation as per the stipulations laid down in its Stage-II Forest Clearance.</p> <p>Plantation and Grassing Activities has been carried out over non-active Overburden Dump which</p>

		<p>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 Sept 2023, total numbers 9350 sapling has been planted for year 2023-24. Cumulative 52,092 saplings have been planted since inception. 1300 nos. Fruit bearing saplings were distributed to the residents of R&R Colony in July2023 during Vanmahotsav taking the cumulative distribution of fruit bearing sapling and 12,000 since inception.</p> <p>Further activities planned in future:</p> <ul style="list-style-type: none"> • Plantation in Safety Zone • Plantation in blank areas as and when they are developed during the course of mining. • Plantation over area reclaimed in due course of mining operations.
5	The mine authority should take initiation for maintenance of Ghodamunda Ghat road	<p>Complied and bettered.</p> <p>NTPC Dulanga CMP has undertaken additional road strengthening works as per the following:</p> <ul style="list-style-type: none"> • Road repairing, Guard Walls, Culvert repairing, road strengthening in Sanghumuda and Kanaktura GP (Rs. 33 Lakhs) • Sarasmal, bandapali, kalobahal (Rs. 15 lakhs) • CC Road in Khuntijharia (Rs. 49.5 lakhs) • Masina, Luhurpada (Rs. 199.76 Lakhs) • Tangarpali Block (Rs. 10 Lakhs) • Diverted village road (Rs. 4 Crores) • Bridge over Garia Nala (Rs. 60 Lakhs) • Kanaktura village Bypass road (Rs 89 Lakhs) <p>All such road strengthening and repair works have been undertaken by NTPC on requests from local villagers for general public use and in interest of Road Safety.</p>
6	The mine authority should establish a Sishu Mandir at	<p>Complied and bettered.</p>

	<p>Hemgir for primary education of the area</p>	<p>In its commitment towards education, NTPC Dulanga CMP has undertaken the following infrastructure activities towards education in Hemgir block and in R&R Colony, Kalamegha:</p> <ul style="list-style-type: none"> • Nodal Highschool building (including Primary & Secondary classes) constructed by NTPC Dulanga at R&R Colony, Kalamegha which caters to the students of the four displaced and 02 affected villages and other peripheral villages. • Additional School building with boundary wall at Kalamegha, Dhumamunda (Rs. 36 Lakhs) • School Development at Masina, Kanaktura, Kulamani (Rs. 22 Lakhs) • Science Block at Duduka College (Rs. 12 Lakhs) • Electrification of Schools and distribution of LED bulbs, fans (Rs. 6 Lakhs) • Development of Navodaya Vidyalaya, Zinc Nagar Vidyalaya, Vivekanand English Medium School (Rs. 26 Lakhs) <p>Apart from the above, NTPC has also contributed to the cause of education through:</p> <ol style="list-style-type: none"> i. Utkarsh Merit Scholarship ii. Furnitures (Desk, Benches, Computers) for schools and colleges iii. Distribution of Study Kits, Test Papers, School Bags, Solar Lanterns etc. iv. Distribution of Test papers to ClassX students. v. Smart Classrooms at R&R Colony, Kalamegha, Kanaktura Highschool, Duduka College etc. vi. Teachers training programme organised for enhancing the skills of teachers vii. Career counselling programmes organised for the students of the peripheral schools.
7	<p>The mine authority should adopt necessary air pollution control measures to control fugitive emissions in the area to maintain SPM level</p>	<p>Complied / Being complied.</p> <p>Necessary air pollution control are adopted as mentioned hereunder by NTPC Dulanga CMP:</p> <ul style="list-style-type: none"> • Surface Miners deployed for mining equipped with Interlocked Dust Suppression system. • Water spraying at faces before and after blasting. • Wet Drilling is being adopted. • Deployment of mobile Fog cannons at loading & unloading points.

		<ul style="list-style-type: none"> • Mist type dust suppression arrangements through nozzles at Receiving hopper during unloading of coal. • Dust suppression arrangement at chute of Rapid loading system during loading of coal in wagons. • Water sprinkling on roads through 6 Nos. truck mounted water tankers of 14 KL each. • Overloading on dumpers from excavation area is strictly ensured along. <p>Also, monitoring of air quality parameters are being done on a regular basis and reports thereof are being submitted to MoEF&CC along with half-yearly compliance reports.</p>															
8	<p>The mine authority should install a mine drainage treatment plant to treat the coal bearing mine drainage water before being discharged to outside agricultural fields and they should clarify whether the mine drainage water will reach Hirakud Reservoir or not</p>	<p>Being complied.</p> <p>The mine drainage water is utilized in mining activity purposes like dust suppression, road sprinkling, washing etc. and waste water generated thereof from workshops is being treated in ETPs. Further, the mine drainage water is collected in mine sumps, mine voids and sedimentation ponds etc. which acts as natural rain water harvesting structures.</p> <p>It is further clarified that the mine drainage water is not being discharged into any surface water body and hence it shall not reach the Hirakud reservoir.</p>															
9	<p>The mine authority should carry out adequate water sprinkling on the coal transportation road from the mine to its Coal Handling plant and from there to its proposed Darlipali Power plant</p>	<p>Being complied.</p> <p>At present, the coal is being transported through MGR to Darlipali Super Thermal Power Station.</p> <p>The mine has CHP of capacity 1325 TPH consisting of 2 nos of screen (-200mm and -50mm) and 1 no crusher of capacity 800 TPH. It has installed dust suppression system at the following points:-</p> <table border="1" data-bbox="735 1648 1386 2036"> <thead> <tr> <th>Dust generating areas</th> <th>Type of water Sprinklers</th> <th>Numbers</th> </tr> </thead> <tbody> <tr> <td>Ground Hopper (2 nos)</td> <td>Mist Type</td> <td>10 each</td> </tr> <tr> <td>Screen (-200 mm)</td> <td>Mist Type</td> <td>16</td> </tr> <tr> <td>Screen (-50 mm)</td> <td>Mist Type</td> <td>16</td> </tr> <tr> <td>Conveyor belts and Transfer</td> <td>Mist Type</td> <td>75</td> </tr> </tbody> </table>	Dust generating areas	Type of water Sprinklers	Numbers	Ground Hopper (2 nos)	Mist Type	10 each	Screen (-200 mm)	Mist Type	16	Screen (-50 mm)	Mist Type	16	Conveyor belts and Transfer	Mist Type	75
Dust generating areas	Type of water Sprinklers	Numbers															
Ground Hopper (2 nos)	Mist Type	10 each															
Screen (-200 mm)	Mist Type	16															
Screen (-50 mm)	Mist Type	16															
Conveyor belts and Transfer	Mist Type	75															

		House (5 nos)		
		Silo (1 nos) of capacity 4000 T with two discharge chutes	Mist Type provided at the telescopic chute of each silo	10 each
		It has also a temporary skid mounted mobile crusher of capacity 350 TPH which is operated as per the requirement. The crusher is provided with water sprinkling arrangement for control of air pollution from emission of dust.		
10	The mine authority should give priority for health, education and local employment in the area.	<p>Complied.</p> <p>Health, Education has been a major activity head under its Initial Community Development (ICD) banner and is being ensured thereof.</p> <p>Some of the major activities undertaken in education have already been highlighted above under SI. No 6.</p> <p>Activities undertaken in health front are given below:</p> <ul style="list-style-type: none"> • Free Medical Health Camps. Additionally, free medical check-up is being administered at dispensary on every Tuesday and Friday. • Veterinary / Animal Health Camps • Distribution of Mosquito Nets • Construction of Dispensary building, • Dedicated ambulance equipped with all facilities has been deployed at Site office. • A PHC has been established with Doctor and paramedical staffs with distribution of free medicines for villagers. <p>Activities undertaken for local employment are:</p> <ul style="list-style-type: none"> • Skill Development training (fully sponsored by NTPC) through CIPET, Bhubaneswar has been provided. 160 persons from PAPs has been trained • Vehicle Training to 35 numbers of PAP's have been provided. • Tailoring training for Women • Tie and Dye training for Women • Livelihood study, mapping & training for village SHGs. 		

		<ul style="list-style-type: none"> • About 30 nos of local employment has been provided by NTPC through different contractual agencies. • Inducting local village youths as trainees with our Mine Developer cum Operator (MDO) for making them employable in mines. • Preference to PAPs for employment based on their suitability is given through MDO. • MDO has engaged PaPs of about 250 Nos from peripheral peripheral villages.
11	The mine authority should take initiation to form a village coordination committee between the villagers and the mine authority to carry out peripheral development works in the area.	<p>Complied.</p> <p>Networks of village mobilisers have been established by appointing villagers from each village so as to form a link between the villages and NTPC Dulanga CMP. Those villagers mobilisers are kept in action even after displacement of all project displaced families to R&R Colony, Kalamegha.</p> <p>Such villagers have been entrusted with the task of conveying to NTPC, the request from village masses regarding their needs so as to incorporate the same while planning for peripheral development works.</p>
12	The mine authority should inform the public about the facilities to be provided to the Scheduled Tribe people of the area.	<p>Complied.</p> <p>Eligible meritorious Scheduled Tribe students are being provided with UTKARSH merit scholarship for their education.</p> <p>Skill Upgradation training has been provided for women folk in areas of tailoring, tie and dye and other livelihood mapping through reputed agencies.</p> <p>Skill Development training have been imparted for village youths.</p> <p>NTPC Dulanga CMP has also sponsored for Tribal sports like National Tribal Archery competition etc.</p> <p>A Tribal Centre/Training Centre has been constructed in its R&R Colony for PAPs.</p>
13	The date and venue of the public hearing was not widely published and the villages were not properly informed about this for which there was less attendance in the meeting.	<p>Complied.</p> <p>Date and venue of Public hearing was published in accordance with provisions laid down by MoEF. Newspaper publications were done in two widely circulated newspapers namely, New Indian</p>

	<p>Hence the public hearing should be rescheduled.</p>	<p>Express (English) dated 29th May 2010 and Pragatibadi (Odiya) dated 29th May 2010. Copy of newspaper notifications were also handed over to the Gram Panchayat offices and staffs from NTPC had visited these villages 4-5 days prior to the scheduled Public Hearing date so as to convey them the venue and date details.</p>
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Environment Policy-2021

I. Purpose:

NTPC being country's largest power generator, with its presence across the energy value chain, recognizes that protection of environment is essential for sustainable business.

In the context of Environment Policy, the definition of environment covers all the domains of environment - Physical, Chemical, Biological and Socio- economic aspect.

NTPC hereby adopts Environment Policy-2021, superseding its earlier policy document of 2017.

The intent of this policy is to meet environmental expectations and provide actionable guidance, as NTPC strives to foster a culture of excellence and challenges itself for continual improvement.

II. Policy Statement:

"To provide cleaner energy by committing to highest possible levels of performance in environmental compliance, practices and stewardship."

III. Applicability:

This policy shall apply to all establishments of NTPC and each employee shall be made a partner in implementing the policy.

IV. Principles:

This policy is based on the following principles:

1. Consideration of Environmental factors right from the stage of planning, design and operation of project/station to ensure that mandatory principles of conservation and sustainability are adhered to.

This document contains:

- I. Purpose***
- II. Policy Statement***
- III. Applicability***
- IV. Principles***
- V. Institutional Framework***
- VI. Policy***
 - ***Stewardship***
 - ***Compliance & Assurance***
 - ***Stakeholder Engagement***
 - ***Capacity Building***
- VII. Review***



2. Adopting the best possible Environment management practices and state-of-the-art technology to minimize impact of business on Environment.
3. NTPC's commitment as a responsible corporate citizen is demonstrated by striving to achieve and setting benchmarks not limited to statutory compliance.
4. Innovation by carrying out Research & Developmental activities, coupled with enablers leading to continual improvement.
5. Accepting accountability for all operations and expeditiously respond to any aberration.
6. Continuous monitoring and sharing of environmental indicators with stakeholders.
7. Develop each employee as environmental steward by improving his awareness levels while soliciting his commitment.

V. Institutional Framework:

Three tier structure for environmental systems implementation:

1. Corporate Level Functions - Engineering, planning and monitoring
2. Regional Level Functions – Compliance monitoring, Facilitators to stations and Coordination between Stations & Corporate.
3. Stations: Functions - Execution and reporting





Note: These charts do not reflect the organizational structure/reporting arrangement, but serve to identify responsible departments within NTPC.

VI. Policy:

NTPC shall achieve these objectives by:

1. Stewardship:

NTPC shall:

- a. Adopt a pro-active approach, place environmental aspects as one of the prime consideration in decision-making process.
- b. Identify and manage environmental impacts due to business activities, by adopting possible latest environment management technologies and practices.
- c. Act to manage risks, as identified by Risk Management Committee (RMC)*.
- d. Evaluate performance of Environment protection equipment, program and practices, with respect to legal provisions and prepare action plans for concerned functional groups.



- e. Ensure efficient and optimal use of resources such as land, water, fuel, construction materials, oils, and chemicals etc, especially the non-renewables.
- f. Spearhead waste management by 3Rs principles (reducing, re-using, and recycling) and safe disposal.
- g. Adopt more environment friendly and energy-efficient inputs.
- h. Provide innovative technological solutions to environment related issues.
- i. Benchmark parameters to establish and adopt best practices.
- j. Take up environmentally befitting projects in areas of climate change, renewable energy, conservation and responsible consumption of natural resources under Sustainable Development initiatives.
- k. Adopt principles of green procurement by incorporating appropriate provisions in contracts and procurements.
- l. To formulate and adopt separate Policies for Ash, Rehabilitation & Resettlement, Community Development – Corporate Social Responsibility and Sustainable Development.
- m. Creation of carbon sink by adding green cover in and around NTPC Stations.

*RMC comprises of members from senior functionaries of management as per provisions of Companies Act 2016.

2. Compliance and Assurance:

- a. NTPC shall continue to comply with all relevant environmental regulations, standards and other codes of practice, by operating and maintaining the assets within the boundary of permits, consents, and licenses.
- b. Risk Management Committee, shall establish system for reporting environment related parameters, deviations and constraints to Management. Environmental risks perceived shall be reviewed through risk management mechanism for appropriate action.
- c. Concerned group shall oversee compliance assurance of operating stations through reviews and appraisals.





Environmental Research and Services (India) Pvt. Ltd.

(An ISO/IEC 17025 : 2017 (NABL) Accredited Laboratory, OSPCB Empanelled Laboratory and ISO 9001 : 2015 Certified Company)

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ULR-TC744023000000203F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 24 Apr 2023

Test Report No: ERSIPL/TR/AA/075

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 12-13.04.2023
Sample Received on : 17.04.2023
Analysis Started on : 17.04.2023
Analysis Completed on : 24.04.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny
Sample ID. No. **Locations (Core Zone)**

1. ERSIPL/AA/285
2. ERSIPL/AA/286
3. ERSIPL/AA/287
4. ERSIPL/AA/288

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/285	ERSIPL/AA/286	ERSIPL/AA/287	ERSIPL/AA/288
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	211.83	206.98	210.19	206.12
2	Particulate Matter (size less than 10 μm) or PM ₁₀	IS 5182. (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	75.43	73.59	73.84	70.88
3	Particulate Matter (size less than 2.5 μm) or PM _{2.5}	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	34.35	32.19	33.72	33.08
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.09	7.08	7.56	8.24
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	14.12	13.57	13.58	14.37

S.P. Pattanayak
(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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ULR-TC744023000000204F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 24 Apr 2023

Test Report No: ERSIPL/TR/AA/076

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 13-14.04.2023
Sample Received on : 17.04.2023
Analysis Started on : 17.04.2023
Analysis Completed on : 24.04.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.


1. ERSIPL/AA/289
2. ERSIPL/AA/290
3. ERSIPL/AA/291
4. ERSIPL/AA/292

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/289	ERSIPL/AA/290	ERSIPL/AA/291	ERSIPL/AA/292
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	203.70	199.53	201.87	198.64
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	73.54	71.18	73.38	69.44
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	32.17	33.44	34.03	30.69
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.31	6.84	8.23	6.15
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	11.48	13.64	11.79	10.72


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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 24 Apr 2023**Test Report No: ERSIPL/TR/AA/T:075-076**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 12-14.04.2023

Sample Received on : 17.04.2023

Analysis Started on : 17.04.2023

Analysis Completed on : 24.04.2023

Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

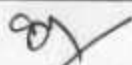
Sample ID. No.**Locations**

1. ERSIPL/AA/285
2. ERSIPL/AA/286
3. ERSIPL/AA/287
4. ERSIPL/AA/288
5. ERSIPL/AA/289
6. ERSIPL/AA/290
7. ERSIPL/AA/291
8. ERSIPL/AA/292

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunn
7. Near Village Khuntjharia
8. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/285	<1.14
2	ERSIPL/AA/286	<1.14
3	ERSIPL/AA/287	<1.14
4	ERSIPL/AA/288	<1.14
5	ERSIPL/AA/289	<1.14
6	ERSIPL/AA/290	<1.14
7	ERSIPL/AA/291	<1.14
8	ERSIPL/AA/292	<1.14
	Permissible Limit	2.0


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ULR-TC744023000000205F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 24 Apr 2023

Test Report No: ERSIPL/TR/AA/077

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 16-17.04.2023
Sample Received on : 17.04.2023
Analysis Started on : 17.04.2023
Analysis Completed on : 24.04.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

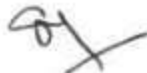
1. ERSIPL/AA/293
2. ERSIPL/AA/294
3. ERSIPL/AA/295
4. ERSIPL/AA/296

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/293	ERSIPL/AA/294	ERSIPL/AA/295	ERSIPL/AA/296
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	213.85	209.19	204.42	196.96
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	74.43	73.21	73.27	70.71
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	34.68	33.18	33.03	31.23
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.86	9.67	8.84	8.75
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	14.23	12.80	14.69	13.15


 (Authorized Signatory)
 S.P. Pattanayak
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ULR-TC744023000000206F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 24 Apr 2023

Test Report No: ERSIPL/TR/AA/078

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 17-18.04.2023
Sample Received on : 17.04.2023
Analysis Started on : 17.04.2023
Analysis Completed on : 24.04.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/297
2. ERSIPL/AA/298
3. ERSIPL/AA/299
4. ERSIPL/AA/300

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/297	ERSIPL/AA/298	ERSIPL/AA/299	ERSIPL/AA/300
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	xx	207.21	206.63	207.73	195.54
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	µg/m ³	100.0	72.84	70.87	70.00	72.78
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	31.37	27.19	29.89	28.52
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	µg/m ³	80.0	7.59	7.84	6.69	6.74
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	µg/m ³	80.0	11.30	12.16	12.92	10.50


 (Authorized Signatory)
 S.P. Pattanayak
 Tech. Manager



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ULR-TC744023000000249F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/AA/095

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-14.05.2023
Sample Received on : 22.05.2023
Analysis Started on : 22.05.2023
Analysis Completed on : 29.05.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny
Sample ID. No. : **Locations (Core Zone)**

1. ERSIPL/AA/388

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results
					ERSIPL/ AA/ 388
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	208.43
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	76.44
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	32.16
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.09
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	13.64

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.....END OF TEST REPORT.....



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ULR-TC74402300000250F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/AA/096

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 14-15.05.2023
Sample Received on : 22.05.2023
Analysis Started on : 22.05.2023
Analysis Completed on : 29.05.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/392
2. ERSIPL/AA/393
3. ERSIPL/AA/394
4. ERSIPL/AA/395

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/392	ERSIPL/AA/393	ERSIPL/AA/394	ERSIPL/AA/395
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	207.94	212.83	201.80	204.99
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	75.08	74.69	72.74	72.83
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	30.01	31.37	33.48	30.89
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.01	8.29	7.82	6.60
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	12.64	13.61	12.24	12.25

(Authorized Signatory)

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 30 May 2023**Test Report No: ERSIPL/TR/AA/T:095-096**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 13-15.05.2023

Sample Received on : 22.05.2023

Analysis Started on : 22.05.2023

Analysis Completed on : 29.05.2023

Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

Sample ID. No.**Locations**

1. ERSIPL/AA/388
2. ERSIPL/AA/392
3. ERSIPL/AA/393
4. ERSIPL/AA/394
5. ERSIPL/AA/395

1. Near Site Office (NTPC), Kapurikachhar
2. Near Village Bendrichua
3. Near Village Rengalmunr
4. Near Village Khuntjharia
5. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/388	<1.14
2	ERSIPL/AA/392	<1.14
3	ERSIPL/AA/393	<1.14
4	ERSIPL/AA/394	<1.14
5	ERSIPL/AA/395	<1.14
	Permissible Limit	2.0

(Authorized Signatory)

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.....END OF TEST REPORT.....



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ULR-TC744023000000251F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/AA/097

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-14.05.2023
Sample Received on : 22.05.2023
Analysis Started on : 22.05.2023
Analysis Completed on : 29.05.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/389
2. ERSIPL/AA/390
3. ERSIPL/AA/391

1. Near Coal Lab
2. Near Work Shop
3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/389	ERSIPL/AA/390	ERSIPL/AA/391
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	500.0	287.09	293.81	288.74
2	Particulate Matter (size less than 10 μm) or PM 10 (RPM)	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	250.0	91.76	91.25	86.22
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	120.0	9.10	8.37	7.31
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	120.0	13.54	12.52	13.16

(Authorized Signatory)

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.....END OF TEST REPORT.....



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ULR-TC744023000000252F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/AA/098

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 17-18.05.2023
Sample Received on : 22.05.2023
Analysis Started on : 22.05.2023
Analysis Completed on : 29.05.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/406

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results
					ERSIPL/ AA/ 406
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	203.43
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	74.42
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	32.67
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.55
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	11.21


 (Authorized Signatory)
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.....END OF TEST REPORT.....



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/AA/099

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 18-19.05.2023
Sample Received on : 22.05.2023
Analysis Started on : 22.05.2023
Analysis Completed on : 29.05.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/410
2. ERSIPL/AA/411
5. ERSIPL/AA/412
6. ERSIPL/AA/413

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/410	ERSIPL/AA/411	ERSIPL/AA/412	ERSIPL/AA/413
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	201.37	201.75	208.16	200.16
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	75.65	73.36	72.24	72.02
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	31.84	32.61	32.60	30.03
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.64	7.75	7.40	7.11
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	80.0	12.86	12.27	11.24	11.08


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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 30 May 2023**Test Report No: ERSIPL/TR/AA/T:098-099**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 17-19.05.2023

Sample Received on : 22.05.2023

Analysis Started on : 22.05.2023

Analysis Completed on : 29.05.2023

Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny

Sample ID. No.**Locations**

1. ERSIPL/AA/406
2. ERSIPL/AA/410
3. ERSIPL/AA/411
4. ERSIPL/AA/412
5. ERSIPL/AA/413

1. Near Site Office (NTPC), Kapurikachhar
2. Near Village Bendrichua
3. Near Village Rengalmunr
4. Near Village Khuntjharia
5. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/406	<1.14
2	ERSIPL/AA/410	<1.14
3	ERSIPL/AA/411	<1.14
4	ERSIPL/AA/412	<1.14
5	ERSIPL/AA/413	<1.14
Permissible Limit		2.0

(Authorized Signatory)

S.P.Pattanayek
Tech. Manager

.....END OF TEST REPORT.....



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ULR-TC744023000000254F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 May 2023

Test Report No: ERSIPL/TR/AA/100

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 17-18.05.2023
Sample Received on : 22.05.2023
Analysis Started on : 22.05.2023
Analysis Completed on : 29.05.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/407
2. ERSIPL/AA/408
3. ERSIPL/AA/409

1. Near Coal Lab
2. Near Work Shop
3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/407	ERSIPL/AA/408	ERSIPL/AA/409
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	500.0	274.14	293.73	285.35
2	Particulate Matter (size less than 10 μm) or PM 10 (RPM)	IS 5182 (Part 23): 2006, Reaffirmed -2017, Gravimetric Method	$\mu\text{g}/\text{m}^3$	250.0	91.61	93.70	96.15
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2017, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	120.0	9.13	8.17	8.25
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2017	$\mu\text{g}/\text{m}^3$	120.0	13.91	13.54	13.18

S.P.
(Authorized Signatory)

S.P. Pattanayak
Tech. Manager



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ULR-TC744023000000334F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/AA/133

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-14.06.2023
Sample Received on : 17.06.2023
Analysis Started on : 17.06.2023
Analysis Completed on : 29.06.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/499

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results
					ERSIPL/ AA/ 499
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)-1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	209.10
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	71.90
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	31.22
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.89
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	11.90

(Authorized Signatory)

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.....END OF TEST REPORT.....



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/AA/134

Name and Address of the Customer	:	Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by	:	Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of	:	Representative of Customer
Date of Sampling/Monitoring	:	14-15.06.2023
Sample Received on	:	17.06.2023
Analysis Started on	:	17.06.2023
Analysis Completed on	:	29.06.2023
Method of Sampling	:	ERSIPL/MSP/06
Quantity of Sample	:	01 sample for each parameter
Environment Condition	:	Sunny

Sample ID. No.

1. ERSIPL/AA/503
2. ERSIPL/AA/504
3. ERSIPL/AA/505
4. ERSIPL/AA/506

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/503	ERSIPL/AA/504	ERSIPL/AA/505	ERSIPL/AA/506
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	209.91	208.79	203.70	207.11
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	76.39	75.24	73.16	73.33
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	32.22	31.65	30.21	32.88
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.66	8.91	8.62	7.79
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	12.19	12.52	13.37	11.60

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 29 June 2023**Test Report No: ERSIPL/TR/AA/T:133-134**

Name and Address of the Customer

: Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer.

Date of Sampling/Monitoring

: 13-15.06.2023

Sample Received on

: 17.06.2023

Analysis Started on

: 17.06.2023

Analysis Completed on

: 29.06.2023

Method of Sampling

: As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB

Quantity of Sample

: 01 sample for each parameter

Environment Condition

: Sunny

Sample ID. No.**Locations**

1. ERSIPL/AA/499
2. ERSIPL/AA/503
3. ERSIPL/AA/504
4. ERSIPL/AA/505
5. ERSIPL/AA/506

1. Near Site Office (NTPC), Kapurikachhar
2. Near Village Bendrichua
3. Near Village Rengalmunr
4. Near Village Khuntjharia
5. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/499	<1.14
2	ERSIPL/AA/503	<1.14
3	ERSIPL/AA/504	<1.14
4	ERSIPL/AA/505	<1.14
5	ERSIPL/AA/506	<1.14
	Permissible Limit	2.0

(Authorized Signatory)

S.P.Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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ULR-TC744023000000336F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/AA/135

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-14.06.2023
Sample Received on : 17.06.2023
Analysis Started on : 17.06.2023
Analysis Completed on : 29.06.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/500
2. ERSIPL/AA/501
3. ERSIPL/AA/502

Locations (Core Zone)

1. Near Coal Lab
2. Near Work Shop
3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/500	ERSIPL/AA/501	ERSIPL/AA/502
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	500.0	273.68	296.11	272.52
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	250.0	103.36	112.02	97.64
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	120.0	9.91	9.31	8.71
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	120.0	14.00	15.82	14.77

(Authorized Signatory)
S.P.Pattanayak
Tech.Manager

.....END OF TEST REPORT.....



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ULR-TC744023000000337F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/AA/136

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 21-22.06.2023
Sample Received on : 24.06.2023
Analysis Started on : 24.06.2023
Analysis Completed on : 29.06.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny
Sample ID. No. : **Locations (Core Zone)**

1. ERSIPL/AA/S15

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results
					ERSIPL/ AA/ S15
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	203.71
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	74.52
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	31.72
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.95
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	12.33

(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/AA/137

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 22-23.06.2023
Sample Received on : 24.06.2023
Analysis Started on : 24.06.2023
Analysis Completed on : 29.06.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/519
2. ERSIPL/AA/520
5. ERSIPL/AA/521
6. ERSIPL/AA/522

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/519	ERSIPL/AA/520	ERSIPL/AA/521	ERSIPL/AA/522
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	206.92	200.86	204.68	201.65
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	71.92	73.22	73.04	74.33
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	28.81	31.40	31.16	29.66
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.72	7.72	8.35	7.44
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	11.49	11.97	12.67	10.82

(Authorized Signatory)
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Tech. Manager

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 29 June 2023**Test Report No: ERSIPL/TR/AA/T:136-137**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 21-23.06.2023

Sample Received on : 24.06.2023

Analysis Started on : 24.06.2023

Analysis Completed on : 29.06.2023

Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB

Quantity of Sample : 01 sample for each parameter

Environment Condition : Sunny


Sample ID. No.**Locations**

1. ERSIPL/AA/515
2. ERSIPL/AA/519
3. ERSIPL/AA/520
4. ERSIPL/AA/521
5. ERSIPL/AA/522

1. Near Site Office (NTPC), Kapurikachhar
2. Near Village Bendrichua
3. Near Village Rengalmunr
4. Near Village Khuntjharua
5. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/515	<1.14
2	ERSIPL/AA/519	<1.14
3	ERSIPL/AA/520	<1.14
4	ERSIPL/AA/521	<1.14
5	ERSIPL/AA/522	<1.14
	Permissible Limit	2.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 29 June 2023

Test Report No: ERSIPL/TR/AA/138

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 21-22.06.2023
Sample Received on : 24.06.2023
Analysis Started on : 24.06.2023
Analysis Completed on : 29.06.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny
Sample ID. No. Locations (Core Zone)

1. ERSIPL/AA/516
2. ERSIPL/AA/517
3. ERSIPL/AA/518

1. Near Coal Lab
2. Near Work Shop
3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/516	ERSIPL/AA/517	ERSIPL/AA/518
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	500.0	274.71	285.83	286.20
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part: 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	250.0	106.55	116.83	98.20
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	120.0	9.25	9.98	9.39
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	120.0	14.60	13.69	15.57

(Authorized Signatory)
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Tech. Manager

.....END OF TEST REPORT.....



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/AA/149

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-14.07.2023
Sample Received on : 15.07.2023
Analysis Started on : 15.07.2023
Analysis Completed on : 24.07.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Cloudy

Sample ID. No.


1. ERSIPL/AA/558

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results
					ERSIPL/ AA/ 558
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)-1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	142.31
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	65.71
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	23.21
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.66
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	11.43


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/AA/150

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 14-15.07.2023
Sample Received on : 15.07.2023
Analysis Started on : 15.07.2023
Analysis Completed on : 24.07.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Cloudy

Sample ID. No.

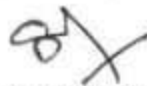
1. ERSIPL/AA/562
2. ERSIPL/AA/563
3. ERSIPL/AA/564
4. ERSIPL/AA/565

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharla
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/562	ERSIPL/AA/563	ERSIPL/AA/564	ERSIPL/AA/565
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	147.38	144.54	149.75	135.15
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	65.57	62.90	67.23	61.48
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	22.66	23.62	22.99	23.35
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.21	6.87	6.60	6.84
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	10.85	10.01	10.39	9.78


 (Authorized Signatory)
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TEST REPORT (AMBIENT AIR)**

Pg-1/1

Date: 05 Aug 2023
Test Report No: ERSIPL/TR/AA/T:149-150

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 13-15.07.2023

Sample Received on : 15.07.2023

Analysis Started on : 15.07.2023

Analysis Completed on : 24.07.2023

Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB

Quantity of Sample : 01 sample for each parameter

Environment Condition : Cloudy

Sample ID. No.

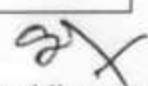
1. ERSIPL/AA/558
2. ERSIPL/AA/562
3. ERSIPL/AA/563
4. ERSIPL/AA/564
5. ERSIPL/AA/565

Locations

1. Near Site Office (NTPC), Kapurikachhar
2. Near Village Bendrichua
3. Near Village Rengalmunr
4. Near Village Khuntjharia
5. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/558	<1.14
2	ERSIPL/AA/562	<1.14
3	ERSIPL/AA/563	<1.14
4	ERSIPL/AA/564	<1.14
5	ERSIPL/AA/565	<1.14
	Permissible Limit	2.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/AA/151

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-14.07.2023
Sample Received on : 15.07.2023
Analysis Started on : 15.07.2023
Analysis Completed on : 24.07.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Cloudy

Sample ID. No.

- ERSIPL/AA/559
- ERSIPL/AA/560
- ERSIPL/AA/561

Locations (Core Zone)

- Near Coal Lab
- Near Work Shop
- Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/559	ERSIPL/AA/560	ERSIPL/AA/561
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	500.0	178.53	171.17	175.47
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	250.0	91.61	85.09	87.96
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	120.0	9.27	8.68	8.84
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	120.0	13.39	13.67	12.91

(Authorized Signatory)
S.P.Pattanayak
Tech.Manager



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/AA/152

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 26-27.07.2023
Sample Received on : 02.08.2023
Analysis Started on : 02.08.2023
Analysis Completed on : 05.08.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Rainy
Sample ID. No. : Locations (Core Zone)

1. ERSIPL/AA/585

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results
					ERSIPL/ AA/ 585
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	xx	101.99
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	50.46
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	21.31
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.58
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	9.05


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager

.....END OF TEST REPORT.....



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/AA/153

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer
Date of Sampling/Monitoring : 27-28.07.2023
Sample Received on : 02.08.2023
Analysis Started on : 02.08.2023
Analysis Completed on : 05.08.2023
Method of Sampling : ERSIPL/MSP/06
Quantity of Sample : 01 sample for each parameter
Environment Condition : Sunny

Sample ID. No.

1. ERSIPL/AA/589
2. ERSIPL/AA/590
5. ERSIPL/AA/591
6. ERSIPL/AA/592

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2008	Results			
					ERSIPL/AA/589	ERSIPL/AA/590	ERSIPL/AA/591	ERSIPL/AA/592
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	XX	203.64	172.33	186.01	174.80
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	70.15	67.05	68.46	69.50
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	28.10	30.55	27.62	28.50
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	8.81	7.39	7.68	8.12
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	13.65	10.77	11.12	10.84

(Authorized Signatory)
S.P.Pattansayak
Tech. Manager

**Environmental Research and Services (India) Pvt. Ltd.**

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Tel: +91-9437021932, +91-9937690329, E-mail: ersibbsr@gmail.com**Test Report Format No.: ERSIPL/FM/37
TEST REPORT (AMBIENT AIR)**

Pg-1/1

Date: 05 Aug 2023
Test Report No: ERSIPL/TR/AA/T:152-153
Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 26-28.07.2023
Sample Received on : 02.08.2023
Analysis Started on : 02.08.2023
Analysis Completed on : 05.08.2023
Method of Sampling : As per guidelines for sampling & measurement of notified AAQ parameters (NAAQS 2009)-CPCB
Quantity of Sample : 01 sample for each parameter
Environment Condition : Rainy/Sunny


Sample ID. No.**Locations**

1. ERSIPL/AA/585
2. ERSIPL/AA/589
3. ERSIPL/AA/590
4. ERSIPL/AA/591
5. ERSIPL/AA/592

1. Near Site Office (NTPC), Kapurikachhar
2. Near Village Bendrichua
3. Near Village Rengalmunr
4. Near Village Khuntjharia
5. Near Village Kathfall

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/585	<1.14
2	ERSIPL/AA/589	<1.14
3	ERSIPL/AA/590	<1.14
4	ERSIPL/AA/591	<1.14
5	ERSIPL/AA/592	<1.14
	Permissible Limit	2.0


(Authorized Signatory)
S.P. Pattanayak
Tech. Manager



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 05 Aug 2023

Test Report No: ERSIPL/TR/AA/154

Name and Address of the Customer :

Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by :

Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of :

Representative of Customer.

Date of Sampling/Monitoring :

26-27.07.2023

Sample Received on :

02.08.2023

Analysis Started on :

02.08.2023

Analysis Completed on :

05.08.2023

Method of Sampling :

ERSIPL/MSP/06

Quantity of Sample :

01 sample for each parameter

Environment Condition :

Rainy

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/586

1. Near Coal Lab

2. ERSIPL/AA/587

2. Near Work Shop

3. ERSIPL/AA/588

3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/586	ERSIPL/AA/587	ERSIPL/AA/588
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	500.0	146.02	140.84	158.22
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	250.0	87.29	85.19	89.64
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	120.0	6.93	6.80	7.32
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	120.0	10.15	9.78	11.08

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager



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ULR-TC744023000000443F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/AA/178

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 13-14.08.2023
Sample Received on : 24.08.2023
Analysis Started on : 24.08.2023
Analysis Completed on : 30.08.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 01 sample for each parameter
Weather Condition : Overcast
Atmospheric Temperature (Min/Max) : 26.0 - 33.0 °C
Atmospheric Pressure (Min/Max) : 1003-1008 mbar

Sample ID. No.

1. ERSIPL/AA/634

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results
					ERSIPL/ AA/ 634
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)-1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	XX	219.27
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	100.0	74.58
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	31.73
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	80.0	7.08
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	80.0	10.56

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ULR-TC744023000000444F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/AA/179

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Date of Sampling/Monitoring : 14-15.08.2023

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Overcast

Atmospheric Temperature (Min/Max) : 27.0 - 33.0 °C

Atmospheric Pressure (Min/Max) : 1004-1006 mbar

Sample ID. No.

1. ERSIPL/AA/638
2. ERSIPL/AA/639
3. ERSIPL/AA/640
4. ERSIPL/AA/641

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/638	ERSIPL/AA/639	ERSIPL/AA/640	ERSIPL/AA/641
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	xx	200.36	215.48	202.89	204.29
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	100.0	70.85	75.18	71.51	73.99
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	30.71	34.09	31.73	32.49
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	80.0	6.03	8.68	7.39	7.54
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	80.0	12.17	12.05	10.91	13.61

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 30 Aug 2023**Test Report No: ERSIPL/TR/AA/T:178-179**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 13-15.08.2023

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Overcast

Atmospheric Temperature (Min/Max) : 26.0 - 33.0 °C

Atmospheric Pressure (Min/Max) : 1003-1008 mbar

Sample ID. No.**Locations**

1. ERSIPL/AA/634
2. ERSIPL/AA/638
3. ERSIPL/AA/639
4. ERSIPL/AA/640
5. ERSIPL/AA/641

1. Near Site Office (NTPC), Kapurikachhar
2. Near Village Bendrichua
3. Near Village Rengalmunnr
4. Near Village Khuntjharia
5. Near Village Kathfali

TEST FINDINGS:

Sl. No	Place of Monitoring/ Sample ID. No	Result of Parameters Analyzed
		Carbon Monoxide (CO) (in mg/m ³)
1	ERSIPL/AA/634	<1.14
2	ERSIPL/AA/638	<1.14
3	ERSIPL/AA/639	<1.14
4	ERSIPL/AA/640	<1.14
5	ERSIPL/AA/641	<1.14
	Permissible Limit	2.0





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TC-7440

ULR-TC74402300000445F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/AA/180

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 13-14.08.2023

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Overcast

Atmospheric Temperature (Min/Max) : 26.0 - 33.0 °C

Atmospheric Pressure (Min/Max) : 1003-1008 mbar

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/635
2. ERSIPL/AA/636
3. ERSIPL/AA/637

1. Near Coal Lab
2. Near Work Shop
3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/635	ERSIPL/AA/636	ERSIPL/AA/637
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	500.0	291.10	300.59	298.47
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23); 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	250.0	119.59	131.58	126.91
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	120.0	9.13	9.97	8.83
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	120.0	15.40	14.80	14.83

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/AA/181

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 22-23.08.2023

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Overcast

Atmospheric Temperature (Min/Max) : 26.0 - 33.0 °C

Atmospheric Pressure (Min/Max) : 1001-1006 mbar

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/642

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results
					ERSIPL/ AA/ 642
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	xx	208.80
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	100.0	72.50
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	32.79
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	80.0	7.74
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	80.0	11.82

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/AA/182

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Date of Sampling/Monitoring : 23-24.08.2023

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Overcast

Atmospheric Temperature (Min/Max) : 25.0 - 33.0 °C

Atmospheric Pressure (Min/Max) : 1001-1005 mbar

Sample ID. No.

1. ERSIPL/AA/646
2. ERSIPL/AA/647
5. ERSIPL/AA/648
6. ERSIPL/AA/649

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per NAAQ Standards CPCB Nov-2009	Results			
					ERSIPL/AA/646	ERSIPL/AA/647	ERSIPL/AA/648	ERSIPL/AA/649
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	xx	206.74	211.48	206.22	213.31
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	100.0	71.88	70.51	73.54	71.64
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	30.97	33.65	30.71	31.31
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	80.0	6.06	7.55	7.75	8.93
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	80.0	11.62	12.24	10.35	12.77

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ULR-TC74402300000448F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 30 Aug 2023

Test Report No: ERSIPL/TR/AA/183

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 22-23.08.2023

Sample Received on : 24.08.2023

Analysis Started on : 24.08.2023

Analysis Completed on : 30.08.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Overcast

Atmospheric Temperature (Min/Max) : 26.0 - 33.0 °C

Atmospheric Pressure (Min/Max) : 1001-1006 mbar

Sample ID. No. : Locations (Core Zone)

1. ERSIPL/AA/643

1. Near Coal Lab

2. ERSIPL/AA/644

2. Near Work Shop

3. ERSIPL/AA/645

3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/643	ERSIPL/AA/644	ERSIPL/AA/645
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	500.0	305.08	306.57	302.15
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	250.0	114.33	115.71	118.89
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	120.0	9.06	9.52	8.93
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022,	µg/m ³	120.0	14.47	13.33	14.22

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ULR-TC744023000000514F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/AA/202

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 12-13.09.2023
Sample Received on : 16.09.2023
Analysis Started on : 16.09.2023
Analysis Completed on : 26.09.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 01 sample for each parameter
Weather Condition : Overcast
Atmospheric Temperature (Min/Max) : 26.0 - 31.0 °C
Atmospheric Pressure (Min/Max) : 1000-1004 mbar

Sample ID. No.

1. ERSIPL/AA/719

Locations (Core Zone)

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results
					ERSIPL/ AA/ 719
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)-1999, Reaffirmed 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	Not Prescribed	205.78
2	Particulate Matter (size less than 10 μm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	$\mu\text{g}/\text{m}^3$	100.0	74.03
3	Particulate Matter (size less than 2.5 μm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	$\mu\text{g}/\text{m}^3$	60.0	33.68
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	$\mu\text{g}/\text{m}^3$	80.0	7.33
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	$\mu\text{g}/\text{m}^3$	80.0	12.08

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TC-7440

ULR-TC744023000000515F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/AA/203

Name and Address of the Customer

: Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer

Date of Sampling/Monitoring

: 13-14.09.2023

Sample Received on

: 16.09.2023

Analysis Started on

: 16.09.2023

Analysis Completed on

: 26.09.2023

Method of Sampling

: As per Applicable Test Method

Quantity of Sample

: 01 sample for each parameter

Weather Condition

: Overcast

Atmospheric Temperature (Min/Max)

: 26.0 - 36.0 °C

Atmospheric Pressure (Min/Max)

: 998-1003 mbar

Sample ID. No.

1. ERSIPL/AA/723
2. ERSIPL/AA/724
3. ERSIPL/AA/725
4. ERSIPL/AA/726

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharia
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results			
					ERSIPL/AA/723	ERSIPL/AA/724	ERSIPL/AA/725	ERSIPL/AA/726
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	Not Prescribed	200.39	208.76	200.76	206.08
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	100.0	72.03	74.13	72.37	72.29
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	30.76	33.68	30.54	30.50
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	80.0	7.87	8.67	7.20	7.65
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	80.0	11.51	13.93	11.13	12.96

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ULR-TC744023000000516F

Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/AA/204

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 12-13.09.2023

Sample Received on : 16.09.2023

Analysis Started on : 16.09.2023

Analysis Completed on : 26.09.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Overcast

Atmospheric Temperature (Min/Max) : 26.0 - 31.0 °C

Atmospheric Pressure (Min/Max) : 1000-1004 mbar

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/720
2. ERSIPL/AA/721
3. ERSIPL/AA/722

1. Near Coal Lab
2. Near Work Shop
3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/720	ERSIPL/AA/721	ERSIPL/AA/722
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	500.0	313.89	308.08	304.49
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	250.0	128.96	134.84	129.47
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	120.0	9.27	8.91	9.49
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	120.0	14.85	14.22	14.80

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 26 Sept 2023**Test Report No: ERSIPL/TR/AA/T:202-204**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 12-14.09.2023

Sample Received on : 16.09.2023

Analysis Started on : 16.09.2023

Analysis Completed on : 26.09.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Overcast

Atmospheric Temperature (Min/Max) : 26.0 - 36.0 °C

Atmospheric Pressure (Min/Max) : 998-1004 mbar

Sample ID. No.**Locations (Core & Buffer Zone)**

- ERSIPL/AA/719
- ERSIPL/AA/720
- ERSIPL/AA/721
- ERSIPL/AA/722
- ERSIPL/AA/723
- ERSIPL/AA/724
- ERSIPL/AA/725
- ERSIPL/AA/726

- Near Site Office (NTPC), Kapurikachhar
- Near Coal Lab
- Near Work Shop
- Near Weigh Bridge 3 & 4 (Village Dulanga)
- Near Village Bendrichua
- Near Village Rengalmunr
- Near Village Khuntjharia
- Near Village Kathfali

TEST FINDINGS:

Place of Monitoring	Result of Parameters Analyzed					
	Mercury (Hg) (in $\mu\text{g}/\text{m}^3$)	Arsenic (As) (in ng/m^3)	Nickel (Ni) (in ng/m^3)	Cadmium (Cd) (in $\mu\text{g}/\text{m}^3$)	Chromium (Cr) (in $\mu\text{g}/\text{m}^3$)	Carbon Monoxide (CO) (in mg/m^3)
ERSIPL/AA/719	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/720	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/721	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/722	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/723	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/724	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/725	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/726	ND	ND	ND	ND	ND	<1.14
Permissible Limit as per CTO No.4169, dtd.20.03.23	Not Prescribed	06	20.0	Not Prescribed		2.0

(Authorized Signatory)

S.P.Pattanayak

Team Manager



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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/AA/205

Name and Address of the Customer

: Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by

: Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of

: Representative of Customer.

Date of Sampling/Monitoring

: 18-19.09.2023

Sample Received on

: 23.09.2023

Analysis Started on

: 23.09.2023

Analysis Completed on

: 26.09.2023

Method of Sampling

: As per Applicable Test Method

Quantity of Sample

: 01 sample for each parameter

Weather Condition

: Partly Sunny

Atmospheric Temperature (Min/Max)

: 26.0 - 34.0 °C

Atmospheric Pressure (Min/Max)

: 1002-1006 mbar

Sample ID. No.

Locations (Core Zone)

1. ERSIPL/AA/743

1. Near Site Office (NTPC), Kapurikachhar

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results
					ERSIPL/ AA/ 743
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	Not Prescribed	204.59
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	100.0	71.12
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	30.97
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	80.0	7.39
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	80.0	11.52

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/AA/206

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer

Date of Sampling/Monitoring : 19-20.09.2023

Sample Received on : 23.09.2023

Analysis Started on : 23.09.2023

Analysis Completed on : 26.09.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Partly Sunny

Atmospheric Temperature (Min/Max) : 26.0 - 35.0 °C

Atmospheric Pressure (Min/Max) : 1002-1007 mbar

Sample ID. No.

1. ERSIPL/AA/747
2. ERSIPL/AA/748
3. ERSIPL/AA/749
4. ERSIPL/AA/750

Locations (Buffer Zone)

1. Near Village Bendrichua
2. Near Village Rengalmunra
3. Near Village Khuntjharua
4. Near Village Kathfali

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results			
					ERSIPL/AA/747	ERSIPL/AA/748	ERSIPL/AA/749	ERSIPL/AA/750
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	Not Prescribed	204.06	201.68	200.94	206.85
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	100.0	72.95	74.22	71.66	70.10
3	Particulate Matter (size less than 2.5 µm) or PM 2.5	IS 5182 (Part 24): 2019, Gravimetric Method	µg/m ³	60.0	33.17	33.34	32.38	30.57
4	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	80.0	9.11	7.07	8.36	8.09
5	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	80.0	11.23	13.36	11.28	13.53

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TC-7440

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg No: 1 of 1

Date: 26 Sept 2023

Test Report No: ERSIPL/TR/AA/207

Name and Address of the Customer : Dulanga open cast Coal Mining, Project of M/s NTPC Limited in Sundargarh district, Odisha.
Sample Collected by : Representative of ERS (I) Pvt. Ltd.
Sample Collected in presence of : Representative of Customer.
Date of Sampling/Monitoring : 18-19.09.2023
Sample Received on : 23.09.2023
Analysis Started on : 23.09.2023
Analysis Completed on : 26.09.2023
Method of Sampling : As per Applicable Test Method
Quantity of Sample : 01 sample for each parameter
Weather Condition : Partly Sunny
Atmospheric Temperature (Min/Max) : 26.0 - 34.0 °C
Atmospheric Pressure (Min/Max) : 1002-1006 mbar
Sample ID, No. Locations (Core Zone)

1. ERSIPL/AA/744
2. ERSIPL/AA/745
3. ERSIPL/AA/746

1. Near Coal Lab
2. Near Work Shop
3. Near Weigh Bridge 3 & 4 (Village Dulanga)

TEST FINDINGS:

Sl. No	Test Parameters	Test method	Unit	Permissible Limit as per CTO No.4169, dtd.20.03.23	Results		
					ERSIPL/AA/744	ERSIPL/AA/745	ERSIPL/AA/746
1	Suspended Particulate Matter (SPM)	IS: 5182 (Part 4)- 1999, Reaffirmed 2019, Gravimetric Method	µg/m ³	500.0	299.0	309.05	301.34
2	Particulate Matter (size less than 10 µm) or PM 10	IS 5182 (Part 23): 2006, Reaffirmed-2022, Gravimetric Method	µg/m ³	250.0	127.76	142.34	124.07
3	Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, Reaffirmed-2022, Improved West & Gaeke Method	µg/m ³	120.0	9.58	8.40	8.88
4	Oxides of Nitrogen (NO _x)	IS 5182 (Part 6): 2006, Reaffirmed -2022	µg/m ³	120.0	14.52	13.19	14.14

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(Authorized Signatory)

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Test Report Format No.: ERSIPL/FM/37

TEST REPORT (AMBIENT AIR)

Pg-1/1

Date: 26 Sept 2023**Test Report No: ERSIPL/TR/AA/T:205-207**

Name and Address of the Customer : Dulanga open cast Coal Mining project of M/s NTPC Limited in Sundargarh district, Odisha.

Sample Collected by : Representative of ERS (I) Pvt. Ltd.

Sample Collected in presence of : Representative of Customer.

Date of Sampling/Monitoring : 18-20.09.2023

Sample Received on : 23.09.2023

Analysis Started on : 23.09.2023

Analysis Completed on : 26.09.2023

Method of Sampling : As per Applicable Test Method

Quantity of Sample : 01 sample for each parameter

Weather Condition : Partly Sunny

Atmospheric Temperature (Min/Max) : 26.0 - 35.0 °C

Atmospheric Pressure (Min/Max) : 1002-1007 mbar

Sample ID. No.

1. ERSIPL/AA/743
2. ERSIPL/AA/744
3. ERSIPL/AA/745
4. ERSIPL/AA/746
5. ERSIPL/AA/747
6. ERSIPL/AA/748
7. ERSIPL/AA/749
8. ERSIPL/AA/750

Locations (Core & Buffer Zone)

1. Near Site Office (NTPC), Kapurikachhar
2. Near Coal Lab
3. Near Work Shop
4. Near Weigh Bridge 3 & 4 (Village Dulanga)
5. Near Village Bendrichua
6. Near Village Rengalmunr
7. Near Village Khuntjharia
8. Near Village Kathfali

TEST FINDINGS:

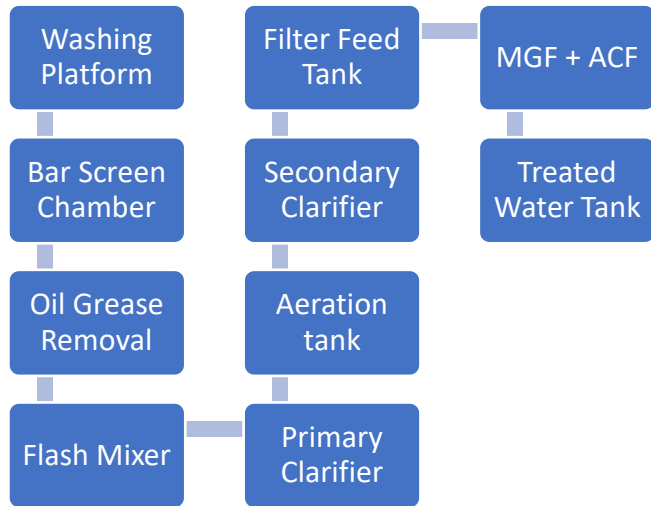
Place of Monitoring	Result of Parameters Analyzed					
	Mercury (Hg) (in $\mu\text{g}/\text{m}^3$)	Arsenic (As) (in ng/m^3)	Nickel (Ni) (in ng/m^3)	Cadmium (Cd) (in $\mu\text{g}/\text{m}^3$)	Chromium (Cr) (in $\mu\text{g}/\text{m}^3$)	Carbon Monoxide (CO) (in mg/m^3)
ERSIPL/AA/743	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/744	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/745	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/746	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/747	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/748	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/749	ND	ND	ND	ND	ND	<1.14
ERSIPL/AA/750	ND	ND	ND	ND	ND	<1.14
Permissible Limit as per CTO No.4169, dtd.20.03.23	Not Prescribed	06	20.0	Not Prescribed		2.0

(Authorized Signatory)
S.P.Pattanayak
Tech. Manager

Continuous Ambient Air Quality Monitoring Station



ZERO DISCHARGE EFFLUENT TREATMENT PLANT OF 50 KLD



Washing Platform

Flow Chart of ETP



Clarifier



Filter Feed Tank



Activated Charcoal Filter(ACF)

Annexure - XII

Environment Expenditure at NTPC Dulanga (In Lakh INR)						
Expenditure Head	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Dump Slope Stabilisation	170.71	221.77	16.49	270.69	546.66	1226.32
Dust Supression	12.36	33.39	61.24	63.44	86.48	256.91
Environment Monitoring	12.07	16.66	29.3	134.95	27.05	220.03
Env Staff Salary	1.35	5.72	7	10.17	10.17	34.41
Plantation	5.16	3	5.84	5.29	32.11	51.4
ETP + Water Purifier		15.9				15.9
Safety Zone & Protective measures			47.04			47.04
Awareness			0.12			0.12
Study on Fly ash utilisation			30.08			30.08
Pond Construction			2			2
	201.65	296.44	199.11	484.54	702.47	1884.21



NTPC Limited

(A Govt. of India Enterprise)

DULANGA COAL MINING PROJECT NOTICE

"It is to inform all concerned that Environmental Clearance has been accorded to Dulanga Coal Mining Project (7 MTPA) in its Valley Coalfields, Distt. - Sundargarh, Odisha by the Ministry of Environment and Forests on 03rd March, 2014. The copy of the clearance letter is available with the Odisha State Pollution Control Board and may also be seen at the website of the Ministry of Environment and Forests at <http://envfor.nic.in>."

AGM (IC)

NTPC Limited, Dulanga Coal Mining Project
881/26, Mission Road, Sundargarh, PIN - 750001, Odisha

Power of India

PFC CONSULTING LIMITED

TIME EXTENSION FOR SUBMISSION OF RESPONSE TO BIDS FOR "Consultancy assignment for development of coal blocks allocated for Odisha UMFP, Bhadrabahal, Odisha"

The last date of submission of Response to Bids which was earlier on March 10, 2014 on or before 11:00 hrs (IST) is extended to March 20, 2014 on or before 11:00 hrs (IST). The Response to Bids will be opened on the same day at 11:30 hrs (IST). The other time lines as specified in the Bid document shall stand extended accordingly. The Bid document is available on PFC & PFCCL website www.pfcindia.com & www.pfcclindia.com.

Note: PFC Consulting Limited reserves the right to cancel or modify the process without assigning any reason and without any liability. This is not an offer.

Shwetabh Verma, Dy. Manager
PFC Consulting Limited

A Wholly owned Subsidiary of Power Finance Corporation Ltd.
(A Govt. of India Undertaking)

Registered Office: First Floor "Ujanidhi", 1, Baniachand Lane, Connaught Place,
New Delhi 110001, India Ph: 91-11-23456123; Fax: 91-11-23456170;
e-mail: odishaumfp_coalblock@pfcindia.com



COMPUTER CENTRE UTKAL UNIVERSITY VANI VIHAR, BHUBANESWAR-751004

TENDER NOTICE

Sealed tenders are invited from the reputed Manufacturing Firms/ Authorized Dealers for supply of rack mounted Servers / up-gradation of existing three nos. of IBM X-3650 rack mounted servers, Desktop Computers, Digital Managed I2 switch, 5KVA on-line UPS, 0.6KVA offline UPS, Wireless LAN (Bridging), Wi-Fi, IP Camera with NVR, Window AC, Water cooler with Water purifier, battery for UPS, Computer Paper, Repairing of existing computer chairs & tables, 11 watt ceiling mounted CFL Bulb (Philips), Computer Consumables, 18.5 LED Monitors, Server based Anti-Virus for this centre. Tender documents with terms & condition to be downloaded from our website www.utkaluniversity.ac.in from 10.03.2014. Sealed tender complete in all respect along with: EMD (amount mentioned in tender document) and Tender form cost of Rs.500/- (non-refundable) in shape of Banker's cheque/DD in favour of Prof. in Charge, Computer Centre payable at Syndicate Bank, Utkal University Campus Branch, Bhubaneswar must reach the office of the undersigned on or before 22.03.2014 by 3.00 P.M. Tender will be opened on 22.03.2014 at 4.00 P.M. in presence of tenderers/their representatives. For repairing and up-gradation work the firm should inspect the location from 10.00 A.M. to 5.00 P.M. in working days.

The right to accept or reject the lowest or any tender in part or full without assigning any reason is reserved.

Sd/- Prof. in Charge



Punjab State Power Corporation Limited

Regd. Off. : PSEB H.O., The Mall, Patiala-147001

NOTICE INVITING TENDER

OFFICE OF CHIEF ENGINEER/SEW MW SECRETARIATE OFF.
PRU GATE NO. 1, PSPCL LUDHIANA

Tender Enquiry No. : GW/2014/PO Dated 03.03.2014

Tender Notice for : Supply of Mild Steel Sections of following sizes conforming to IS 2002:2000 with latest amendments (Grade-A Quality) and PSPCL's Specifications QW-237 dated 03.03.2014.



KARNATAKA

Sampige Road
Phone: 080 - 23

No. ED/KEA/ADMN/CR-12/2013-14

ADMISSION TO PROFESSIONAL COURSES

- Applications are invited from eligible candidates of Karnataka for admission to Professional Courses detailed herein under for the seats to be notified.
- Academic Eligibility

Sl. No.	For Admission to 1st Year	In Qualifying
1.	Medical / Dental (MBBS / BDS)	Passed in 2nd PUC / Languages and obt Physics, Chemistry, and 3B category can
2.	Ayurveda, Homoeopathy, Unani, Naturopathy and Yoga (ISM & H)	Passed in 2nd PUC / Languages and obt Physics, Chemistry, and 3B category can
3.	Engineering / Technology (B.E. / B.Tech)	Passed in 2nd PUC / Languages and obt Physics and Mathe Biology / Electronics 3B category candida
4.	Architecture (B.Arch)	Passed in 2nd PUC Compulsory optional aggregate in all the category candidates
5.	B.Sc. (Agriculture), B.Sc. (Forestry), B.Sc. (Sericulture), B.Sc. (Agri.Biotech), B.Sc. (Horticulture), B.H.Sc., (Home Science)	Passed in 2nd PUC / and Biology as option
6.	Bachelor of Veterinary Science and Animal Husbandry (B.V.Sc. & A.H.)	Passed in 2nd PUC aggregate minimum English subjects. (4/ candidates)
7.	B.Tech.(Food Technology), B.Tech.(Dairy Technology), B.F.Sc (Bachelor of Fisheries Science), B.Tech. (Food Science & Tech.) and B.Sc.(Ag. Marketing and Co-operation)	Passed in 2nd PUC / Mathematics and Bio
8.	B.Tech.(Agriculture Engineering)	Passed in 2nd PUC / and Mathematics as c
9.	B-Pharma	Passed in 2nd PUC / and Biology or Phys Minimum of 45% of M 1, 2A, 2B, 3A and 3B c Passed in Diploma in by the Pharmacy Co and has secured mini 3A and 3B category c
10.	2nd Year B. Pharma	Passed in Diploma in by the Pharmacy Co and has secured mini

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

