



(A Govt. of India Enterprise)

कोयला खनन परियोजनाएँ, हजारीबाग Coal Mining Projects, Hazaribag

Date: 31/05/2023

Ref: 1040/PBCMP/EMG/2023/F-47/111

To,

The Deputy Director General of Forests (C), MoEF & CC, Integrated Regional Office, 2nd Floor, Headquarter, Jharkhand State Housing Board, Harmu Chowk, Ranchi (Jharkhand) - 834 002.

Dear Sir.

Sub: Six Monthly Progress Report on compliance of conditions stipulated in the Environmental Clearance by MoEF & CC and Monitoring report for the period Oct., 2022 to March 2023 for NTPC Ltd - Pakri Barwadih Coal Mining Project (15MTPA): Reg.

Ref1: EC Ltr No. J-11015/692/2007-IA-II(M) Date 19th May 2009.

Ref2: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 29.06.2016

Ref3: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 07.12.2017

Ref4: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 14.08.2018

Ref5: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 10.11.2020

With reference to above subject please find enclosed herewith the six-monthly status report on compliance of various conditions in the Environmental Clearance accorded to NTPC Ltd - Pakri Barwadih Coal Mining Project (15MTPA) for the period Oct., 2022 to March 2023. The monitoring reports on fugitive emission, effluent quality, ambient air quality, ground and surface water quality, noise measured data etc. are also enclosed with the report.

This is for your kind information please.

Thanking you.

Yours Faithfully,

[NAVIN KUMAR]

Dy. General Manager PB & PB-NW CMP, न कुमार / NAVIN KUMAR

Encl.: A/a Copy to:

SA ALCOUR GALLE CATAL DON SENAL NOME) Sc. E & Regional Director, Kolkata, Central Pollution Control Board, Southern Conclass en Black 502, 5th & 6th Floors, Rajdhanga Main road, Kolkata-700107 (W.B), e-mail: nakdan-yis (N.B)

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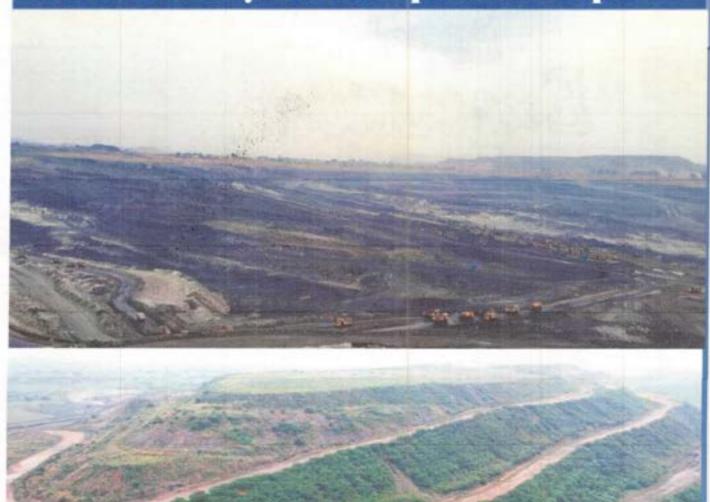
> कोयला खनन परियोजनाएँ, सिकरी साईट कार्यालय, बङ्कागाँव, हजारीबाग - 825311 Coal Mining Projects, Sikri Site Office, Barkagaon, Hazaribag - 825311

पंजीकृत कार्यालय : एनटीपीसी भवन, स्कोप कॉम्प्लैक्स, 7, इस्टिट्यूशनल, लोधी रोड, नई दिल्ली — 110003. टेलीफोन नं\_/Tel: 011-24387333, फैक्स नं\_/Fax: 01124361018 Registered Office: NTPC Bhawan, Scope Complex, 7, Institutional Area, Lodi Road, New Delhi - 110003. E-mail: ntpcc@ntpc.co.in, Website: www.ntpc.co.in



Report Period: Oct - 2022 to March -2023

# Six Monthly EC Compliance Report





NTPC LTD.

Pakri Barwadih Coal Mining Project.



#### COMPLIANCE STATUS OF ENVIRONMENTAL CLEARANCE CONDITIONS

Period: October - 2022 to March - 2023

EC Clearance Ltr. No.J-11015/692/2007-IA.II (M) Dated 19<sup>th</sup> May 2009

& Amendment Ltr. No J-11015/692/2007-IA-II (M) Dated 29.06.2016

Amendment Ltr. No J-11015/692/2007-IA-II (M) Dated 07.12.2017

Amendment Ltr. No J-11015/692/2007-IA-II (M) Dated 14.08.2018

Amendment Ltr. No J-11015/692/2007-IA-II (M) Dated 10.11.2020



NTPC Ltd - PAKRI BARWADIH COAL MINING PROJECT
Sikri Site Office
PO: Barkagaon, Dist: Hazaribagh

Jharkhand – 825 311



# NTP C Limited Pakri Barwadih Coal Mining Project (15MTPA)

#### COMPLIANCE STATUS OF ENVIRONMENTAL CLEARANCE CONDITIONS

SL No	Conditions	Compliance/ Status report for the period Oct – 2022 to March - 2023
SPEC	IFIC CONDITIONS	
I	The environmental clearance is restricted to Phase-1 of 39 years of opencast operations involving 3319.42 ha of ML area only for which exploration has been completed.	Noted. We shall always abide the said condition.
II	No mining operations shall be undertaken in the forestland within the ML until clearance has been obtained under the provisions of FC Act, 1980.	All necessary clearances under the provisions of FC Act, 1980 has been obtained for the 1026.438 Ha of forest land involved vide:  i. Stage I Clearance obtained vide letter no. "F. No 8-56/2009, dated 11 <sup>th</sup> May 2010",  ii. Stage II Clearance obtained vide letter no. "F. No 8-56/2009, dated 17 <sup>th</sup> Sept 2010",  iii. Final land release letter received from the State Govt. vide letter no. 3/Vanbhoomi-75/2009-1240 dated 31.03.2011.  The Mining operations is restricted to the area only for which forest clearance of has been accorded by MoEF under the provisions of FC Act, 1980.
III	The monolith found within the core zone shall not be disturbed by the mining operations and a minimum 500m distance along with thick green belt would be maintained between the eastern quarry and the monolith. A road would be created upto the monolith a park created around it so that the monolith could be visited.  Amendment vide letter number-J-11015/692/2007-IA-II(M) Date-07.12.2017  The user agency would provide necessary fund to the state	

नवीन कुमार / NAVIN KUMAR क मान्यक (प्रथम प्रथम) (DGM (ENVI MONT) Compliance of Condition stipulated in Environment Clearance granted to Pakri Barwadih Coal Mining Project (COAL MINING PROJECTS हमारीका अन्य प्रीप्ति प्रथम (COAL MINING PROJECTS हमारीका / Hazaribag



#### Pakri Barwadih Coal Mining Project (15MTPA)

	it so as that the Monolith could be visited as for tourism purpose.	release of payment.
IV	Mining shall be carried out as per statuette from the streams/nallahs flowing within the lease. Embankment to be constructed shall be based on peak flow data and shall be at least 3m above the HFL. The slope of the embankment shall at least 2:1 towards the ML and shall be stabilized with	
	plantation. The CWPRS would be engaged for the design and study of realignment of the drains / nalas flowing across the ML and creation of embankment, and also obtain approval of the State Government for diversion of the nalas.	
V	Topsoil should be stacked properly with proper slope at earmarked site(s) and should not be kept active and shall be used for reclamation and development of green belt.	Top soil is being stacked in available suitable land. Same is being used for spreading over the completed portion of OB Dump for development of the green belt.
		All the protection measures for soil erosion from top soil dumps are being taken. To prevent erosion from top soil dumps, coir mats have been laid on the slopes.
		Further, to avoid soil erosion plantation has been carried out on external dump along with Mixed grass variety seeds and root shoots of <b>Vertiver</b> grass.
VI	OB should be stacked at earmarked three external OB dump site within ML area of a maximum height of 90m.	As per approved revised Mine Plan, OB is being stacked at earmarked area. Presently height of the dump is 89.62 m with three terraces. It will be restricted to the maximum height of 90 meter.
	Amendment vide letter number- J-11015/692/2007-IA-II(M) Date- 07.12.2017 A minimum of 500m shall be maintained and thick green belt developed between the habitation of	
1	Barkagaon and OB dumps.	between habitation of Barkagaon and Of dumps, existing greeneries between



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		mine and habitation of the Barkagaon have not been disturbed. Further, about 2500 trees have been planted along road side between East quarry and Barkagaon village. Apart from above 5500 nos. of trees have been planted in Langatu and Arahara village falling between Mining and Barkagaon village.
	The option of raising the level of grazing land created after backfilling the quarry by 10m or so shall be examined so to reduce the overall OB dump height.	As per approved Mining Plan Grazing land of 223 Ha will be developed on back filled quarry of western & eastern part at the time of mine closure.
	Slope stability tests may be undertaken and the feasibility of backfilling depending on the type of cost-effective technology available at that stage shall be re-examined.	Slope stability tests have been conducted through the Central Institute of Mining and Fuel Research (CIMFR) Dhanbad & BIT, Sindri – Dhanbad for Dump–A and Dump–C & also for Western Mine Pit slopes. Slope stability Study of Eastern Quarry & EQ dump has been done by IIT-BHU.  As per approved mining plan Internal dumping will start from 7 <sup>th</sup> year of start of the mining. However internal dumping has been started from FY-2022-23 based on scientific study. Till March 2023 an
	The ultimate slope of the dump shall not exceed 28°.	area of 55.0 Ha has been backfilled.  The ultimate slope of the dump shall be restricted to 28 degree.
	Monitoring and management of reclaimed dumpsite should continue until the vegetation becomes self-sustaining.	Monitoring & management of reclaimed dump site shall be carried out till the
	Compliance status should be submitted to the Ministry of Environment & Forests and its Regional office located at Bhubaneswar on yearly basis.	The half yearly compliance report of EC is being submitted regularly to the MoEF & CC Regional office Ranchi. Last report submitted online on Parivesh Portal and also submitted to regional office vide letter no 1040/PBCMP/EMG/2022/F-47/143 dated- 26/12/2022 and through mail dated 03.01.2023 enclosed as Annexure – 1.
I	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for	To arrest silts from OB, embankment and top soil dumps, catch drains have been provided. <b>1200-meter</b> toe wall followed by garland drain along the embankment, <b>100-meter</b> toe wall along



#### ng Project (15MTPA)

Pakri Barwadih Coal Mini	
maintained properly. Garland drains (size, gradient and length) and sump capacity should be designed keeping	Ct tt tt Tost Cotta
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Garland Dain (Dump 'C'), 450-meter toe wall along the contour of another Top Soil dump near Itiz village followed by Garland Drain are also constructed, 350-meter toe wall with Garland Drain along the Lathorwa/Khorra Nallah have been constructed to avoid any siltation in the nearby area.

The garland drains constructed along the dumps are ultimately connected to the settling pit to allow the water to pass through it.

Catch drains also provided at external dumps, workshop, offices etc. to direct the rain water to siltation pond at sump area to arrest silts and further to direct water to main sump.

The sump has been constructed keeping the safety margin more than 50% over and above the maximum rainfall in the area. Water so collected is being utilized for dust suppression in mining area, transport roads and also for green belt development etc. The catch drains are regularly being de-silted and maintained properly.

The main sump is in the de-coaled area at dip most side so as to provide adequate retention period to allow proper settling of silt material.

#### VIII Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.

While construction the retaining wall all the technical parameters viz. peak rainfall of the area, stability of the wall etc was considered. Presently, more than 2.1 km long retaining wall along toe of OB dump with adequate dimension has been constructed.

IX Amendment: letter number- J-11015/ 692/ 2007-IA-II(M) Date 07.12.2017:

The approach road of 6 km along northern boundary of mining lease is already metalled.

The approach road of 6 km along northern boundary of mining lease shall be metalled. For development of 3-tier avenue plantation, northern sides of main approach road to be preferred in place of haul roads.

During this monsoon 3720 nos. of plants have been planted along the northern boundary of the mining lease also existing green belt have not been disturbed.

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Amendment: letter number- J-11015/ 692/ 2007-IA-II(M) Date 29.06.2016

The coal shall be transported through closed belt conveyor system of a length of 13 km to Banadag railway station. The project proponent is permitted for (2) years to use State roads Highway/public transportation of coal (approx.. 35 km) to Banadag Railway Siding by adopting all mitigative measures to control dust pollution. The project proponent shall put all the efforts to expedite completion of service road for belt conveyor so that the same can be utilized for coal transportation.

infrastructure Conveyor completed and operational upto TP-10. From TP-10 to siding, a rapid loading system (RLS) for transporting and loading of coal to railway wagons is under construction, which has been delayed due to land acquisition issues. Land has been made available only on 28.04.2023 through deployment forces by district administration and NTPC is putting its best efforts to complete the RLS at earliest.

All environmental mitigative measures associated with transportation of coal by road is being followed.

Photographs of the CHP is Enclosed as Annexure-2.

Condition IX, Amendment vide number-J-11015/692/2007-IA-II(M) Date 29.06.2016, letter number-J-11015/692/2007-IA-II(M) Date 14.08.2018 and letter number- J-Date 11015/692/2007-IA-II(M) 10.11.2020

Thereby extension in amendments in EC dated 19th July 2018 for a period of two years (i.e upto 28th June, 2022) by road as an interim adopting arrangement by mitigation measures to control dust pollution, which would include regular water maintenance of roads, trucks with sprinkling, covering tarpaulin sheet etc.

Presently part of the coal produced from PBCMP is being transported through road in tarpaulin covered truck and part of the coal is transported through conveyor belt.

The rapid loading system of the Conveyor system is under construction and hence 100% of the coal produced PBCMP could the transported through Belt conveyor. The construction has been delayed due to land acquisition issues.

In this regard, Ministry of Environment, Forest and Climate Change, Government of India has notified the Gazette Notification vide SO-1561 (E) dated 21.05.2020.

As per the clause 3(i) of the notification, such time enabling transport/conveyer infrastructure is not available, road transportation may be undertaken in trucks, covered by tarpaulin or other means."

This is being abided by NTPC while carrying out road transportation through trucks. नवीन कुमार / NAVIN KUMAR

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#### Pakri Barwadih Coal Mining Project (15MTPA)

Width of the road shall be at least 7 mts before the start of the transportation and necessary	Road which is used for transportation of
transportation and necessary permission shall be taken from state PWD.	coal is wider than 7mtr. For granting of necessary permission from state PWD a letter vide letter no.1040/PBCMP /ENV/2021/F-47/44 Dt 28.06.2021 has been submitted. Copy of letter already submitted through last compliance reporting.
<ul> <li>The State Pollution Control Board, while considering consent to operate for the project, shall ensure that with the proposed coal transportation by road, air quality would remain within the national ambient air quality standards.</li> </ul>	Agree to abide the conditions.
<ul> <li>The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been distributed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc."</li> </ul>	The mining activity are being carried out as per the approved mine plan and due care are being taken to minimize the adverse impact of the mining activity to surrounding areas.  All the mitigation measures are being taken as per the approved EMP and Mine Closure Plan.
Drills should be wet operated only.	Drilling machine with inbuilt water injecting system is being utilized for drilling purpose. Also, regular water spraying is being carried out in the drilling area for minimization of the fugitive dust emission.
Controlled blasting should be practiced with use of delay detonators. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders should be implemented.	Blasting patterns have been designed
न कुमार / NAVIN KUMAR	Also blast vibration monitoring is being done regularly (and also through third party) to determine any adverse impact due to blasting. The test results are well within the norms prescribed by the DGMS. The latest test report of the same is enclosed as <b>Annexure – 4</b> .
	while considering consent to operate for the project, shall ensure that with the proposed coal transportation by road, air quality would remain within the national ambient air quality standards.  • The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been distributed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc."  Drills should be wet operated only.  Controlled blasting should be practiced with use of delay detonators. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders should be implemented.

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XII	No additional groundwater (bore well) shall be used for mining operations. Additional water if any required for the project shall be used from recycled water or mine discharge water or rainwater collected in rainwater harvesting pits within the CML.	As stipulated, the requirement of water for other activity viz.: dust suppression, gardening and vehicle washing etc are being fulfilled through recycled water, mine seepage water, storm water.  Ground water is being used mainly for domestic use.
XIII	Regular monitoring of groundwater level and quality should be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity should 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 should be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.	Monitoring of groundwater levels are being carried out by manual monitoring at 20 locations around the mining lease area.  Apart from manual monitoring, automatic water level recorders (Piezometers) have been installed at two locations viz.: Langatu site office, Sikri site office.  The data so generated is being submitted quarterly to Ministry of Environment & Forests and Climate Change & Central Pollution Control Board. Last six months water level data are enclosed as Annexure — 5. Water quality report of Jan. 2023 is attached as Annexure — 6.
	Rainwater structures shall be erected in the core and buffer zone, in case monitoring indicates a decline in water table.	Roof top rain water structure has been constructed and also rejuvenated the existing ponds in nearby villages for improving the g round water of the area. Approximately 1,48,796 m³/year of ground water is being recharged at Pakri Barwadih Coal Mining Project.
XIV	The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	As mentioned Regular monitoring of the ground water table in the surrounding villages are being done to determine the any adverse impact on to the ground water regime. Till date no decline in water table are observed due to dewatering from the mine.  However, NTPC Ltd – PBCMP, under its
नवीः	स कुमार / NAVIN KUMAR	social obligation, have installed 16 Nos. of hand pumps 15 nos. of Tube wells in nearby villages in FY 2022-23. Also, to meet the further water requirement of the nearby villagers 9 tankers water has been supplied through mobile water



# NTP C Limited Pakri Barwadih Coal Mining Project (15MTPA)

		tankers during this summer season.
XV	Sewage treatment plant of adequate capacity shall be installed in the colony.	
	ETP should also be provided for workshop and CHP wastewater.	For treatment of industrial effluents, an ETP with Electro-Mechanical process technology have been installed at Mine workshop. Effluent quality data is enclosed as <b>Annexure-8</b> .
	Treated wastewater meeting prescribed norms only shall be recycled for mining operations to the extent possible and permitted to be discharged in to the natural water courses only if it meets the prescribed standards.	Till date no discharge is being done into any natural water course. Treated waste water is being re-cycled and reused for various mining operations.
XVI	The total area that shall be brought under afforestation at the time of mine closure shall not be less than 1199 ha which includes reclaimed topsoil soil dump area (25 ha), external OB dump (632 ha), backfilled area (524 ha), along ML boundary, embankment and undisturbed area,	Shall always be complied with.  So far more than 2.47 Lakhs of tree saplings have been planted and distributed to local villagers at and around the Pakri Barwadih Coal Mining Project.
	along roads and infrastructure, green belt (18 ha), and in township outside the lease by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.	Also for mass awareness, the NTPC Ltd – PBCMP is actively participating in "Van Mahotsav" "Tree Raksha Bandhan", "Paryavaran Mela" etc. being organized by State Forest Department.  Details of the plantation / distribution taken up by NTPC Limited till date is enclosed as Annexure-9.
XVII	A Progressive Mine Closure Plan shall be implemented by reclamation of 524 ha, of the total quarry area of 1785 ha, which shall be backfilled and afforested by planting native plant species in consultation with the local DFO/ Agriculture Department. The density of the trees should be around 2500 plants per ha. Of the	Shall always be complied with.  Till March 2023 total area of approx. 55 Ha has been backfilled. However internal dumping is in active stage and Mining / reclamation schedule being implemented at the cost of project.

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total reclaimed backfilled area, 223 ha shall be grazing land and 442 ha shall be agricultural land for utilization of the villagers. Of the balance 1261 ha of quarry area, an area of 596 ha of de-colaed area/void being converted into a water reservoir shall be gently sloped and the upper benches of the reservoir shall be terraced and stabilized with plantation and the remaining 665 ha is for public use for Phase-2 of the project.

amount is being deposited annually. **Rs 7.60 Crore** have been deposited in the FY
2022-23 as 7<sup>th</sup> year Mine Closure cost. So
far Rs. **52,20,09,027.77** including
interest has accrued in Escrow account
as part of the Mine Closure cost.

Details of amounts accumulated in ESCROW is enclosed as **Annexure-10**.

#### XVIII

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

Regular periodic medical check-up of all mine workers as per DGMS guidelines is being carried out at project hospital.

"Occupational health study in Pakri Barwadih Coal Project with special reference to respiratory health and hearing impairment assessment" was Regional conducted through Occupational Health Centre (Eastern), Institute Of Kolkata & National Health, Occupational Ahmedabad. Report of the same already submitted in last compliance reporting.

As of now no case of occupational disease and hearing impairment has been reported.

#### XIX

Condition XIX, Amendment vide letter number-J-11015/692/2007-IA-II(M) Date 07.12.2017

A detailed R&R Plan for the life of the land losers, comprising losers and land and homestead homestead losers, including tribals to be displaced from the project area shall be prepared and implemented in stipulated time frame. Project will implement the proponent approved R&R plan as per phased requirement of displacement. compensation shall be not less than that specified in the National R&R Policy.

NTPC RAP has been approved vide Govt. of Jharkhand (GoJh) Gazette Notification and forwarded vide letter No. 116 /R dated 27.02.2013 which is in line with the Jharkhand R&R policy.

As per the approved Govt. of Jharkhand (GoJh) Sankalp No. 116 / R dated 27.02.2013, houses have been constructed in the R&R colony at Dhenga along with all necessary infrastructure.

Persistent efforts to convince the villagers, has resulted in approx 44 HSOs shifting to the R&R colony at Dhenga and more HSOs are in the process of shifting to R&R Colony.

Some of the PAPs have opted for selfrelocation. Based on the demands of

Provision shall also be made in the R&R Plan to take care of the land less

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	labourers and the tribals. The total expenditure on R&R shall not be less than Rs. 2976 Cr, which includes private land acquisition (Rs. 982 Cr) and R&R (Rs.1492 Cr). Alternate livelihood and skill development programmes and schemes shall be implemented as part of R&R and CSR.	PAPs, a special package has been designed to compensate each self-relocating family. Till March 2023 total 1010 PAPs have been resettled.  As per the Socio-economic survey which has been mentioed in Sankalp document, SI No. 3, page no. 2, there are no ST PAF in the project area.  Further, through ITI Dhenga (Being run by NTPC) capacity building of youths of the project area is being carried out by PBCMP. Other training programs for women empowerment and providing livelihood options is also being organised by PBCMP.  It is also to confirm that the R&R benefits being extended are not less
XX	The project authorities shall carry out a pre-mining socio-economic survey based on the UNDP Human Development Report and monitor the socio-economic status once every three years and maintain records thereof and report in their Annual	than as enlisted in the national R&R policy.  Pre-mining Socio economic survey has been undertaken through IIT Kharagpur and Abhigyan Samiti (Local NGO).  For monitoring, socio economic status a contract for conducting Social Impact Assessment in the project affected
	Report, the socio-economic impact of R&R and CSR activities.	villages of PBCMP has been awarded to M/s. DELOITTE TOUCHE TOHMATSU INDIALLP, Gurgaon dated 16.09.2020. The study report is provided in the last compliance.
XXI	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: 23 ha) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its Regional office at Bhubaneswar.	The report on LULC for the period 2016- 19 has already been submitted.  The work for LULC study for the period 2019-22 using satellite imagery is enclosed as <b>Annexure-11</b> .
XXII	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of	

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Pakri Barwadih Coal Mining Project (15MTPA)

	Environment & Forests 5 years in advance of final mine closure for approval.			
GENE	RAL CONDITIONS			
I	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	Shall always be complied.  Permission from MOEF & CC will be taken in case of any change in technology and scope of work is proposed.		
II	No change in the calendar plan including excavation, quantum of mineral coal and waste shall be made.	The OM from MoEF&CC vide F.No. 22 44/2018-IA.III dated 14.05.2020 regarding flexibility in coal or mineral production of capacity irrespective of calendar plan subject to maximum of capacity granted in the environmental clearance, is being followed.		
III	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring SPM, RPM, SO2, NO <sub>x</sub> and heavy metals such as Hg, Pb, Cr, As, etc. 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.	The project has established 8 nos. AAC monitoring stations in the core as well as buffer zone of the ML area in consultation with the Jharkhand State Pollution Control Board (JSPCB). There are 4 no. of monitoring station in core zone i.e. Urub Village, Nagari Village, Langatu Village, Pakri-Barwadih village area and there are 4 nos. of monitoring stations in the buffer zone such as Kandaber village, Garikalan Village, Dhenga village and Kusumbha Village.		
		Location map of the same is enclosed as Annexure – 12.		
IV	Fugitive dust emissions (SPM and RSPM and heavy metals such as Hg, Pb, Cr., As, etc) from all the sources shall be controlled regularly monitored and data recorded properly.	For controlling of the fugitive dust emissions wet drilling with water injection system is being in practice during drilling operations.  Permanent water sprinkling system has		
	Water spraying arrangement on haul roads, wagon loading, and dump trucks (loading and unloading) points shall be provided and properly maintained.	been installed at main haul roads. Dust suppression at mines haul roads & other dust generating areas like truck loading & unloading points is being carried out by engaging 20 nos. mobile water tankers. Details are as under:		
		a) 12KL: 10 Nos. b) 16KL: 07 Nos. c) 28KL: 02 Nos. d) 80KL: 01 No. नवीन कुमार / NAVIN		



# Pakri Barwadih Coal Mining Project (15MTPA)

		Route map of water sprinkling system is enclosed as <b>Annexure – 13.</b>
		Monitoring of the fugitive emission and heavy metal are being done at CPCE prescribed intervals. Analysis reports of same are enclosed as <b>Annexure – 14</b> .
RSI suc reg	ta on ambient air quality (SPM, PM, SO2, NOx and heavy metals that has Hg, Pb, Cr, As, etc.)) shall be pularly submitted to the Ministry luding its Regional Office at	approved and NABL accredited Lab at
Bhi Pol	ubaneswar and to the State lution Control Board and the ntral Pollution Control Board once	
	six months.	The last Six-Monthly report was submitted online on PARIVESH Porta and also submitted to regional office vide letter no. 1040/PBCMP/EMG/2022/F-47/143 dated 26/12/2022 and through mail dated 03.01.2023 enclosed as <b>Annexure – 1.</b>
con	equate measures shall be taken for trol of noise levels below 85 dB (A) he work environment.	Effective measures are well taken to minimize the noise level below 85 dB (A) in the work zone.
drill etc	rkers engaged in blasting and ing operations, operation of HEMM, shall be provided with ear gs/muffs.	
		Noise monitored data is enclosed as Annexure-15.
proj con und 199	ustrial wastewater (workshop and stewater from the mine) shall be perly collected, treated so as to form to the standards prescribed ler GSR 422 (E) dated 19 <sup>th</sup> May 3 and 31 <sup>st</sup> December 1993 or as ended from time to time before	For treatment of waste water generated at HEMM Washing center, an Electro Mechanical ETP have been installed at Mine workshop and Oil and grease trap
70.000	charge.	Annexure-8.



# Pakri Barwadih Coal Mining Project (15MTPA)

	effluents.	
VIII	Vehicular emissions shall be kept under control and regularly monitored.	Planned preventive maintenance of all vehicles plying for project is being done periodically. All the vehicles deployed at PBCMP are PUC compliant.  PUC certificate of some of the vehicle is enclosed as <b>Annexure – 16.</b>
IX	Environmental laboratory shall be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.  Amendments dt 07.12.2017: The monitoring shall be done by NABL/MoEF&CC accredited Laboratory.	accredited lab in consultation with the State Pollution Control Board. However, Environmental laboratory has already been setup with the following equipments:  \$ 5 nos. RDS machines, \$ 5 nos. of fine particulate sampler, \$ 1 no of High-volume sampler, \$ 1 set of continuous ambient Air Quality monitoring station (AAQMS), \$ 1 set of meteorological station, \$ 1 set of noise level meter, \$ 5 set of Piezometers with Automatic data recorder. \$ 1 no. of manual water level meter, \$ 1 no. of handy sampler for indoor air quality. \$ 1 no. Personal Dust Sampler  Photograph of the AAQMS and other equipments are enclosed as <b>Annexure</b>
X Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.  Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed.		All the possible measures are being taken to control the fugitive dust emission. Apart from controlling fugitive dust emission, Personal protective respiratory devices are provided to personnel working in dusty areas & adequate training on safety & health are also being imparted.  Occupational health surveillance program prepared and implemented to identify the adverse impact, if any, and to take appropriate corrective action, if required.
	14	

एवं पहाचकार (पर्यापण प्रकार) / DGM (ENVT. MGMT.) एवटीपीसी जिपिटेड / NTPC Limited कोवात स्वरूप परियोजनी / COAL MINING PROJECTS इंडापीबाच / Hazaribag



# Pakri Barwadih Coal Mining Project (15MTPA)

		engaged in the project are being done at required intervals to observe any contractions due to exposure to dust. The various tests include PFT, X-Ray, and lung spirometry etc.  Summary report of the medical checkup is enclosed as <b>Annexure – 18.</b>
ΧI	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.	At the corporate office, a separate Environmental Management Cell is already functioning under supervision of senior executive who is reporting to Head of the Company to look after the implementation of the various pollution control measures and other Environment Management System requirements.  At local level, dedicated department for Environment Management is also functional with qualified Environmental
		Engineer. Head of the Department directly reports to Head of the Projects. The working level staffs in Environment Cell have been deployed through MDO.  The organization chart of the same is enclosed as <b>Annexure – 19</b> .
XII	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose.	The requisite funds for environmental mitigation measures have been included
	Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhopal.	environmental mitigative measures will not be diverted for other purposes.  Amount of <b>Rs. 5.66 Crores</b> have been
		spent during Oct-2022 to March-2023 for the Environment Management Cost.  Till March 2023 we have spent an
		amount <b>Rs. 72.023 Crores</b> (Rs. 61.155 Crores – Audited and Rs. 10.86 Crores - Unaudited) for the Environment Management Cost. Details of the expenditure incurred towards EMP are enclosed as <b>Annexure-20</b> .
XIII	The Regional Office of this Ministry located at Ranchi shall monitor	

नवीन कुमार / NAVIN KUMAR



# Pakri Barwadih Coal Mining Project (15MTPA)

s c f	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.	MoEF/ RO during their inspection / site visit.
3 5	A copy of the EC will be marked to concerned Panchayat/ local NGO, if any, from whom any suggestion/representation has been received while processing the proposal.	No suggestion / representation have been received while processing the proposal. Copy of the EC letter has been sent to the local administrative offices and the EC letter has been also uploaded on the company's website <a href="https://www.ntpc.co.in">www.ntpc.co.in</a> . Further, copy of the EC has been handed over to all the Mukhiya / Surpanch concerned with the PBCMP.  Copy of the receipt of EC from different Panchayats is already submitted.
a I	State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.	Copy of the EC letter was sent to office of District Industry centre, District Collector office for display.  A copy of the EC has been also marked to JSPCB for display at their Regional office.
t a contract to the contract t	The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at <a href="http://envfor.nic.in/">http://envfor.nic.in/</a> . The compliance status shall also be uploaded by the project authorities in their website and regularly updated at least once in six months so as to bring the same in the public domain. The data shall also be displayed at the	and the same was published in English Daily "The Times of India" as well as in vernacular language (Hindi) daily "PRABHAT KHABAR" on 30.05.2009 which is within 7 days of receiving the granted EC.
t	east once in six months so as to brin the same in the public domain. The	ng ne ne

नवीन कुमार / NAVIN KUMAR यर महाउकाक (पर्वारम प्रवेश) / DGM (ENVT. MGMT.) (प्यारीविती जिल्लीका NTPC Limited कोवान सकत परिवेक्गी (COAL MINENS PROPERTS



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# Pakri Barwadih Coal Mining Project (15MTPA)

3	The Ministry or any other competent authority may stipulate any further condition for environmental protection.	The additional conditions stipulated by MoEF vide amendment letter no. J-11015/692/2007-IA.II(M) Dated 29.06.2016, 07.12.2017, 14.08.2018 & 10.11.2020 towards environment protection have been complied.
4	Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environment (Protection) Act, 1986.	Noted and will be complied.
5	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules. The proponent shall ensure to 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 will be complied under the provision of these acts and rules.

नवीन कुमार / NAVIN KUMAR वर वात्त्ववक (पर्वादाव प्रवेदन) / DGM (ENVT. MGMT) इन्दर्शिती शिनिटेश/ NTPC Limited कोवन व्यवन परिवेद्यन्ति (COAL MANNG PROJECTS हजारीवान / Hazaribag





# PC Limite

Govt. of India Enterprise)

कोयला खनन परियोजनाएँ, हजारीबाग Coal Mining Projects, Hazaribag

Date: 26/12/2022

Ref: 1040/PBCMP/EMG/2022/F-47/ 1 43

The Additional Principal Chief Conservator of Forest (C), Ministry of Environment, Forest and Climate Change, Regional Office (ECZ), Bungalow No. A-2, Shyamli Colony, Ranchi (Jharkhand) - 834 002.

Dear Sir,

Sub: Six Monthly Progress Report on compliance of conditions stipulated in the Environmental Clearance by MoEF & CC and Monitoring report for the period April 2022 to September 2022 for NTPC Ltd - Pakri Barwadih Coal Mining Project (15MTPA): Reg.

Ref1: EC Ltr No. J-11015/692/2007-IA-II(M) Date 19th May 2009.

Ref2: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 29.06.2016

Ref3: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 07.12.2017

Ref4: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 14.08.2018

Ref5: EC Amendment Ltr No J-11015/692/2007-1A-II(M) Date 10.11.2020

With reference to above subject please find enclosed herewith the six-monthly status report on compliance of various conditions in the Environmental Clearance accorded to NTPC Ltd -Pakri Barwadih Coal Mining Project (15MTPA) for the period April 2022 to September 2022. The monitoring reports on fugitive emission, effluent quality, ambient air quality, ground and surface water quality, noise measured data etc are also enclosed with the report.

This is for your kind information please.

Thanking you.

Encl.: A/a

Yours Faithfully,

BIRENDRA KUMAR Addl. G.M. (Envt.Mgmt.)

THE PERENDRAKUMAR **WORL ADOL, GENERAL MANAGER** SECURITARIA DARRACT MENTS

Copy to: Sc. E & Regional Director, Kolkata, Central Pollution Control Board, Southern Control arec Blooks 502, 5th & 6th Floors, Rajdhanga Main road, Kolkata-700107 (W.B), e-mail@oreg/HAZAR mkbiswas.cpcb@nic.in-

2. Regional Officer, Jharkhand State Pollution Control Board, PTC Chowk, Hazaribagh, Iharkhand.

3. Member Secretary, Jharkhand State Pollution Control Board, Ranchi-834004 (Jharkhand), e-mail:ranchijspcb@gmail.com

> कोयला खनन परियोजनाएँ, सिकरी साईट कार्यालय, बङ्कागाँव, हजारीबाग - 825311 Coal Mining Projects, Sikri Site Office, Barkagaon, Hazaribag - 825311

पंजीकृत कार्यालय ः एनटीचीसी वकन, त्रकोप कॉन्प्लेक्स, ७, इतिटट्यूशनस एरिया, लोबी श्रेड, नई दिल्ली — 110003. टेलीकोन भं /Tel: 011-24387333, वैक्स मं /Fax: 01124381018 Registered Office: NTPC Shawan, Scope Complex, 7, Institutional Area, Lodi Road, New Delhi - 110003, E-mail: ntpoco@ntpc.co.in, Website: www

नवीन कुमार / NAVIN KUMAR क्ष महाज्ञक (पर्यायल प्रवेदन) / DGM (ENVT. MGMT.) एमटीवीशी मिनिटेड/ NTPC Limited विता सन्त परिकारकार्ग COAL MINING PROJECTS हजारीबाग / Hazaribag



Six Monthly Progress Report on compliance of conditions stipulated in the Environmental Clearance by MoEF & CC and Monitoring report for the period April 2022 to September 2022 for NTPC Ltd - Pakri Barwadih Coal Mining Project (15MTPA): Reg.

1 message

EMG\_PBCMP <emg\_pbcmp@ntpc.co.in>

<SHIVAMSRIVASTAVA@ntpc.co.in>

Tue, Jan 3, 2023 at 2:09 PM

To: "jspcb\_hazaribagh@rediffmail.com" <jspcb\_hazaribagh@rediffmail.com>, "ro.ranchi-mef@gov.in" <ro.ranchi-mef@gov.in" <ro.ranchi-mef@gov.in> ("ranchijspcb@gmail.com" <ranchijspcb@gmail.com", "mkbiswas.cpcb@nic.in" <mkbiswas.cpcb@nic.in> (Cc: TSPAKRI <tspakri@ntpc.co.in>, PBENV <pb\_env@ntpc.co.in>, Upendra Kumar Pandit <UPENDRAKUMARPANDIT@ntpc.co.in>, NAVIN <NAVINKUMAR03@ntpc.co.in>, Birendra Kumar <BIRENDRAKUMAR01@ntpc.co.in>, Amudala <AMUDALAPRATHAP@ntpc.co.in>, SHIVAM SRIVASTAVA

ED.No.-143, Date-26.12.2022 EC Compliance 3.pdf

Ref1: EC Ltr No. J-11015/692/2007-IA-II(M) Date 19th May 2009.

Ref2: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 29.06.2016

Ref3: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 07.12.2017

Ref4: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 14.08.2018

Ref5: EC Amendment Ltr No J-11015/692/2007-IA-II(M) Date 10.11.2020

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With reference to above subject please find enclosed herewith the six-monthly status report on compliance of various conditions in the Environmental Clearance accorded to <a href="NTPC Ltd - Pakri Barwadih Coal Mining Project (15MTPA)">NTPC Ltd - Pakri Barwadih Coal Mining Project (15MTPA)</a> for the period <a href="April 2022">April 2022</a> to September 2022. The monitoring reports on fugitive emission, effluent quality, ambient air quality, ground and surface water quality, noise measured data etc are also enclosed with the report.

This is for your kind information please.

Thanking you.

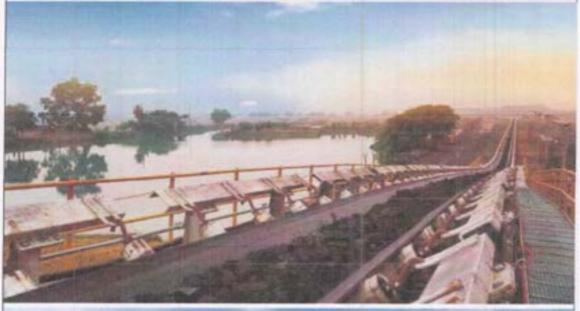
Yours Faithfully,

Birendra Kumar Addl. General Manager PB, PB-NW & Badam CMP, NTPC Ltd.

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नवीन कुमार / NAVIN KUMAR

क्ष महाउद्यक्त (पर्यटक प्रशेषन) / DGM (ENVT. MGMT.) हम्प्रोपीटी शिविटेड/ NTPC Limited क्षेत्रक स्थान परिकारणी COAL MINING PROJECTS हजारीसात्र / Hazaribag





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# भारत की राजपत्र The Gazette of India

ਜੀ.ਗੀ.-ਭੀ.एਕ.-ਮ.-21052020-219495 CG-DL-E-21052020-219495

असाधारण
EXTRAORDINARY
भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित PUBLISHED BY AUTHORITY

· H. 1400] No. 1400] नई दिल्ली, बृहस्पतिबार, मई 21, 2020/वैशाख 31, 1942 NEW DELHI, THURSDAY, MAY 21, 2020/VAISAKHA 31, 1942

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

### अधिसूचना

नई दिल्ली, 21 मई, 2020

का.आ. 1561(अ).—जबिक केन्द्रीय सरकार ने पर्यावरण (संरक्षण) नियमावली, 1986 के नियम 5 के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 3, धारा 6 और धारा 25 के तहत अपनी शक्तियों का प्रयोग करते हुए, ऐश सामग्री (ऐश कंटेंट) को 34% तक की सीमा सहित कोयले का उपयोग करने के लिए ताप विद्युत संयंत्रों की कतिपय श्रेणियों को अधिदेशित करते हुए भारत के राजपत्र, असाधारण में सा.का.नि. 02 (अ), तारीख 2 जनवरी, 2014 द्वारा पर्यावरण (संरक्षण) नियमावली, 1986 के नियम 3 के उपनियम 8 का संशोधन प्रकाशित किया।

और जबिक सा.का.नि. 02 (अ), तारीख 2 जनवरी, 2014 द्वारा उक्त अधिसूचना द्वारा निम्नलिखित समय-सीमा तक कच्चे अथवा मिथित अथवा लाभकारी कोयले (बेनिफिसिएटिड कोल), जिसमें ऐश सामग्री चौंतीस प्रतिशत (34%) से अधिक ना हो, का उपयोग करने के लिए त्रैमासिक आधार पर कोयला आधारित ताप विद्युत संयंत्रों को अधिदेशित किया गया है:

नयीन कुमार / NAVIN KUMAR का बहाउबाक (पर्चरण प्रधान): DGM (ENVT. MGMT) (मन्द्रपिती निविदेश NTPC Limited बोह्य साम पविद्यानार्गः COAL MINING PROJECTS

coffee and Linches

क्रम सं.	हम सं. विद्युत संयंत्र की श्रेणी गर्तमुख(पिट-हैड)/कोयला विद्युत संयंत्र के अवस्थ		समय-सीमा
(ক)	एकल ताप विद्युत संयंत्र (किसी भी क्षमता के) और कैटिप्व ताप विद्युत संयंत्र (100 मेगावाट और अधिक क्षमता सहित)	गर्तमुख विद्युत संयंत्रों को छोड़कर गर्तमुख मे दूरी पर ध्यान दिए बिना शहरी क्षेत्रों,या परिस्थितिकीय रूप से संवेदनशील क्षेत्रों या अत्यधिक प्रदूषित क्षेत्रों में अवस्थित	2 जून, 2014 से प्रभावी।
(평)		1000 किमी से अधिक दूर	2 जून, 2014 से प्रभावी।
(ग)		750-1000 किमी के बीच	1 जनवरी, 2015 से प्रभावी।
(ঘ)		500-749 किमी के बीच	5 जून, 2016 से प्रभावी।

और जबिक, केंद्रीय सरकार ने पर्यावरण (संरक्षण) नियमावली के नियम 5 के उप-नियम (3) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की धारा 6 और धारा 25 के अधीन अपनी शक्तियों का प्रयोग करते हुए भारत के राजपत्र, असाधारण में स.का.आ. 3305 (अ), तारीख 7 दिसंबर, 2015 और सा.का.नि.593 (अ), तारीख 28 जून, 2018 द्वारा विद्युत उत्पादन की क्षमता और विद्युत संयंत्र की संस्थापना की तारीख और समय-बद्ध रीति से प्राप्त किए जाने के आधार पर ताप विद्युत संयंत्रों की विभिन्न श्रेणियों के लिए उत्सर्जन मानकों और विनिर्दिष्ट जल उपभोग को प्रकाशित किया था।

और जबिक, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ने विद्युत मंत्रालय द्वारा दिनांक 13 अक्तूबर, 2017 को प्रस्तुत की गई यथा मंशोधित योजना के अनुसार विभिन्न ताप विद्युत संयंत्रों को वर्ष 2022 तक प्रदूषण नियंत्रण उपकरण संस्थापित करने के लिए पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 5 के तहत निर्देश जारी करने के लिए केंद्रीय प्रदूषण नियंत्रण बोर्ड को दिनांक 7 दिसंबर, 2017 के फा.मं. क्यू-15017/40/2007-सीपीडब्ल्यू द्वारा तिदेश दिए।

और जबिक, विद्युत मंत्रालय ने अन्य बातों के साथ-साथ यह अभ्यावेदन किया है कि प्रदूषण नियंत्रण प्रौद्योगिकियों के उन्नत होने के साथ ही ताप विद्युत संयंत्र दहन प्रक्रिया से उत्पन्न फ्लाई-ऐश का पता लगाने में बेहतर उपकरणों से सुसज्जित हुए हैं और बिना धुला कोयला अधिक कुशलता और मितव्ययता से प्रयोग किया जा सकता है; ताप विद्युत संयंत्रों को राख अवयवों की विभिन्न किस्मों के साथ कोयले के लिए डिजाइन किया गया है और इनमें सूखी राख (ड्राई ऐश) निकालने, उसका रखरखाव करने और राख के उपयोग के लिए आपूर्ति प्रणालियों को उपलब्ध कराया गया है; धुले कोयले के उपयोग से बिजली उत्पादन महंगा हो जाता है; ताप विद्युत संयंत्रों में उत्पन्न फ्लाई-ऐश सीमेंट निर्माण, ईंट बनाने, सड़क बिद्धाने, खनन के उपरांत रिक्त हुए स्थलों और निचले क्षेत्रों को भरने के लिए वैक-फिल सामग्री जैसे कई लाभकारी उपयोगों के लिए प्रयोग की जा रही है; औसतन ऐश की मात्रा 34% तक बनाए रखने की आवश्यकता उद्योगों को कोयले का आयात करने के लिए प्रेरित करती है जिससे विदेशी मुद्रा इत्यादि का बहिर्बाह (आऊटफ्लो) होता है।

और जबिक, कोयला मंत्रालय ने अन्य बातों के साथ-साथ अभ्यावेदन किया है कि कोयला खानें वर्षों से कच्चे कोयले की गुणवत्ता, आकार और बाहरी सामग्री में सुधार के लिए निरंतर कड़े प्रयास कर रही हैं जिससे सभी संबंधित उपकरणों की टूट-फूट में उल्लेखनीय कमी आई है, कोयला धुलाई प्रक्रिया में कई प्रकार का रखरखाव होता है और कोयला खानों से धुलाई-स्थलों (वाशरीज़) तक कोयले की बड़ी मात्रा को सड़क द्वारा ले जाने और फिर अही

> नवीन कुमार NAVIN KUMAR वर महाउठाङ (वर्षणक कार्य) I DGM (ENVT. MGMT.) व्यक्तिमार्ग जिल्हिंड I NTPC Limited वंचान कार्य वरियोजनार्ग I COAL MINING PROJECTS प्रवासिका / Hazaribag

विद्युत संयंत्रों तक ले जाने के लिए रेल साइडिंग्ज़ तक ले जाने से बचना; धुलाई की प्रक्रिया केवल कोयले को धुले हुए कोयले और वाशरी अवशिष्ट में बॉटती है जबिक खनित कोयले की राख की मात्रा वहीं रहती है; निम्न श्रेणी कोयला वाशरी अवशिष्ट कई छोटे उपयोगकर्ता उद्योगों में, अधिक प्रदूषण आदि सुजित करते हैं।

और जबिक, कोयला मंत्रालय और विद्युत मंत्रालय ने इसलिए अनुरोध किया है कि दिनांक 2 जनवरी, 2014 की अधिसूचना पर पुन: विचार द्वारा, विद्युत संयंत्रों को धुले हुए कोयले के प्रयोग के लिए अधिदेशित करने पर गौर किया जाना अपेक्षित है जिससे पर्यावरण पर प्रतिकूल प्रभाव डाले बिना कोयले की लंबी दूरी की दुलाई के लिए विजली के उत्पादन में आसानी होगी।

और जबिक, नीति आयोग ने अपनी रिपोर्ट में वाशरीज़, कोयला खनन, परिवहन और विद्युत संयंत्रों में कोयले की खपत की दृष्टि से इस विषय का विश्लेषण करने के बाद अन्य वातों के साथ-साथ संक्षिप्त में यह अभ्यावेदन किया है कि समीपवर्ती उद्योगों में वाशरी अवशिष्ट का इस्तेमाल अधिक प्रदूषण पैदा करता है; चूंकि वाशरी अवशिष्ट अनेक छोटे उद्योगों में वितरित होते हैं, इसलिए विद्युत संयंत्र पर उत्पन्न प्रदूषण की तुलना में अनेक स्थलों पर उत्पन्न प्रदूषण को नियंत्रित करना अधिक कठिन होता है; धुलाई प्रक्रिया में उत्पन्न राख (ऐश) कोयला कणों के साथ-साथ पानी को भी प्रदूषित करती है और इसका लाभकारी उपयोग नहीं किया जा सकता, कोयला धुलाई प्रक्रिया में पानी का अधिक प्रयोग होता है, अपशिष्ट मृजन होता है; वाशरी अवशिष्ट के निपटान का पर्यावरण पर प्रतिकृल प्रभाव होता है क्योंकि इसमें बड़ी मात्रा में निम्न श्रेणी कोयला अवशिष्ट, तरल अपशिष्ट प्रवाह, कोयला भण्डारण, कोयला मिट्टी का रखरखाव, अपवाह और उड़ने वाली धूल का रखरखाव और निपटान करना होता है, कोयला धुलाई का स्थलाकृति, जल निकास स्वरूप और गुणवत्ता, जल निकायों, वड़े पैमाने पर प्रतिवेशी वायु गुणवत्ता पर भी प्रतिकृल प्रभाव पड़ता है; धुलाई प्रक्रिया से विद्युत उत्पादन की लागत में भी वृद्धि होती है जिसका कोई पर्यावरणीय लाभ इत्यादि भी नहीं होता।

और जबिक, नीति आयोग ने इसलिए सिफारिश की है कि पर्यावरणीय और प्रदूषण मानकों का निर्धारण करना और उन्हें लागू करना विवेकपूर्ण होगा, जिन्हें कोयले में ऐश की मात्रा प्रतिबंधित किए जाने के वजाए, परिवहन दूरी के आधार पर विद्युत उत्पादकों के साथ जोड़ा जाना चाहिए।

और जबिक, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ऊर्जा मंत्रालय, कोयला मंत्रालय के अभ्यावेदनों, नीति आयोग और कई हितधारकों की रिपोर्ट पर विवेचन करने तथा सावधानीपूर्वक विचार करने के बाद एवं जनहित में निम्नलिखित निष्कर्ष पर पहुंचा है—

- खनित कोयले में ऐश सामग्री की मात्रा समान रहती है। वाशरी से ऐश सामग्री दो स्थानों (वाशरी और विद्युत संयंत्र) में विभाजित हो जाती है जबिक बिना धुला कोयला विद्युत संयंत्र में प्रयोग किया जाता है, ऐश सामग्री का निपटान केवल एक स्थान अर्थात विद्युत संयंत्र में किया जाता है;
- ii) ताप विद्युत संयंत्र प्रदूषण नियंत्रण, ऐश प्रबंधन के लिए तकनीकी रूप से सुसज्जित होते हैं क्योंकि उनमें फ्लाई-ऐश का निराकरण करने के लिए उच्च क्षमता वाले उपकरण होते हैं, ड्राई ऐश निष्क्रमण और हैंडलिंग सिस्टम, ऐश उपयोग के लिए सप्लाई सिस्टम और फ्लू गैसों को तितर-बितर करने के लिए बड़े टाल (स्टैक) होते हैं;
- iii) पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ने उत्सर्जन मानक अधिसूचित किए हैं जिनमें क्रमश: ताप विद्युत संयंत्रों को समयबद्ध रीति से इन मानकों का पालन करने के लिए अधिदेशित किया गया है:

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और जबिक, फ्लाई ऐश प्रबंधन और विभिन्न स्तरों पर बिना धुले कोयले के संसाधन के दौरान उत्पन्न अन्य संबंधित पर्यावरणीय पहलुओं सिहत बिना धुले कोयले की हैंडलिंग के लिए यथासंभव उत्कृष्ट कार्यडांचे को अपनाना समयोचित है।

और जबिक, कोयला मंत्रालय ने अभ्यावेदन किया है कि मौजूदा अग्रत्याशित कोविड-19 महामारी और इसके फलस्वरूप देश में ऊर्जा उत्पादन के लिए कोयला क्षेत्र की मांग को प्रोत्साहित कर घरेलू कोयले के उपयोग की तत्काल आवश्यकता को देखते हुए यह बांछनीय है कि तत्काल अधिसूचना जारी की जाए।

अब, इसलिए, केंद्रीय सरकार पर्यावरण (संरक्षण) नियमावली, 1986 के नियम 5 के उपनियम (4) के साथ पठित पर्यावरण संरक्षण अधिनियम, 1986 (1986 का 29) की धारा 3, धारा 6 और धारा 25 के तहत अपनी शक्तियों का प्रयोग करते हुए, उक्त नियमावती के नियम 5 के उपनियम (3) के भाग (अ) के तहत सूचना देने की अनिवार्यता को हटा देने के उपरांत जनहित में पर्यावरण (संरक्षण) नियमावली, 1986 को आगे संशोधित करते हुए एतद्वारा निम्नलिखित नियम बनाती है, अर्थात्:

- 1. (1) इन नियमों को पर्यावरण (संरक्षण) संशोधन नियमावली, 2020 कहा जाएगा।
  - (2) ये सरकारी गज़ट में प्रकाशित होने की तारीख से लागू होंगे।
- पर्यावरण (संरक्षण) नियमावली, 1986 में, नियम 3 में, उपनियम (8) के लिए निम्नलिखित उपनियम प्रतिस्थापित होगा, अर्थात् :-
  - "(8) ताप विद्युत संयंत्रों को, ऐश सामग्री अथवा दूरी संबंधी अनुबंधों के बिना, निम्नलिखित शर्तों के अध्याधीन कोयले के प्रयोग की अनुमति होगी:
  - (1) उत्सर्जन मानदण्डों के लिए प्रौद्योगिकीय समाधान निर्धारित करना:
    - वर्तमान अधिसूचनाओं और केंद्रीय प्रदूषण नियंत्रण बोर्ड द्वारा समय-समय पर जारी अनुदेशों के अनुसार विविक्त सामग्री के लिए विनिर्दिष्ट मानदंडों का अनुपालन करना।
    - वाशरी के मामले में मिडलिंग और अवशिष्टों का एफबीसी(तरलीकृत तल दहन) प्रौद्योगिकी आधारित विद्युत संयंत्रों में उपयोग किया जाए। एफबीसी संयंत्रों में मिडलिंग और अवशिष्टों के लिए वाशरी में संयोजन (लिंकेज) होना चाहिए।

# ऐश पॉन्ड का प्रबंधन:

- ं. ताप विद्युत संयंत्र धुले हुए कोयले से बिना धुले हुए कोयले पर स्थिच करने के कारण फ्लाई-ऐश पॉन्ड(मौजूदा विद्युत उत्पादन क्षमता) की अतिरिक्त क्षमता की पात्रता प्राप्त किए बिना, समय-समय पर जारी की गई अधिसूचनाओं में यथा-अधिसूचित शर्तों का पालन करें।
- ऐश प्रबंधन के लिए जल की खपत को अनुकूल करने हेतु समुचित प्रौद्योगिकी समाधान लागू हों;
- विद आवश्यक हो तो फ्लाई-ऐश का अधिकतम उपयोग सुनिश्चित करने के लिए स्थल विशिष्ट स्थितियों के आधार पर ऐश का पृथक्करण इलैक्ट्रो-स्टेटिक अवक्षेपक (प्रेसीपिटेटर) स्तर पर किया जाए।
- iv. ताप विद्युत संयंत्र उपर्युक्त 2(i) के अध्याधीन, छोड़ी हुई अथवा चालू खानों (वर्किंग माइन्स) में (खान मालिकों द्वारा सुविधाजनक बनाया जाए) पर्यावरणीय सुरक्षा उपायों के साथ फ्लाई-ऐश का निपटान करें।

3. परिवहन:

नवीन कुमार / NAVIN KUMAR क शाउरक (पर्वत्स प्रकार) DGM (ENVI MUMI) शाउरकी शिविटेड/ NTPC Limited शोवत सम्म प्रिकेटमाई/ COAL MINING PROJECTS श्वासिमा / Hazaribag

- i. ढके हुए रेलवे बैगन (तिरपाल अथवा किसी अन्य माध्यम से ढके हुए रेलवे बैगन) और/अथवा खान-क्षेत्र से परे ढके हुए वाहक (कन्वेयर) द्वारा ही कोयले का परिवहन किया जाए। तथापि, जब तक रेल परिवहन/वाहक इन्फ्रास्ट्रक्चर उपलब्ध नहीं हो जाता, सड़क परिवहन ट्रकों द्वारा किया जाए जो तिरपाल अथवा किसी अन्य माध्यम से ढके हुए हों।
- ii. ताप विद्युत संयंत्र द्वारा सुनिश्चित किया जाए कि
  - रेल अथवा कन्वेयर द्वारा परिवहन के लिए विद्युत संयंत्र में अथवा इसके समीप रेल साइडिंग स्विधा अथवा कन्वेयर सुविधा स्थापित हो; और
  - (ख) यदि रेल अथवा कन्वेयर सुविधा की अनुपलब्धता के कारण परिवहन न हो पाए, तो यह सुनिश्चित किया जाए कि संबंधित खान के डिलींबरी स्थान से कोयले का परिवहन ढके हुए ट्रकों (तिरपाल अथवा किसी अन्य माध्यम द्वारा), अथवा किसी अन्य यंत्रीकृत बंद ट्रक से सड़क द्वारा हो।
- (4) इसे बित्तीय वर्ष 2020-21 और उसके बाद के लिए संबंधित परियोजनाओं हेतु संगत पर्यावरणीय स्वीकृति की अतिरिक्त शर्तें भी समझा जाएगा। मौजूदा पर्यावरणीय स्वीकृतियों को संशोधित किया जाएगा ताकि संगत क्षेत्रों के लिए उपरोक्त शर्तों को प्रवर्तनशील बनाया जा सके। तदनुसार संबंधित राज्य प्रदूषण नियंत्रण बोर्ड द्वारा प्रचालन की अनुमति जारी की जाएगी।

[फा.सं. 13014/01/2020-आईए-।(टी)] गीता मेनन, संयुक्त सचिव

टिप्पण—मूल नियम भारत के राजपत्र में सं.का.आ. 844(अ), तारीख 19 नवंबर 1986 द्वारा प्रकाशित किए गए थे और पश्चातवर्ती संशोधन सं.का.आ. 82(अ), तारीख 16 फरवरी, 1987; का.आ. 64(अ), तारीख 18 जनवरी, 1988; सा.का.नि. 931(अ), तारीख 27 अक्तूबर,1989; का.आ. 23(अ), तारीख 16 जनवरी, 1991; सा.का.नि. 95(अ), तारीख 12 फरवरी, 1992; सा.का.नि. 329(अ), तारीख 13 मार्च, 1992; सा.का.नि. 562(अ), तारीख 27 मई, 1992; सा.का.नि. 884(अ), तारीख 20 नवंबर, 1992; सा.का.नि. 386 (अ), तारीख 22 अप्रैल, 1993; सा.का.नि. 422 (अ), तारीख 19 मई, 1993; सा.का.नि. 801 (अ), तारीख 31 दिसंबर, 1993; सा.का.नि. 320 (अ), तारीख 16 मार्च, 1994; सा.का.नि. 560 (अ), तारीख 19 सितंबर, 1997; सा.का.नि. 378 (अ), तारीख 30 जून, 1998; सा.का.नि. 07 (अ), तारीख 22 दिसंबर, 1998; सा.का.नि. 407 (अ), तारीख 31 मई, 2001; सा.का.नि. 826 (अ), तारीख 16 नवंबर, 2009; सा.का.नि. 513 (अ), तारीख 28 जून, 2012; सा.का.नि. 593 (अ), तारीख 02 जनवरी, 2014; का.आ. 3305 (अ), तारीख 16 जनवरी, 2020 द्वारा किए गए।

#### MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE NOTIFICATION

New Delhi, the 21st May, 2020

S.O. 1561(E).—Whereas the Central Government had, in exercise of its powers under Section 3, Section 6 and Section 25 of Environment (Protection) Act, 1986 (29 of 1986) read with rule 5 of Environment (Protection) Rules, 1986, published draft rules further to amend sub-rule (8) of rule 3 of Environment (Protection) Rules, 1986, in the Gazette of India, Extraordinary, vide number G.S.Ro. 02(E) Track the KUMAR

त्व महाराज (वर्णाला प्रवान) I DGM (ENVT MGMT) हम्प्टीमी जिल्हेंड I NTPC Limited श्रीयता समय प्रतियोजनार I COAL MAING PROJECTS हज्जिला I Hazaribag 2nd January, 2014 mandating certain categories of thermal power plants to use coal with ash content restricted to 34%.

And whereas, the said Notification vide number G.S.R. 02(E) dated the 2<sup>nd</sup> January, 2014, mandated coal based thermal power plants to use raw or blended or beneficiated coal with ash content not exceeding thirty-four percent (34%), on quarterly basis, by the time lines given below:

Sl. No.	Category of Power Plant	Distance of location of Thermal Power Plant from pit-head/coal mine	Time lines
(a)	Stand-alone Thermal Power Plants (any capacity), and Captive Thermal Power Plants (with capacity of 100 MW and above)	Located in urban areas, or ecologically sensitive areas or critically polluted areas, irrespective of distance from pit-head, except pit- head power plants.	With effect from 2 <sup>nd</sup> June, 2014.
(b)		beyond 1000 km	With effect from 2 <sup>nd</sup> June, 2014.
(c)		between 750-1000 km	With effect from 1st January, 2015.
(d)		between 500-749 km	With effect from 5th June, 2016.

And whereas, the Central Government had, in exercise of its powers under sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986) read with sub-rule (3) of rule 5 of the Environment (Protection) Rules, in the Gazette of India, Extraordinary, vide number S.O. 3305 (E), dated the 7th December, 2015 and G.S.R. 593 (E), dated the 28th June, 2018 published the emission standards and specific water consumption for various category of thermal power plants, based on capacity of power generation and date of installation of power plant and to be achieved in time bound manner.

And whereas, the Ministry of Environment, Forest and Climate Change directed the Central Pollution Control Board vide F.No.Q-15017/40/2007-CPW dated the 7th December, 2017 to issue Directions under Section 5 of Environment (Protection) Act, 1986, to various Thermal Power Plants to install pollution control equipment as per the revised plan submitted by the Ministry of Power dated the 13th October, 2017 by 2022.

And whereas, the Ministry of Power has, inter alia, represented that with advancement in pollution control technologies, thermal power plants are better equipped to capture fly-ash generated in combustion process and unwashed coal can be used more efficiently and economically; thermal power plants are designed for coal with wide variety of ash content and are equipped with dry ash evacuation, handling and supply systems for ash utilisation; using washed coal makes power generation costlier; fly ash generated in thermal power plants is being used in several beneficial uses like cement manufacturing, brick making, road laying, back-fill material for reclamation of mine voids and low lying areas; requirement of maintaining average ash content to 34% prompts industries to undertake import of coal, resulting in outflow of foreign exchange etc.

And Whereas, the Ministry of Coal has, inter alia, represented that the coal mines are constantly striving to improve raw coal in terms of quality, size and extraneous material over the years which has considerably reduced wear and tear of all related equipment, coal washing process involves multiple handling and avoidable road transportation of huge quantities of coal from coal mines to washeries and then to rail sidings for onward transport to power plants; the washing process only divides the coal into washed coal and washery rejects while the ash content of mined coal remains the same; use of low grade coal washery rejects, in the multiple small user industries, generates more pollution etc.

And Whereas, the Ministry of Coal and Ministry of Power have, therefore, represented that the mandating power plants to use washed coal requires to be revisited by reconsidering the notification dated the 2<sup>nd</sup> January, 2014 which will help ease power generation for long distance haulage of coal without adverse impact on the environment.

And Whereas, the NITI Aayog, in its report after analysing the issue from the perspective of washeries, Coal mining, transportation and consumption of coal at power plants has, inter alia, summed up that use of washery rejects in nearby industries generates more pollution; since washery rejects are distributed in number of smaller industries, the pollution control at numerous points is more difficult than controlling the

नवीन कुमार / NAVIN KUMAR वर महत्त्वक (वर्षण क्यार) (DGM (ENVT. MGMT) (न्दर्गील स्थिके/ NTPC Limited बोदल क्षत्र कीर्यकर्ति COAL MINING PROJECTS स्वारीक्षत्र / Hazaribag pollution at power plant end; Ash generated in the washing process pollutes water along with coal particles and cannot be gainfully utilised; Coal washing process involves increased water use, effluent generation; Disposal of washery rejects has negative environmental impact as it has to handle and dispose huge quantity of low grade coal washery rejects, liquid effluent streams, coal storage, handling coal dust, runoff and fugitive dust; Coal washing also adversely impacts topography, water drainage pattern and quality, water bodies, surrounding air quality at large scale; Washing process increases the cost of power generation with no commensurate environmental advantages etc.

And Whereas, NITI Aayog has, therefore, recommended that it may be prudent to determine and enforce the environmental and pollution norms, to be complied with by the power generators, rather than restricting the ash content in coal, based on distance of transportation.

And Whereas, the Ministry of Environment, Forest and Climate Change, after deliberating the representations from Ministry of Power, Ministry of Coal, report of NITI Aayog and various stakeholders and after careful considerations & in larger public interest, arrived at the following:

- (i) The extent of ash content in mined coal remains the same. With washeries, the ash content gets divided at two places (washeries and the power plant), whereas if unwashed coal is used in power plant, the ash content is handled at only one place viz. the power plant;
- (ii) Thermal power plants are technologically equipped to address pollution control, ash management as they have high efficiency equipment to capture fly ash, dry ash evacuation and handling systems, ash supply systems for ash utilisation and tall stacks for wider dispersal of flue gases;
- (iii) The Ministry of Environment, Forest and Climate Change has notified emission norms, mandating respective thermal power plants to adhere to such norms in a time bound manner;

And Whereas, it is expedient to adopt best possible framework towards handling of unwashed coal including management of fly ash and other associated environmental aspects arising out of processing of unwashed coal at different stages.

And Whereas, the Ministry of Coal has represented that in view of the existing unprecedented COVID-19 pandemic and the resultant immediate requirement of utilization of domestic coal by stimulating coal sector demand for power generation in the country, it is desirable to issue the notification at the earliest.

Now, therefore, in exercise of the powers conferred by Section 3, Section 6 and Section 25 of the Environment Protection Act, 1986 (29 of 1986) read with sub-rule (4) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government, after having dispensed with the requirement of notice under clause (a) of sub-rule (3) of rule 5 of the said rules, in public interest, hereby makes the following rules to further amend the Environment (Protection) Rules, 1986, namely:-

- 1. (1) These rules may be called the Environment (Protection) Amendment Rules, 2020
  - (2) They shall come into force on the date of their publication in the Official Gazette.
- In the Environment (Protection) Rules, 1986, in rule 3, for sub-rule (8), the following sub-rule shall be substituted, namely:-
- "(8) Use of coal by Thermal Power Plants, without stipulations as regards ash content or distance, shall be permitted subject to following conditions:
- (1) Setting Up Technology Solution for emission norms:
  - Compliance of specified emission norms for Particulate Matter, as per extant notifications and instructions of Central Pollution Control Board, issued from time to time.
  - (ii) In case of washeries, Middling and rejects to be utilized in FBC (Fluidised Bed Combustion) technology based thermal power plants. Washery to have linkage for middling and rejects in Fluidised Bed Combustion plants.

#### (2) Management of Ash Ponds:

- (i) The thermal powers plants shall comply with conditions, as notified in the Fly Ash notification issued from time to time, without being entitled to additional capacity of fly ash pond (for existing power generation capacity) on ground of switching from washed coal to unwashed coal.
- (ii) Appropriate Technology solutions shall be applied to optimise water consumption for Ash management;

एव महाज्ञारक (प्रवेशना प्रकार) I DGN (ENVT. MGNT.) इन्द्रश्रीती जिन्नेदेश NTPC Limited कोवास खनन परिवोज्यार्थ (COAL MANNG PROJECTS क्रमणियान / Hazaribag

- (iii) The segregation of ash may be done at the Electro-Static Precipitator stage, if required, based on site specific conditions, to ensure maximum utilization of fly ash;
- (iv) Subject to 2(i) above, the thermal power plants to dispose flyash in abandoned or working mines (to be facilitated by mine owner) with environmental safeguards.

#### (3) Transportation:

- (i) Coal transportation may be undertaken by covered Railway wagon (railway wagons covered by tarpaulin or other means) and/or covered conveyer beyond the mine area. However, till such time enabling Rail transport/conveyer infrastructure is not available, road transportation may be undertaken in trucks, covered by tarpaulin or other means.
- (ii) It shall be ensured by the thermal power plant that
  - Rail siding facility or conveyor facility is set up at or near the power plant, for transportation by rail or conveyor; and
  - If transportation by rail or conveyor facility is not available, ensure that the coal is transported out from the Delivery Point of the respective mine in covered trucks (by tarpaulin or other means), or any mechanized closed trucks by road.
- (4) This shall also be deemed to be additional conditions of the relevant Environmental Clearances for respective projects for financial year 2020-21 and onwards. The existing Environmental Clearances shall stand modified so as to make the above conditions operative for relevant sectors. The Consent to Operate shall be issued by respective State Pollution Control Boards accordingly."

[F.No.13014/01/2020-IA.I(T)]

GEETA MENON, Jt. Secy.

Note:-The principal rules were published in the Gazette of India vide number S.O. 844(E), dated the 19th November, 1986 and subsequently amended vide numbers S.O. 82(E), dated 16th February, 1987; S.O. 64(E), dated 18th January, 1988; G.S.R. 931(E), dated 27th October, 1989; S.O. 23(E), dated 16th January, 1991; G.S.R. 95(E), dated 12th February, 1992; G.S.R.329(E), dated 13th March, 1992; G.S.R. 562(E), dated 27th May, 1992; G.S.R. 884(E), dated 20th November, 1992; G.S.R. 386(E), dated 22nd April, 1993; G.S.R. 422(E), dated 19th May, 1993; G.S.R. 801(E), dated 31st December, 1993; G.S.R. 320(E), dated 16th March, 1994; G.S.R. 560(E), dated 19th September, 1997; G.S.R. 378(E), dated 30th June, 1998;G.S.R. 7(E), dated 22nd December, 1998; G.S.R. 407(E), dated 31st May, 2001; G.S.R. 826(E), dated 16th November, 2009; G.S.R. 513(E), dated 28th June, 2012; G.S.R. 02(E) dated 2nd January, 2014; S.O. 3305 (E), dated 7th December, 2015; G.S.R. 593(E), dated 28th June, 2018 and S.O. 236 (E), dated 16th January, 2020.

नवीन कुमार / NAVIN KUMAR एव वहारावक (वर्षरात प्रवेदन) (DGM (ENVT MGMT) (न्यांगीली निर्मिटेड/ NTPC Limited क्रोवल श्रेन परिशेत्रमारं/ COAL MAING PROJECTS हजारीबाग / Hazaribag

#### **Instance**

#### PAGIN MOPOLE

Tran at 14:18:44 March 2, 2023 Geo: 0.700 mm/s, Mic: 127.0 dB(L)

Trigger Source Range Record Time

Geo: 254.0 mm/s Record Time 3.0 sec at 1024 sps Operator/Setup: Operator/factory MMB

Notes

Location: Client: RAMGARH

NTPC/TATA/CCL

User Name: General:

SOLAR INDUSTRIES INDIA LTD

COAL MINES

#### **Extended Notes**

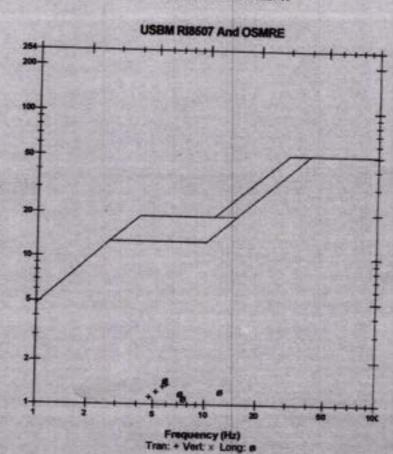
Microphone Linear Weighting 111.0 dB(L) at 2.526 sec

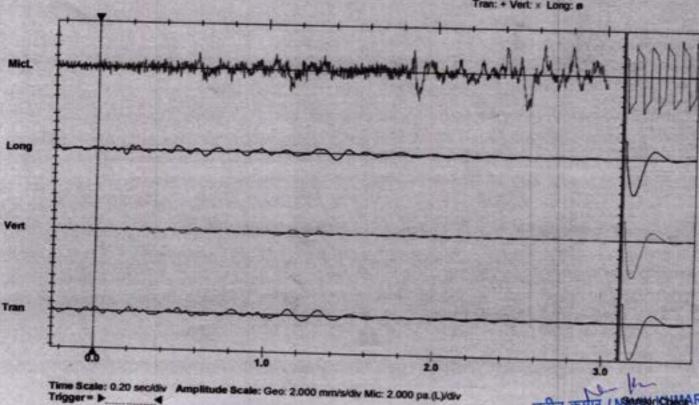
ZC Freq 8.4 Hz Channel Test Passed (Freq = 20.5 Hz Amp = 1235 mv )

	Tran	Vert	Long	
PPV	1.356	0.741	1.466	mm/s
ZC Freq	6.1	6.0	6.0	Hz
Time (Rel. to Trig)	1.141	1,157	1,410	Sec
Peak Acceleration	0.009	0.007	0.012	0
<b>Peak Displacement</b>	0.036	0.018	0.038	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.5	7.3	Hz
Overswing Ratio	4.2	4.3	4.3	

Peak Vector Sum 1.689 mm/s at 1.323 sec

Serial Number Battery Level 3.6 Volts
Unit Calibration October 19, 2022 by UES New Delhi UM20049\_20230225141844 JDFW October 19, 2022 by UES New Delhi UM20049\_20230225141844.JDFW

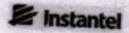




Printed: March 11, 2023 (V 10.72 - 10.72)

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नवीन कुमार I NAMINICHAR ON SECRETAR PROPERTY DOM (ENVY MONT) PROBLEM RATES INTPC Limited कोवाना समय परिकोजनारी COAL MINING PROJECTS इत्यादिकान / Hazaribag



Vert at 14:19:02 March 21, 2023

Range Record Time

Trigger Source Geo: 0.510 mm/s Range Geo: 31.75 mm/s

1.0 sec at 1024 sps

Job Number:

Location: Client User Name: General:

Microphone

Linear Weighting

91.48 dB(L) at 0.621 sec

ZC Freq 64 Hz Channel Test Passed (Freq = 19.7 Hz Amp = 496 mv)

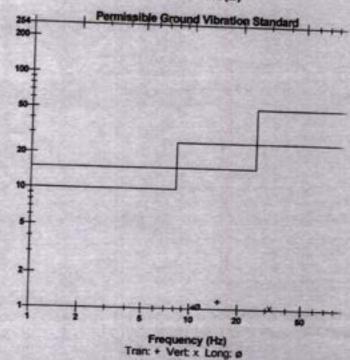
	Tran	Vert	Long	
PPV	1.159	1.048	1.064	mm/s
PPV	52.28	51.41	51.54	dB
ZC Freq	15	32	11	Hz
Time (Rel. to Trig)	0.949	0.373	0.717	sec
Peak Acceleration	0.013	0.027	0.013	g
Peak Displacement	0.014	0.011	0.021	mm
Sensor Check Frequency	Passed	Passed	Passed	
Overswing Ratio	7.5	7.6	7.5	Hz
Ordinaming Ratio	3.3	3.6	3.4	

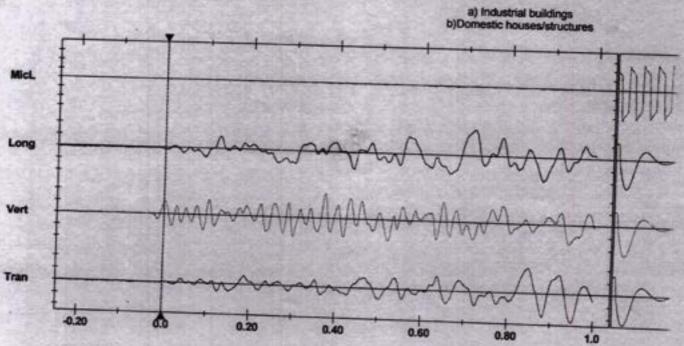
Peak Vector Sum 1.307 mm/s at 0.949 sec

Serial Number BE20626 V 10.72-1.1 Minimate Blaster Battery Level 6.2 Volts
Unit Calibration January 18, 2023 by UES New Delhi
File Name \_\_TEMP\_EVT

Post Event Notes At Near New Pit Office 310 MT From Blasting Patch

#### DGMS India (B)





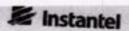
Time Scale: 0.10 sec/div Amplitude Scale: Geo: 0.500 mm/s/div Mic: 10.000 pa.(L)/div

Printed: March 24, 2023 (V 10.72 - 10.72)

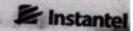
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Sensor Che नवीन कुमार I NAVIN KUMAR

ITS MELETIN (MELET BEEF) / DOM (ENVT. MONT) medical cadatal NTPC Limited STREE STREETS COAL MINING PROJECTS youthurn / Hazanibag



/elocity (mm/s)



MicL at 14:27:06 February 17, 2023 Mic: 100.00 dB(L)

**Trigger Source** Range Record Time

Geo: 254.0 mm/s 3.0 sec at 2048 sps

Operator/Setup: Operator/NTPC OCP.MMB

Notes

Location: PBCMP NTPC Client NTPC

User Name: IDL EXPLOSIVES LTD

Generat COAL MINES

**Extended Notes** Distance 500 Mtr. Near Nagri School

Microphone Linear Weighting PSPL 108.1 dB(L) at 2.081 sec

ZC Freq 4.2 Hz

Channel Test Passed (Freq = 20.5 Hz Amp = 1231 mv)

Tran PPV 1.277 0.914 1.127 mm/s ZC Freq 8.5 7.8 6.1 Hz Time (Rel. to Trig) -0.1750.503 -0.188sec Peak Acceleration 0.013 0.012 0.013 Peak Displacement Sensor Check 0.024 0.019 0.022 Passed Passed

Peak Vector Sum 1.618 mm/s at -0.185 sec

Serial Number Battery Level

UM15577 V 10-72 Micromate ISEE

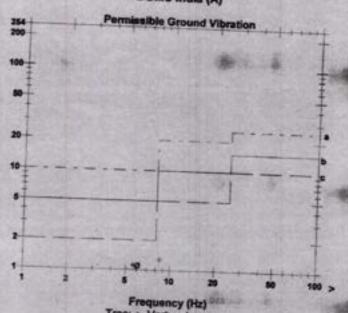
3.8 Volts

Unit Calibration June 3, 2022 by CIMFR Dhanbad

File Name TEMP.EVT

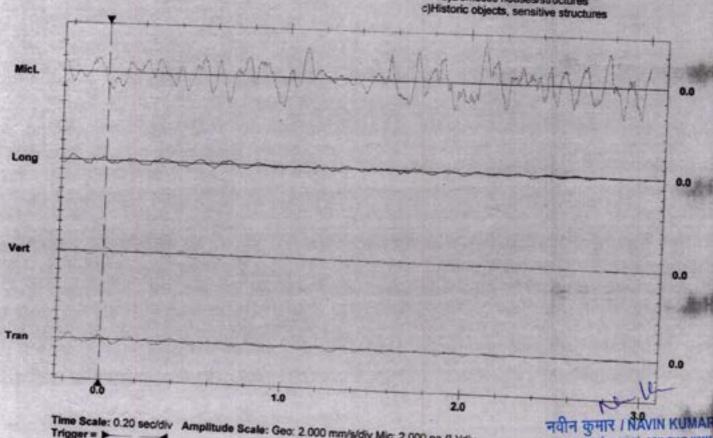
**Post Event Notes** 





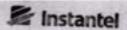
Tran: + Vert / Long: ø

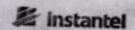
a)Industrial Buildings b)Domestic houses/structures c)Historic objects, sensitive structures



Time Scale: 0.20 sec/div Amplitude Scale: Geo: 2.000 mm/s/div Mic: 2.000 pa.(L)/div

OR RELIEF (VOICE SELF) / DOM (ENVY MONT) PROMINE REPORT NTPC Limited कोशा सन्य परियोजनाई/ COAL MINING PROJECTS हजारीबान / Hazaribag





Date/Time **Trigger Source** 

MicL at 14:19:12 February 25, 2023

Mic: 100.00 dB(L) Geo: 254.0 mm/s Record Time 3.0 sec at 2048 sps

Operator/Setup: Operator/NTPC OCP.MMB

Notes Location:

PECMP NTPC

Client User Name:

NTPC

IDL EXPLOSIVES LTD General: **COAL MINES** 

**Extended Notes** 

Distance 600 Mtr. Near Nagri School

Microphone

Linear Weighting 106.4 dB(L) at 2.792 sec

PSPL ZC Freq

10.2 Hz

Channel Test Passed (Freq = 20.5 Hz Amp = 1183 mv )

	Tran	Vert	Long	
PPV	0.993	0.899	1.498	mm/s
ZC Freq	7.2	7.8	11.8	Hz
Time (Rel. to Trig)	1.584	1.981	1.635	sec
Peak Acceleration	0.012	0.013	0.018	a
Peak Displacement	0.023	0.015	0.021	mm
Sensor Check	Passed	Passed	Passed	

Peak Vector Sum 1.684 mm/s at 1.637 sec

Battery Level

UM15577 V 10-72 Micromate ISEE

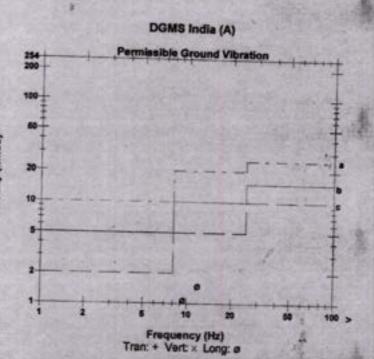
3.8 Volts

June 3, 2022 by CIMFR Dhanbad

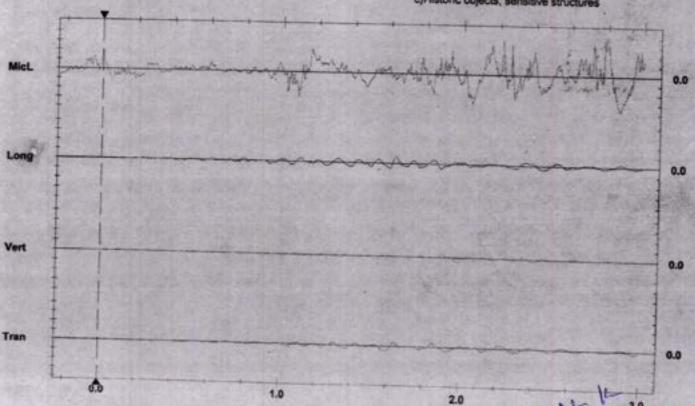
**Unit Calibration** File Name

TEMP.EVT

**Post Event Notes** 



a)Industrial Buildings b)Domestic houses/structures c)Historic objects, sensitive structures

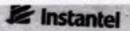


Time Scale: 0 20 sec/div Amplitude Scale: Geo: 2.000 mm/s/div Mic: 1.000 ps.(L)/div

Printed: February 28, 2023 (V 10.72 - 10.72)

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3.0 नवीन कुमार / NAVIN KUMAR THE WALLES CONTINUES OF PARTY NOW ! PROTEST REPORT NTPC Limited about 1977 With arely COAL MINING PROJECTS हजारीबाग / Hazaribag



Date/Time

Tran at 14:29:09 January 6, 2023 Geo: 0.700 mm/s

Trigger Source Geo: 0.700 mm/s
Range Geo: 254.0 mm/s
Record Time 3.0 sec at 1024 sps
Operator/Setup: Operator/factory MMB

Notes Lecation: Client: RAMGARH TATANTPC/CCL

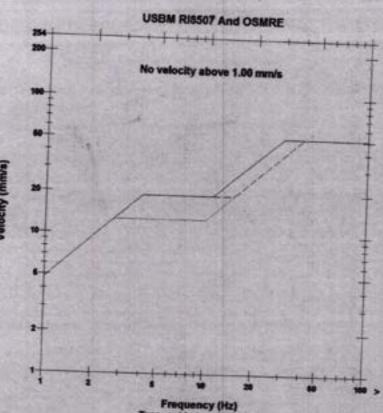
SOLAR INDUSTRIES INDIA LIMITED User Name:

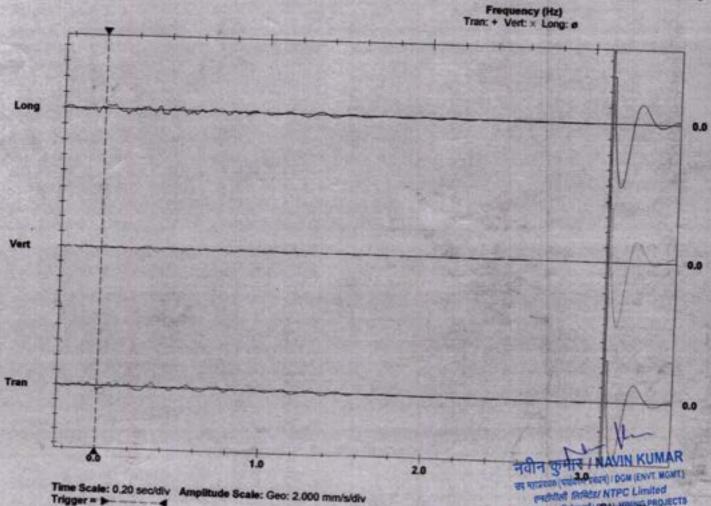
General: COAL MINES

PPV	Tran 0.701	Vert 0.552	Long	
PPV	47.92	45.83	0.607 46.66	mm/s
ZC Freq Time (Rel. to Trig)	0.000	0.333	4.5	Hz
Peak Acceleration	0.012	0.007	0.137	Sec
Peak Displacement Sensor Check	0.015 Passed	0.010 Passed	0.014 Passed	mm
Frequency Overswing Ratio	7.5	7.7	7.3	Hz
Overswing icatio	3.5	3.0	4 4	CALL STREET

Peak Vector Sum 0.937 mm/s at 0.333 sec

Serial Number Battery Level Unit Calibration UM9191 V 10-90GC Micromate ISEE 3.5 Volts June 30, 2021 by CIMFR Dhanbad TEMP.EVT File Name

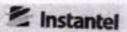




Printed: January 8, 2023 (V 10.72 - 10.72)

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नवीन कुमार I NAVIN KUMAR स माज्यक (पालीक कार्य) DGM (ENVT. MGMT) हमदोशीली क्रिकेट NTPC Limited कोचना समय परिकार को CSONSOF CHOCK हमारियान / Hazaribag



Date/Time **Trigger Source**  MicL at 15:43:27 January 20, 2023 Geo: 2.000 mm/s, Mic: 2.000 pa.(L)

Range Geo: 254.0 mm/s
Record Time 3.0 sec at 1024 sps
Operator/Setup: Operator/factory\_MMB

Notes Location: Client:

User Name: SOLAR INDUSTRIES INDIA LTD

General:

Linear Weighting 2.824 ps.(L) at 1.344 sec PSPL ZC Freq

57 Hz

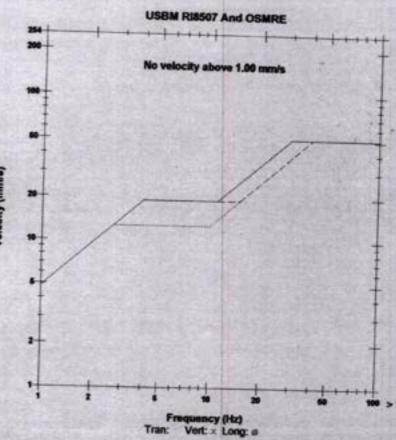
Channel Test Passed (Freq = 20.5 Hz Amp = 1292 mv)

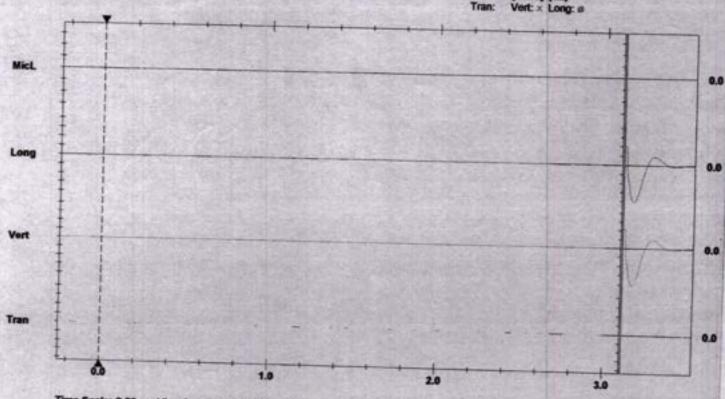
1	Tran	Vert	Long	
PPV	0.095	0.047	0.079	mm/s
PPV	30.52	24.50	28.93	dB
ZC Freq	4.6	47	4.5	Hz
Time (Rel. to Trig)	2.728	-0.025	2.729	sec
Peak Acceleration	0.005	0.004	0.005	0
<b>Peak Displacement</b>	0.003	0.000	0.002	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.5	7.3	Hz
Overswing Ratio	4.2	4.3	4.4	12 P. W.

Peak Vector Sum 0.112 mm/s at 2.728 sec

Serial Number UM20049 V 10-90GC Micromate ISEE Battery Level Unit Calibratio 3.8 Votts October 19, 2022 by UES New Delhi File Nam

TEMP.EVT





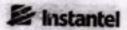
Time Scale: 0.20 secidiv Amplitude Scale: Geo: 2.000 mm/s/div Mic: 1.000 pa.(L)/div

wy 26, 2023 (V 10,72 - 10,72)

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नवीन कुमार / NAVIN KUMAR PHOTOSE PARTS / NTPC Limited WHITE REPR WHITE PROJECTS इनारेका / Hazaribag





/elocity (mm/s)

Date/Time **Trigger Source** 

Tran at 01:41 23 December 3, 2022 Geo: 0.510 mm/s. Mrc. 137.0 dB(L)

Range Record Time Geo: 31.75 mm/s 4.0 sec at 1024 sps

Notes

Location: Client

On Ground Surface Pakri Barwadhi Coal Mines Black Diamond Explosives Pvt Ltd

User Name: General:

#### **Extended Notes**

Microphone **PSPL** 

Linear Weighting 106.0 dB(L) at 1.926 sec

ZC Freq 16 Hz

Channel Test Passed (Freq = 20.1 Hz Amp = 557 mv)

Tran Vert Long PPV 2.095 0.762 1.333 mm/s PPV 57.43 48.64 53.50 dB ZC Freq Time (Rel. to Trig) 4.3 18 12 Hz 0.707 0.071 0.938 Sec Peak Acceleration 0.013 0.012 0.013 Peak Displacement 0.046 0.010 0.030 Sensor Check Passed Passed Passed Frequency Overswing Ratio 7.6 7.6 7.5 Hz 3.3 3.6 3.4

Peak Vector Sum 2.278 mm/s at 0.708 sec

Serial Number BE20626 V 10.72-1.1 Minimate Blaster

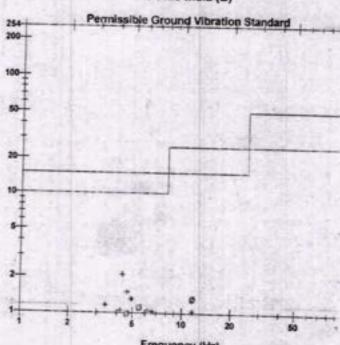
Battery Level 6.1 Volts

Unit Calibration January 29, 2022 by UES New Delhi File Name \_\_TEMP.EVT

Post Event Notes

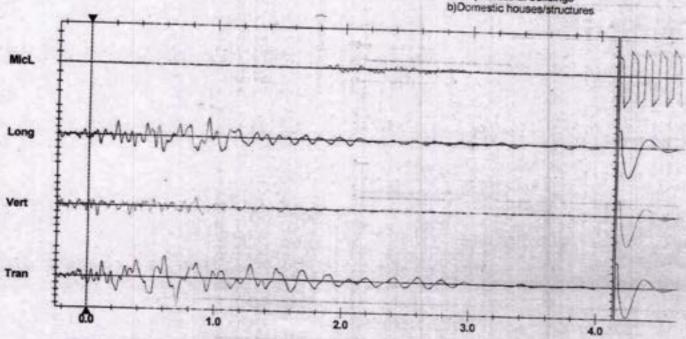
At Near Nagari School 295 Mt From Blasting patch

#### DGMS India (B)



Frequency (Hz) Tran: + Vert x Long: ø

a) Industrial buildings

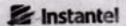


Time Scale: 0.20 sec/div Amplitude Scale: Geo: 0.500 mm/s/div Mic: 10.000 pa.(L.)/div

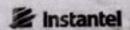
Printed: December 8, 2022 (V 10.72 - 10.72)

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Sensor Chec नवीन कुमार / NAVIN KUMAR PROMISE PROPER INTER Limite वता सन्द परियोजनार्। COAL MINING PROJECT ह्मारीकाण / Hazaribag



felocity (mm/s



MicL at 14:57:28 December 28, 2022

**Trigger Source** Range Record Time

Mic: 100.00 dB(L) Geo: 254.0 mm/s Record Time 3.0 sec at 2048 sps
Operator/Setup: Operator/NTPC OCP.MMB

Notes Location: PBCMP NTPC

Client:

NTPC

IDL EXPLOSIVES LTD User Name: COAL MINES General:

**Extended Notes** 

Distance 500 Mtr. Near Nagri School

Microphone Linear Weighting PSPL

107.0 dB(L) at 0.002 sec

ZC Freq <1.0 Hz

Channel Test Check (Freq = 0.0 Hz Amp = 0 mv )

	Tran	Vert	Long	
PPV	0.118	0.110	0.087	mm/s
ZC Freq	N/A	N/A	4.5	Hz
Time (Rel. to Trig)	0.721	1.262	1.027	sec
Peak Acceleration	0.008	0.012	0.012	9
<b>Peak Displacement</b>	0.000	0.000	0.003	mm
Sensor Check	Passed	Passed	Passed	

Peak Vector Sum 0.155 mm/s at 1.026 sec

N/A: Not Applicable

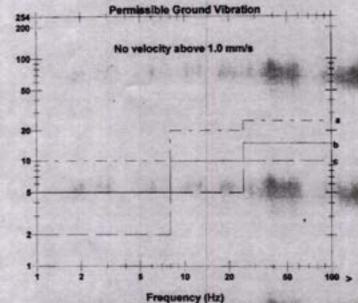
UM15577 V 10-72 Micromate ISEE Serial Number

3.8 Volts **Battery Level** 

Unit Calibration June 3, 2022 by CIMFR Dhanbad File Name \_\_TEMP.EVT

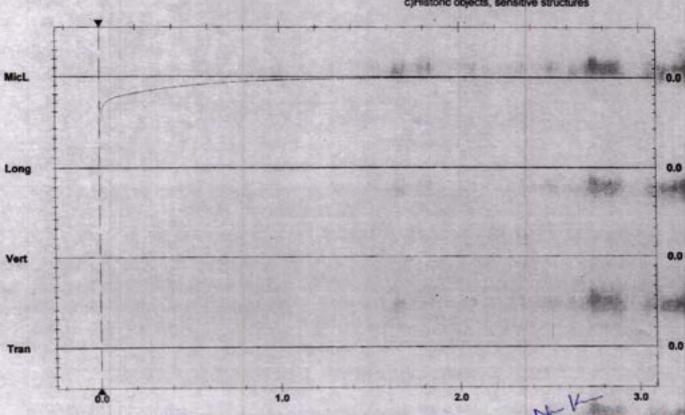
**Post Event Notes** 

#### DGMS India (A)



Frequency (Hz)
Tran: + Vert × Long: e

a)Industrial Buildings b)Domestic houses/structures c)Historic objects, sensitive structures

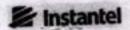


Time Scale: 0.20 secidiv Amplitude Scale: Geo: 2.000 mm/s/div Mic: 1.000 pa.(L)/div नवीन कुमार / NAVIN KUMAR

Printed: January 5, 2023 (V 10.72 - 10.72)

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IT RELEASE (VOICES VOUR) / DOM (ENVY. MONT) putting shifted NTPC Limited HER GIVE TREATED COAL MINING PROJECTS हजारीबाग / Hazaribag



**Trigger Source** 

Tran at 01:43 11 November 4, 2022 Geo: 0.510 mm/s. Mc. 137.0 dB(L)

Geo: 31.75 mm/s Range 4.0 sec at 1024 sps Record Time

Notes

On Ground Surface Location: Pakri Barwadhi Coal Mines Client Black Diamond Explosives Pvt Ltd User Name:

General:

#### **Extended Notes**

Linear Weighting Microphone 109.5 dB(L) at 3.768 sec PSPL

4.8 Hz ZC Freq

Channel Test Passed (Freq = 19.7 Hz Amp = 486 mv )

Long Vert Tran 1.508 mm/s 1.476 0.937 PPV dB 54.57 50.43 54.38 PPV NA NA Hz ZC Freq 7.8 3.973 SOC 3.999 Time (Rel. to Trig) 3.905 Peak Acceleration Peak Displacement Sensor Check 0.015 0.023 0.022 0.015 mm 0.013 0.017 Passed Passed Passed 7.6 Hz 7.5 Frequency 35 3.3 Overswing Ratio 3.2

Peak Vector Sum 1.762 mm/s at 3.973 sec

N/A: Not Applicable

BE20626 V 10.72-1.1 Minimate Blaster Serial Number

6.1 Volts

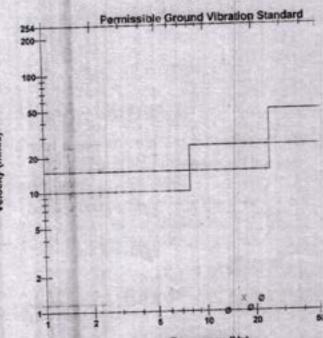
Battery Level 6.1 Volts
Unit Calibration January 29, 2022 by UES New Delhi

TEMP EVT File Name

Post Event Notes

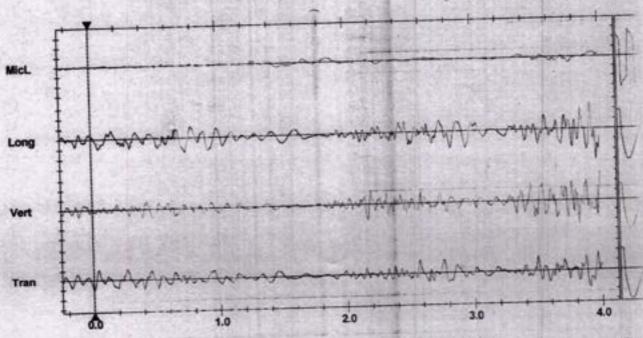
At Near Urub School 295mt From Blasting Patch

#### DGMS India (B)



Frequency (Hz) Trant + Vert x Long ø

a) Industrial buildings b)Domestic houses/structures



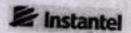
Trigger = >

Time Scale: 0.20 sec/div Amplitude Scale: Geo: 0.500 mm/s/div Mic: 10,000 pa (L.)/div

Printed: November 4, 2022 (V 10.72 - 10.72)

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चय महाप्रकंपक (पर्याचल प्रकंपन) / DGM (ENVT MGMT) एमटीपीजी निर्मिदेश NTPC Limited where whether of coal mining projects क्रमशियाग / Hazaribag



elocity (mm/s)

Date/Time

Long at 01:45:14 November 12, 2022

Range Record Time

Trigger Source Geo: 0.510 mm/s. Mic. 137.0 dB(L) Geo: 31.75 mm/s 4.0 sec at 1024 sps

Notes

Location: On Ground Surface Client Pakri Barwadhi Cosl Mines Black Diamond Explosives Pvt Ltd User Name:

General:

**Extended Notes** 

Microphone Linear Weighting 120.0 dB(L) at 3.063 sec

ZC Freq

Channel Test Passed (Freq = 20.1 Hz Amp = 483 mv)

DOM:	Tran	Vert	Long	
PPV	0.460	0.286	0.571	mm/s
PPV	44.26	40.12	46.14	0.000
ZC Freq	4.7	15		dB
Time (Rel. to Trig)	0.446	0.548	8.3	Hz
Peak Acceleration	0.007	0.007	0.256	Sec
Peak Displacement	0.014	0.007	0.008	9
Sensor Check	Passed		0.016	mm
Frequency		Passed.		
Outputing Date	7.5	7.6	7.4	Hz
Overswing Ratio	3.3	3.6	3.4	

Peak Vector Sum 0.611 mm/s at 1.135 sec

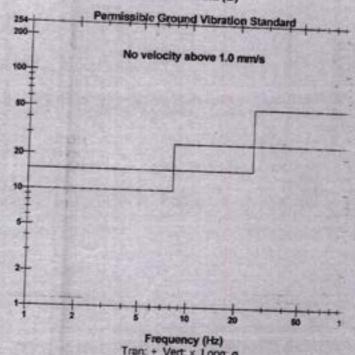
Serial Number BE20626 V 10.72-1.1 Minimate Blaster Battery Level 6.1 Volts

Unit Calibration January 29, 2022 by UES New Delhi File Name \_\_\_TEMP EVT

Post Event Notes

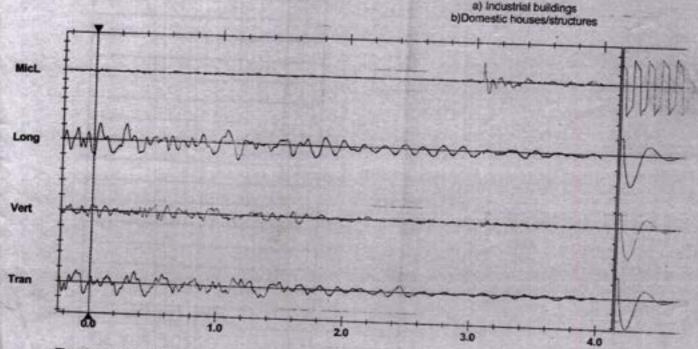
At Near Nagan School 310 Mt From Blasting Patch

### DGMS India (B)



Tran: + Vert x Long: Ø

a) Industrial buildings



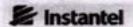
Time Scale: 0.20 sec/div Amplitude Scale: Geo: 0.500 mm/s/div Mic: 10.000 pa.(L.)/div

Sensor Chec

Printed: November 17, 2022 (V 10.72 - 10.72)

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नवीन कुमार / NAVIN KUMAR चन महायाच्या (पर्यापाम प्रवास) / DGM (ENVT. MGMT) PRINTER SHEET NTPC Limited WITH THE WITH THE PROJECTS हजारीदाप / Hazaribag



Tran at 14:38:09 October 21, 2022 Date/Time

Geo: 0.700 mm/s Geo: 254.0 mm/s **Trigger Source** Range Geo: 254.0 mm/s
Record Time 3.0 sec at 1024 sps
Operator/Setup: Operator/factory.MMB

Notes Location: RAMGARH

Client: TATAINTPC/CCL

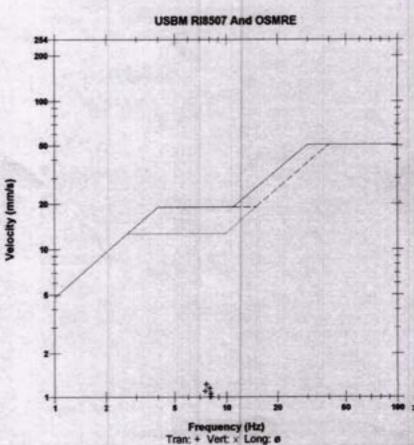
SOLAR INDUSTRIES INDIA LIMITED User Name:

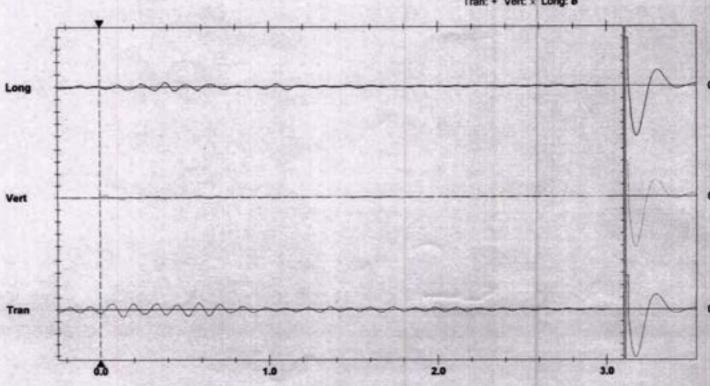
**COAL MINES** General:

	Tran	Vert	Long	
PPV	1.222	0.418	0.725	mm/s
PPV	52.74	43.42	48.21	dB
ZC Freq	7.8	7.8	8.8	Hz
Time (Rel. to Trig)	0.134	0.031	0.388	sec
Peak Acceleration	0.014	0.006	0.007	0
<b>Peak Displacement</b>	0.026	0.007	0.012	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.7	7.1	Hz
Overswing Ratio	3.3	2.9	3.2	

Peak Vector Sum 1,290 mm/s at 0,582 sec

Serial Number Battery Level UM9191 V 10-90GC Micromate ISEE 3.8 Volts Unit Calibratio June 30, 2021 by CIMFR Dhanbad TEMP.EVT File Name





Time Scale: 0.20 sec/div Amplitude Scale: Geo: 2.000 mm/s/div

Printed: October 21, 2022 (V 10.72 - 10.72)

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Sensor Check

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	Ground	d Water Le	evel Monit	Ground Water Level Monitoring Report (in meter) October-2022 to March-2023	(in meter	Octobe	r-2022 to	o March-	2023	ı
SI.No.	Monit	Total Depth of Well	Height from surface	GPS Location	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
=	SINDUARI	10 meter	0.10 meter	N-23" 53" 33.3" E-85" 12" 08.3"	7.50	7.55	7.60	8.00	8.00	7.95
2	KANDABER	20 meter	0.95 meter	N- 23" 54" 26.4" E- 85" 09" 34.7"	8.85	8.90	8.95	9.25	9.30	9.45
m	SIRMA	9 meter	0.40 meter	N- 23" 53" 36.1" E- 85" 10" 42.5"	6.40	6.40	6.50	6.75	6.75	6.80
4	PAKRI BARWADIH	10 meter	0.55 meter	N- 23' 52' 16.6" E- 85' 13' 55.5"	4.60	4.65	4.70	5.00	5.05	5.15
10	AMBAJEET	11 meter	0.45 meter	N- 23" 51' 07.8" E- 85" 17' 12.0"	8.10	8.15	8.25	8.50	8.55	8.60
w	HORAM	10.5 meter	0.45 meter	N- 23° 50° 28.0" E- 85° 15° 09.6"	7.70	7.75	7.85	8.15	8.15	8.20
7	DHENGA	11 meter	0.40 meter	N- 23"50" 48.2" E- 85"13" 30.9"	5.50	5.50	5.55	6.05	6.10	6.20
00	DEWORIA KHURD (1)	9 meter	0.85 meter	N- 23' 53' 06.7" E- 85' 11' 06.9"	6.95	7.05	7.10	7.50	7.50	7.60
ø1	KANKIDAR	9 meter	0.5 meter	N- 23" 53" 05.5" E- 85" 12" 38.2"	7.05	7.10	7.15	7.65	7.65	7.70
10	DARIKALAN	15.1 meter	0.25 meter	N-23*52"29.208" E- 85* 13'5.714"	9.25	9.35	9.45	9.85	9.85	10.00
11	LANGATU	14 meter	0.30 meter	N- 23* 51'0.889" E-85'12'54.623"	9.60	9.65	9.70	10.20	10.20	10.30
12	BARKAGAON	10 meter	0.75 meter	N- 23" 53" 05.5" E- 85" 12" 38.2"	7.90	8.00	8.05	8.35	8.35	8.45
13	SONBARSA (1)	8 meter	0.30 meter	N-23*52'48,579" E-85*12'15.253"	5.50	5.60	5.70	5.95	5.95	6.10
14	ш	13 meter	0.35 meter	N-23*55*33.715" E-85* 11*3.872"	6.80	6.90	7.00	7.15	7.20	7.30
115	KERIGARA	11 meter	0.25 meter	N-23*51'51.562" E-85*12' 12.15"	9.20	9.25	9.30	9.75	9.75	9.85
16	NAGRI	4.5 meter	0.20 meter	N-23" 54" 30.4" E-85" 12" 06.6"	1.95	2.05	2.10	2.45	2.45	2.55
17	SONBARSA (2)	7.90 meter	0.40 meter	N-23*52'39.66" E-85*12'19.51"	5.05	5.10	5.20	5:55	5.60	5.70
18	DEWORIA KHURD (2)	10 meter	0.50 meter	N-23"53'7.01" E- 85" 11"39.01"	6.40	6.45	6.50	6.80	6.80	6.90
19	CHURCHU	8.80meter	0.30 meter	N-23*53'24.24" E-85*11' 49.23"	6.15	6.20	6.30	6.75	6.75	6.85
20	URUB	14.30 meter	0.40 meter	N- 23" 54" 9.34"	11.05	11.10	11 16	37.11	11.75	11.05

नवीन कुमार / NAVIN KUMAR व्य बहाउबेडक (पर्वाचन प्रवेचन) / DGM (ENVT. MGMT.) एन्टरीनीली स्थिदेड/ NTPC Limited कोवास खरून परियोजनी / COAL MINING PROJECTS हजारीबान / Hazaribag

	Automatic Wat	er Level Reading	in meter (Piezom	eter -1), Locatio	n - Langatu Site C	Office
Date	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
1	42.01	42.81	45.79	50.39	46.63	52.18
2	41.28	43.77	41.91	47.21	49.39	52.40
3	42.65	43.57	40.59	46.87	45.57	52.44
4	39.36	45.26	41.17		50.11	52.01
5	36.43	46.71	47.94		48.77	52.14
6	39.15	44.01	46.03	49.84	47.43	51.87
7	40.21	41.92	48.96	47.10	48.78	52.21
8	40.14	43.83	44.44	45.56	51.08	50.56
9	44.56	43.63	43.64	46.79	51.28	49.37
10	46.19	42.31	44.32	50.79	50.46	50.46
11	44.85	42.44	43.79	50.96	52.23	52.26
12	45.53	42.80	48.11	52.00	50.69	52.36
13	50.78	44.63	44.77	49.95	49.87	50.70
14	44.29	46.24	45.19	51.98	52.18	50.61
15	48.11	45.43	46.51	50.97	50.72	52.29
16	47.64	45.73	46.79	49.22	50.43	52.27
17	47.81	46.97	50.36	50.70	50.51	51.81
18	45.58	44.79	49.33	51.35	50.37	52.24
19	44.89	47.52		49.90	49.67	50.86
20	46.51	46.29	52.38	48.71	49.27	51.25
21	46.20	45.83	50.42	49.62	50.50	50.67
22	47.62	48.07	49.01	48.32	50.06	50.30
23	44.16	47.21	47.33	50.06	50.38	50.68
24	44.68	47.59	47.81	48.22	51.30	52.02
25	45.73	46.82	50.63	47.83	51.22	50.93
26	46.33	45.79	50.27	50.21	52.35	52.73
27	46.37	42.41	50.73	47.92	52.04	51.69
28	45.81	42.84	49.16	46.55	52.24	51.67
29	44.07	46.01	52.03	44.81		51.84
30	42.28	46.85	50.17	46.72		52.60
31	41.55		50.48	46.61		52.17
lvg.	44.28	45.00	47.34	48.87	50.20	51.60

नवीन कुमार / NAVIN KUMAR ज्य बारकाक (पर्यासम्प प्रवेश) : DGM (ENVI. MGMT) रमरीपीती (निविदेश) NTPC Limited कोवता करून परियोजना) COAL MINING PROJECTS हर्ट्याचिमा / Hazaribag

	Automatic Wa	ter Level Reading	in meter (Piezor	meter -2), Locatio	on - NTPC Office,	Sikri
Date	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
1	2.87	3.15		4.58		
2	2.77	3.22	5.39	4.40		
3	3.22	3.37	5.35	4.51		
4	3.05	3.45	5.11	4.59		
5	2.72	3.56	4.83			
6	2.54	3.74	5.49	4.76	5.79	
7	2.45	3.74	5.35	5.40	5.58	
8	2.55	3.71	4.89	4.93		
9	2.73	3.85	4.60	4.73	RAIS HILLIAM	
10	2.65	3.93			6.13	6.96
11	2.60	4.32				6.55
12	2.56	4.40			5.97	
13	2.58	4.37	5.13		6.07	
14	2.69	4.43	5.29		6.57	
15	2.71	4.73	5.38		6.66	
16	2.70	4.72	5.69	5.36	6.50	7.21
17	2.69	5.16	5.74	5.04		6.93
18	2.67	4.93	5.54	5.11		6.55
19	2.75	4.66	5.69	5.47		6.46
20	2.74		5.61	5.41	6.59	6.75
21	2.80		5.18	5.69		6.60
22	2.85	5.43	5.35	5.25		6.71
23	2.94	4.99	5.54	5.24		6.63
24	2.73	4.79	5.51	5.33		7.00
25	2.66	5.09	5.34	5.95		6.81
26	2.75	5.49	5.18	5.46		6.69
27	2.84	5.60	5.34	5.72		6.85
28	3.03	5.25	5.17	5.71		7.13
29	3.12	4.95	4.97	5.13		7.45
30	2.96		4.76			7.76
31	2.98		5.19			7.75
vg.	2.77	4.41	5.28	5.17	6.21	6.93

नवीन कुमार / NAVIN KUMAR वर्ष प्राटकाक (प्रतिकार प्रकार): DGM (ENVT. MGMT.) (प्रतिकार) क्रिकेट्ट / NTPC Limited क्रोकात स्वरूप प्रतिकारी: COAL MINING PROJECTS हजारीबाग् / Hazaribag



PLOT NO. 4, KHASRA NO. 45, OPPOSITE SHREE MANAN DHAM TEMPLE. 8TH K.M. MILE STONE, INDUSTRIAL AREA, MEERUT ROAD, GHAZIABAD -201003 (U.P.)

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MoEF&CC Recognized Environmental Laboratory

# SURFACE WATER SAMPLING AND ANALYSIS SUMMARY REPORT FOR THE MONTH OF JAN 2023

Name and Address of Customer:

M/S PAKRI BARWADIH COAL MINING NTPC LTD.,

LANGATU, BARKAGAON, HAZARIBAGH, JHARKHAND. (INDIA)

			SURFACE WATE	R (16.01.2023)		
S. No	Parameter			TETEL	RESULT	
		Unit	LATHORWA NALA, NEAR SIRMA- UPSTREAM (SW-1)	PAKWA NALA, WHILE ENTERING THE LEASE AREA- UPSTREAM (SW-2)	PAKWA NALA, WHILE LEAVING THE LEASE AREA- DOWNSTREAM (SW-3)	LATHORWA NALA, BEFORE CONFLUENCE WITH GHAGRANADI- DOWNSTREAM (SW-4
1	Colour	Hazen	25	28	30	26
2	Turbidity	NTU	2	5	3	2.5
3	pH	-	7.18	7.12	7.14	7.23
4	Residual Free Chiorine(as CIZ)	mg/l	ND	ND	ND	ND
5	Total Dissolved Solids	mg/l	234	148	216	234
6	Total Suspended Solids	mg/I	26	22	18	13
7	Total Hardness (as CaCO3)	mg/I	138	118	136	132
8	Calcium (as Ca)	mg/l	24.5	21.5	27.2	26.4
9	Magnesium	mg/I	16.8	14.3	16.5	16.0
10	00	mg/l	5.6	6.2	6.8	6.4
11	Chloride (as CI)	mg/l	19	13	28	26
12	Sulphate (SO <sub>4</sub> )	mg/I	28	19	24	29
13	Iron (as Fe)	mg/l	0.56	0.24	0.36	0.34
14	Copper(as Cu)	mg/I	BDL	BDL	BDL	BOL
15	8aran	mg/T	0.22	0.24	0.29	0.32
16	Nitrate (as No <sub>2</sub> )	mg/l	4.3	2.6	2.1	2.9
17	Fluoride (as F)	mg/l	0.39	0.35	0.27	0.33
18	Phenolic Compound (as C <sub>4</sub> H <sub>3</sub> OH)	mg/t	US BOU 5/	BDL	RONBOLENI	BDL
19	Mercury(as Hg)	mg/l	BOL	BDL	BDL	BOL
20	Cadmium (as Cd)	mg/l	BOL	BDL	BDL	BDL
21	Selenium (as Se)	mg/I	BDL	BOL	BDL	BOL
22	Arsenic (as As)	mg/l	BDL	BOL	BDL	BDL
23	Cyanide (as CN)	mg/l	BOL	8DL	BOL	BDL
24	Lead (as Pb)	mg/l	BDL	BDL	BDL	BDL

नवीन कुमार I NAVIN KUMAR BE MICEUS CONTROL DESP. | DON (ENVT. MONT.) pretitief finites/ NTPC Limited सेवात खनर परिकेलचर्रः COAL MINING PROJECTS इजारीबान / Hazaribag



Page 1 of 2



PLOT NO. 4, KHASRA NO. 45, OPPOSITE SHREE MANAN DHAM TEMPLE, 8TH K.M. MILE STONE, INDUSTRIAL AREA, MEERUT ROAD, GHAZIABAD -201003 (U.P.)

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S. No		Unit	LATHORWA NALA, NEAR SIRMA- UPSTREAM (SW-1)	PAKWA NALA, WHILE ENTERING THE LEASE AREA- UPSTREAM (SW-2)	PAKWA NALA, WHILE LEAVING THE LEASE AREA- DOWNSTREAM (SW-3)	LATHORWA NALA, BEFORE CONFLUENCE WITH GHAGRANADE DOWNSTREAM (SW- 4)
25	Zinc (as Zn)	mg/l	0.15	0.12	0.16	BOL
26	Anionic Detergent (MBAS)	mg/l	BOL	BDL	BDL	BDL
27	Mineral Oil	mg/l	BDL	BDL	BDL	BDL
28	Total Alkalinity (as CaCO3)	mg/l	92	68	74	98
29	Aluminum (as Al)	mg/l	BDL	BOL	BDL	BDL
30	Barium (as Ba)	mg/l	BDL	BDL	BDL	BDL
31	Ammonia (Total Ammonia -N)	mg/l	2.9	3.2	3.7	3.1
32	Silver (as Ag)	mg/l	BDL	BDL	BDL	BDL
33	Nickel (as Ni)	mg/l		BOL	BOL	0.22
34	Chromium (as Cr +6)	mg/l	BOL	8DL	BDL	BOL
35	Chemical Oxygen Demand	mg/l	18	26	26 34	
36	Manganese (as Mn)	mg/l	0.18	0.13	0.16	0.24
37	E.coll	Coll/100ml	Present	Present	Present	Present
38	Total Coli forms	MPN/100ml	>1600	>1600	>1600	>1600
39	Sodium	mg/l	56	19	37	32
40	Potassium	mg/I	13	5	9	7
41	Biochemical Oxygen Demand (at 27°C for 3 days )	mg/l	nA.	5	6.5	4.5
42	Conductivity (25° C)	mS/cm	360	228	332	360
43	Silica (Sio <sub>2</sub> )	mg/l	18	2.4	2.6	2.1
44	Phosphate (PO <sub>4</sub> )	mg/l	0.43	0.57	0.62	0.50

\*\*\*END OF TEST REPORT \*\*\*

Page No. -2 of 2

FOR GLOBAL ENVIRO LABORATORIES

(INTEKHAB KHAN)

नवीन कुमारे I NAVIN KUMAR

यर पहारवयक (पर्यवास प्रवेदान) i DOM (ENVT MONT) रुप्याचिति निर्मिदेश NTPC Limited कोवल स्थल परियोजनी COAL MINING PROJECTS हजारीबाग / Hazaribag AUTHORISED SIGNATORY (ARVIND KUMAR)





PLOT NO. 4, KHASRA NO. 45, OPPOSITE SHREE MANAN DHAM TEMPLE, 8TH K.M. MILE STONE, INDUSTRIAL AREA, MEERUT ROAD, GHAZIABAD -201003 (U.P.)

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## SURFACE WATER SAMPLING AND ANALYSIS SUMMARY REPORT FOR THE MONTH OF JAN 2023

Name and Address of Customer:

M/S PAKRI BARWADIH COAL MINING NTPC LTD.,

LANGATU, BARKAGAON, HAZARIBAGH, JHARKHAND. (INDIA)

		SURFACE	/ATER (16.01.2023)		
s. No	Parameter			RESULT	the state of the s
		BA	GHAGRA NADI NEAR PANDURIYA D/S OF CONFLUENCE WITH HORHORINADI- DOWNSTREAM (SW-S)	HORHORINADI, NEAR KANRTRI-(SW-6)	POND NEAR CHEOAKHURD-(SW-)
1	Colour	Hazen	24	30	34
2	Turbidity	NTU	3.6	2.8	3.8
3	pH #		7.2	7.19	7.13
4	Residual Free Chlorine(as CIZ)	mg/l	ND	ND	NO
5	Total Dissolved Solids	mg/l	218	222	286
6	Total Suspended Solids	mg/l	19	26	27
7	Total Hardness (as CaCO3)	mg/I	142	125	147
8	Calcium (as Ca)	mg/l	28.4	25	29.4
9	Magnesium	f\gm	17.2	15.2	17.8
10	D0	mg/l	5.9	7.1	6.4
11	Chloride (as CI)	/Jam	45	61	41
12	Sulphate (SO <sub>4</sub> )	mg/1	38	31	25
13	Iron (as Fe)	mg/l	0.91	0.68	1.3
14	Copper(as Cu)	mg/t	80.	BDL	BOL
15	Boron	tana mg/l	0.41	0.26	0.38
16	Nitrate (as No <sub>1</sub> )	TIME mg/1	DAVE 34 VYVII	A THE REAL PROPERTY AND ADDRESS OF THE PARTY A	5.1
17	Fluoride (as F)	mg/l	0.54	0.25	0.31
18	Phenolic Compound (as C <sub>4</sub> H <sub>5</sub> OH)	mg/l	BOL	BDL	8DL
19	Mercury(as Hg)	mg/l	BDL	BDL	BDL
20	Cadmium (as Cd)	mg/l	BOL	8DL	BOL
21	Selenium (as Se)	mg/l	BDL	BDL	BOL
22	Arsenic (as As)	mg/l	BOL	BDL	BDL
23	Cyanide (as CN)	mg/l	BOL	BDL	BDL
24	Lead (as Pb)	mg/l	BDL	8DL	BDL

नवीन कुमार I NAVIN KUMAR

क्ष महाउद्यक्त पर्वादल प्रवेदन)। DGM (ENVT. MGMT) (अटीवीर्टी निविदेश NTPC Limited

HAZER WITH AND COAL MINING PROJECTS

Page 1 of 2



PLOT NO. 4, KHASRA NO. 45, OPPOSITE SHREE MANAN DHAM TEMPLE, 8TH K.M. MILE STONE, INDUSTRIAL AREA, MEERUT ROAD, GHAZIABAD -201003 (U.P.)

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s. No		Unit	GHAGRA NADI NEAR PANDURIYA D/S OF CONFLUENCE WITH HORHORINADI- DOWNSTREAM (SW-5)	HORHORINADI, NEAR KANRTRI- (SW-6)	POND NEAR CHEOAKHURD-(SW 7)
25	Zinc (as Zn)	mg/l	0.18	0.08	8DL
26	Anionic Detergent (MBAS)	mg/l	BDL	BDL	BDL
27	Mineral Oil	mg/l	BDL	BOL	BDL
28	Total Alkalinity (as CaCO3)	mg/l	105	77	68
29	Aluminum (as Al)	mg/l	BOL	BDL	BDL
30	Barium (as Ba)	mg/l	BOL	BOL	BDL
31	Ammonia (Total Ammonia -N)	mg/l	4.2	3.5	3.8
32	Silver (as Ag)	mg/l	BOL	BDL	BDL
33	Nickel (as Ni)	mg/l	BOL	0.16	0.26
34	Chromium (as Cr + )	mg/l	BOL	8DL	BDL
35	Chemical Oxygen Demand	mg/l	36	44	24
36	Manganese (as Mn)	mg/l	0.18	0.26	0.16
37	E.Coli	Coll/100ml	Present	Present	Present
38	Total Coli forms	MPN/100ml	>1600	>1600	>1600
39	Sodium	mg/l	42	36	45
40	Potassium	mg/I	12	11	15
41	Biochemical Oxygen Demand (at 27°C for 3 days )	mg/l	LIDE	8	5.5
42	Conductivity (25° C)	mS/cm	335	342	440
43	Silica (Sio <sub>3</sub> )	mg/l	2.3	3.4	4.5
44	Phosphate (PO <sub>4</sub> )	N mg/l	0,55	0.81	1.07

\*\*\*END OF TEST REPORT \*\*\*

Page No. 2 of 2

FOR GLOBAL ENVIRO LABORATORIES

(INTEKHAB KHAN)

नवीन कुमार / NAVIN KUMAR

यन महाज्ञावक (पर्यायल प्रस्तन) / DGM (ENVT MGMT) (न्योगीजी निर्मिदेश NTPC Limited कोवल शनन परिशेजनी / COAL MINING PROJECTS हजारीशाम / Hazaribag AUTHORISED SIGNATORY





PLOT NO. 4, KHASRA NO. 45, OPPOSITE SHREE MANAN DHAM TEMPLE. 8TH K.M. MILE STONE, INDUSTRIAL AREA, MEERUT ROAD, GHAZIABAD -201003 (U.P.)

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# GROUND WATER SAMPLING AND ANALYSIS SUMMARY REPORT FOR THE MONTH OF JAN 2023

Name and Address of Customer:

M/S PAKRI BARWADIH COAL MINING NTPC LTD.,

LANGATU, BARKAGAON, HAZARIBAGH, JHARKHAND. (INDIA)

#### PAKRI BARWADIH COAL MINES

		GRO	W DANG	ATER REPORT (	16.01.2023)		3000	Acceptable	Parameter (Edu
S. No	PARAMI	ETER			RES	ULT		Limit	Permissible limit
			Unit	WELL AT SINDUARI- (GW-1)	WELL AT KANDABER -{GW-2}	WELL AT SIRMA- (GW-3)	WELL AT PAKRI BARWADIH - (GW-4)	IS: 10:	500:2012
1	Colour	,	fazen	<5.0	<5.0	<5.0	<5.0	5 Max	15 Max
2	Odour		2	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	Taste	-1	0	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	CO	NTU	3.5	4.2	4.6	5.1	1	5
5	pH	0	-	7.18	7.25	7.18	7.32	6.5-8.5	No relaxation
6	Residual Free Chlorin CI2)	ne(as	mg/l	ND	ND	ND	ND	0.2	1
7	Total Dissolved Solids	5 1	mg/I	518	536	378	521	500	2000
8	Total Hardness (as Ca	(CO3)	mg/l	247	255	180	248	200	600
9	Calcium (as Ca)	139	mg/l	49.3	51.0	36.0	49.6	75	200
10	Magnesium		mg/i	29.9	31.0	21.9	30.1	30	100
11	Chloride (as Ci)	19	mg/l	140	144.9	102.2	140.8	250	1000
12	Sulphate	9	mg/l	56.3	58.3	41.1	56.6	200	400
13	Iron (as Fe)		mg/l	0.16	0.21	0.25	0.23	0.3	No relaxation
14	Copper(as Cu)	OIN	ng/l	BOL TO	BOL	BDL	BDL E	0.05	1.5
15	Baran	-	Ng/I	BOL	BDL	BDL	BDL	0.5	1
16	Nitrate (as No <sub>2</sub> )		ng/I	6.5	7.8	4.7	6.5	45	No relaxation
17	Fluoride (as F)	-	ng/l	0.22	0.26	0.29	0.32	1	1.5
18	Phenolic Compound C <sub>8</sub> H <sub>5</sub> OH)	(as n	mg/l	BDL	BOL	BOL	BOL	0.001	0,002
19	Mercury(as Hg)	n	ng/l	BOL	BOL	BOL	BDL	0.001	No relaxation
20	Cadmium (as Cd)	n	ng/l	BDL	BDL	3DL	BDL	0.003	No relaxation
21	Selenium (as Se)	n	ng/i	BOL	BDC	BDL	BDL	0.01	No relaxation
22	Arsenic (as As)	n	Ngn	BOL	BDL	BOL	BOL	0.01	0.05

नवीन कुमार I NAVIN KUMAR

एव बहारतक (वहारण प्रथम) DGM (ENVT MGMT) (म्मरीवीली जिन्देश MTPC Limited कोवल समय चीवोजनी/COM, MMMG PROJECTS हरातीबाण / Hazaribag



Page 1 of 2



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			GROU	JND WATER R	EPORT			
23	Cyanide (as CN)	mg/l	BOL	BDL	BDL	BDL	0.05	No relaxation
24	Lead (as Pb)	mg/I	BDL	BDL	BDL	BDL	0.01	No relaxation
25	Zinc (as Zn)	mg/l	BDL	BDL	BDL	BDL	5	15
26	Total Alkalinity	mg/i	185	191	135	186	200	600
27	Aluminium (as Al)	mg/l	BDL	BDL	BDL	BDL	0.03	0.2
28	Barium (as Ba)	mg/l	BOL	BDL	BOL	BOL	0.7	No relaxation
29	Ammonia (Total Ammonia -N)	mg/l	BOL	BOL	BOL	BDL	0.5	No relaxation
30	Silver (as Ag)	mg/I	BDL	BDL	8DL	BOL	0.1	No relaxation
31	Nickel (as Ni)	mg/l	BOL	8DL	BDL	BDL	0.02	No relaxation
32	Chramium (as Cr +3)	mg/l	BDL	BOL	BOL	BOL	0.05	No relaxation
33	Manganese (as Mn)	mg/l	BOL	BDL	BDL	BOL	0.1	0.3
34	E.Coli	/100 ml	Absent	Absent	Absent	Absent		NOT DETECTABLE IN 100 ML SAMPL
35	Total Coli forms	MPN/100 ml	Absent	Absent	Absent	Absent		NOT DETECTABLE II 100 ML SAMPL
36	Conductivity	μS/cm	803	812	571	808	NOT SPECIFIED	NOT SPECIFIED
		COUNTY - I	BDL- B	elow Detect	on Limit	MORSE		A-11-

JOIN HANDS - "END OF TEST REPORT "

Page No. -2 of 2

FOR GLOBAL ENVIRO LABORATORIES

CHECKED BY (INTEKHAB KHAN)

नवीन कुमार / NAVIN KUMAR का प्राप्तकार (पर्वाराण प्रवेश) / DGM (ENVT. MGMT.) एमधीरीती (मिनिटेड/ NTPC Limited

STERN WITH WHITE COAL MINING PROJECTS हजारीबाग / Hazaribag

**AUTHORISED SIGNATORY** (ARVIND KUMAR)





PLOT NO. 4, KHASRA NO. 45, OPPOSITE SHREE MANAN DHAM TEMPLE, 8TH K.M. MILE STONE, INDUSTRIAL AREA, MEERUT ROAD, GHAZIABAD -201003 (U.P.)

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## GROUND WATER SAMPLING AND ANALYSIS SUMMARY REPORT FOR THE MONTH OF JAN 2023

Name and Address of Customer:

M/S PAKRI BARWADIH COAL MINING NTPC LTD.,

LANGATU, BARKAGAON, HAZARIBAGH, JHARKHAND. (INDIA)

		1000	PAKRI B	BARWADIH C	DAL MINES			
103		GROUND	WATER REPOR	RT (16.01.2023)			Acceptable	Permissible
S. No	PARAMETER				RESULT		Limit	limit
E		UNIT	WELL AT AMBAJIT- (GW-S)	WELL AT HORAM (GW-6)	WELL AT BARKAGAON (GW-7)	WELL AT DEWORIA KHURD- (GW-8)	15: 105	500:2012
1	Colour	Hazen	<5.0	<5.0	<5.0	<5.0	5 Max	15 Max
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeabl e	Agreeable
3	Taste		Agreeable	Agreeable	Agreeable	Agreeable	Agreeabl e	Agreeable
4	Turbidity	NTU	3.8	2.1	2.4	3.0	1	5
5	pH	Water .	7.12	7.22	7.19	7.14	6.5-8.5	No relaxation
6	Residual Free Chlorine(as Ci2)	mg/I	ND	ND	ND	NO	0.2	1
7	Total Dissolved Solids	mg/l	395	362	458	355	500	2000
8	Total Hardness (as CaCO3)	mg/l	188	172	218	169	200	600
9	Calcium (as Ca)	mg/l	37.6	34.5	43.6	33.8	75	200
10	Magnesium	mg/l	22.8	20.9	26.5	20.5	30	100
11	Chloride (as CI)	mg/I	106.8	97.8	123.8	95.9	250	1000
12	Sulphate	mg/i	42.9	39.3	49.8	38.6	200	400
13	Iron (as Fe)	mg/l	0.2	0.34	0.38	0.19	0.3	No relaxation
14	Copper(as Cu)	mg/l	BDL	BDL	8DL	BOL	0.05	1.5
15	Boron	mg/l	BOL	BOL	BDE	BDL	0.5	1
16	Nitrate (as No2)	mg/l	4.9	3.2	5.7	5.6	45	No relaxation
17	Fluoride (as F)	mg/l	0.24	0.13	0.15	0.19	1	1.5
18	Phenolic Compound (as C6H5OH)	mg/l	BDL	80L	BDL R	ONBOLEN	0.001	0.002
19	Mercury(as Hg)	ng/l	BDL	BDL	801	8DL	0.001	No relaxation
20	Cadmium (as Cd)	mg/l	BOL	BOL	BOL	BDL	0.003	No relaxation
21	Selenium (as Se)	mg/l	BDL	BDL	BOL	BDL	0.01	No relaxation
22	Arsenic (as As)	mg/I	BOL	BDL	BDL	BDL	0.01	0.05

Page 1 of 2

नवीन कुमार / NAVIN KUMAR वर महत्त्वक (कारण प्रांटन) (DGM (ENVT. MGMT.) (कारणेशन (कार्यक्ष) NTPC Limited कोरण प्रांच प्रांचेशनार्ग (COAL MANNS PROJECTS हकारीवान / Hazaribag





PLOT NO. 4, KHASRA NO. 45, OPPOSITE SHREE MANAN DHAM TEMPLE, 8TH K.M. MILE STONE, INDUSTRIAL AREA, MEERUT ROAD, GHAZIABAD -201003 (U.P.)

MOBILE: +91-9810317145, +91-8826028116

E-mail: global\_enviro@reditfmail.com, globalenvirolab@gmail.com

MoEF&CC Recognized Environmental Laboratory

			GROU	ND WATER R	EPORT			
23	Cyanide (as CN)	mg/l	BDL	BDL	BDL	BDL	0.05	No relaxation
24	Lead (as Pb)	mg/l	BDL	BOL	BDL	BOL	0.01	No relaxation
25	Zinc (as Zn)	mg/I	BDL	BDL	BOL	BOL	5	15
25	Total Alkalinity	mg/l	141	129	164	127	200	600
27	Aluminum (as Al)	mg/i	BDL	BOL	BOL	BOL	0.03	0.2
28	Barium (as Ba)	mg/I	BDL	BOL	BOL	BOL	0.7	No relaxation
29	Ammonia (Total Ammonia -N)	mg/l	BDL	BDL	BOL	BDL	0.5	No relaxation
30	Silver (as Ag)	mg/l	BOL	BOL	BDL	BDL	0.1	No relaxation
31	Nickel (as Ni)	mg/I	BOL	BOL	BOL	BDL	0.02	No relaxation
32	Chromium (as Cr +6)	mg/l	BOL	BOL	BDL	BDL	0.05	No relaxation
33	Manganese (as-Mn)	mg/l	BDL	BOL	BOL	BDL	0.1	0.3
34	E. Coll	/100 ml	Absent	Absent	Absent	Absent	2	NOT DETECTABLE IN 100 ML SAMPLE
35	Total Coll forms	MPN/ 100 ml	Absent	Absent	Absent	Absent		NOT DETECTABLE IN 100 ML SAMPLE
36	Conductivity	µS/cm	612	552	710	543	NOT SPECIFIED	NOT SPECIFIED
		100		elow Detecti	on Limit	1033		

\*\*\* END OF TEST REPORT \*\*\*

Page No. -2 of 2

FOR GLOBAL ENVIRO LABORATORIES

JOIN HANDS TO SAVE

(INTERHAB KHAN)

AUTHORISED SIGNATORY (ARVIND KUMAR)

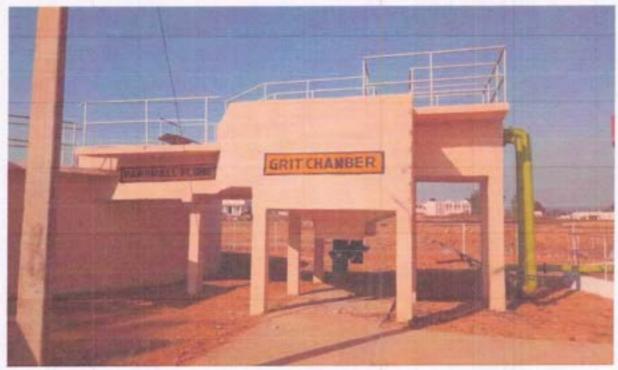
नवीन कुमार I NAVIN KUMAR

त्व प्राप्तक (पर्वतम् प्रवेश) I DGM (ENVT MGMT) एण्डीपीती निरिदेश NTPC Limited कोचन स्थल पीचोजनी (COAL MINNG PROJECTS हजारीबाय / Hazaribag



Photograph# 1.5 MLD STP for treatment of Sewage with the latest technology of MBBR System



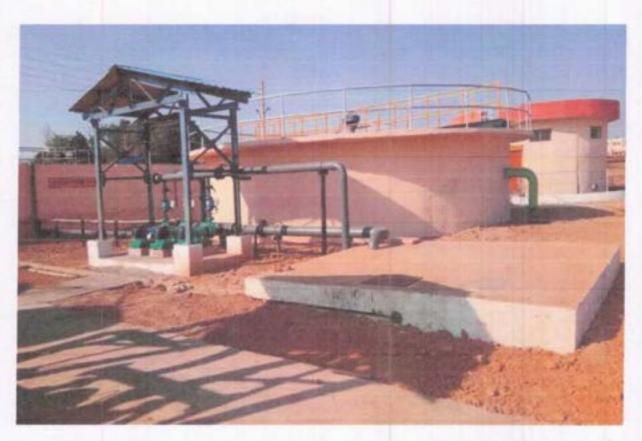


नवीन कुमार / NAVIN KUMAR क क्यान्त्रक (पर्वाचन प्रवास) / DGN (ENVT. MGMT.) (म्म्योतील इनक्षेत्र/ NTPC Limited क्षेत्रमा सन्तर परिवेदमर्ग / COAL MINING PROJECTS इस्तरीमान / Hazaribag



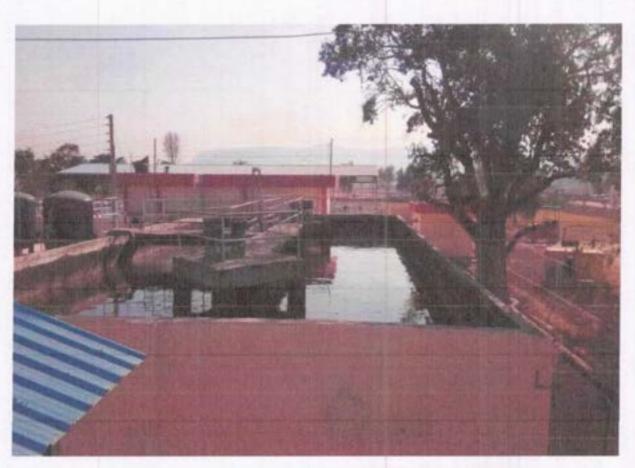


नवीन कुमार / NAVIN KUMAR वर प्राप्तक (प्रवेदल प्रवेदन) / DGM (ENVT. MGMT.) प्रभागित जिनिहेड / NTPC Limited कोचल करू पीक्षेत्रवर्ग / COAL MNNS PROJECTS हजारीबाग / Hazaribag





नवीन कुमार / NAVIN KUMAR एव बहारवाक (वर्षारान प्रशंपन) / DGM (ENVT. MGMT) (न्न्टोचीली निर्मिटेड/ NTPC Limited कोमल सन्त्र परियोजनाई/ COAL MANNG PROJECTS हजारीबाग / Hazaribag





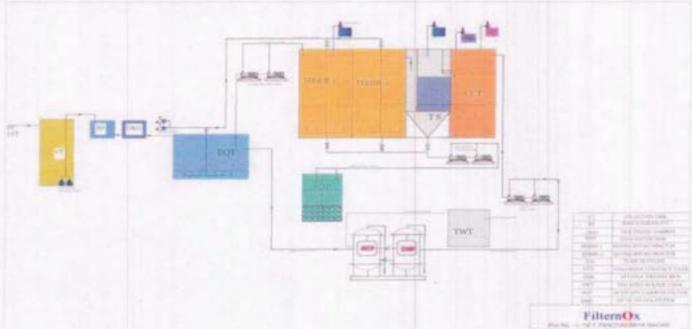
नदीन कुमीर / NAVIN KUMAR का माजकाक (वर्षाकल क्यान) / DGM (ENVT MOMT) एक्टीबीली जिल्लेक्टेश NTPC Limited कोवास क्षम परिकालनी COAL MANING PROJECTS हवादीकान / Hazaribag

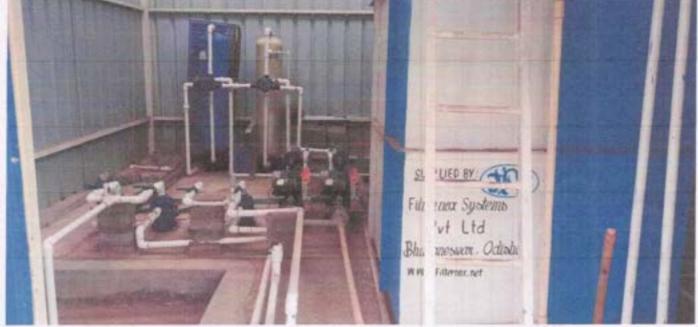
# PAKRI BARWADIH COAL MINING PROJECT



# **Environment Management Cell** 25 KLD Sewage Treatment Plant







नवीन कुमरि / NAVIN KUMAR

OR MILITADO (MILITADO MENTE DOM (ENVI. MONT.) proteins states NTPC Limited कोचला खनन परियोजनार्। COAL MINING PROJECTS हजारीबाग / Hazaribag

Parameter   Unit   Co.03.2023   State   State   Co.03.2023   State   C		THE REAL PROPERTY AND PERSONS ASSESSMENT OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE							
Parameter   Unit   Inlet Result   Outlet Result			ETP Inlet	& Outlet An	nalysis Data	Month of Ma	rch-2023		
Parameter   Unit   Param	I. No		Unit	Inlet	Result	Outlet	Result	The Land Lement	
December   Control of Control o				02.03.2023	16.03.2023	02.03.2023	16.03.2023	standards (CPCB)	Protocoal
Total Suspended Solid (TSS)   mg/L   1742   1927   521   574   574   574   574   574   574   574   574   574   574   574   574   574   574   574   575   5	-	рн	******	6.95	7.03	7.36	7.28	5.5-9.0	APHA-4500-H+
Total Disloved Solid (TDS)   mg/L   1742   1927   621   574     Oli & Greses (O&G)   mg/L   14.5   12.7   3.2   2.7     Biological Oxygen Demand (BOD3 day, mg/L   271.8   307.3   98.5   113.7     Biological Oxygen Demand (BOD3 day, mg/L   271.8   307.3   98.5   113.7     Maganese (Mn)	2	Total Suspended Solid (TSS)	mg/L	574	594	58	61	100 mg/l	APHA-2540-B
Biological Oxygen Demand (BOD3 day, mg/L   211.8   307.3   39.5   2.7   21.8   307.3   39.5   113.7	m	Total Disloved Solid (TDS)	mg/L	1742	1927	621	574	Not Specified	APHA-2540-C
Biological Oxygen Demand (BOD3 day, mg/L   698   78   25   28   28   27   27   27   27   27   27	4	Oil & Greses (O&G)	mg/L	14.5	12.7	3.2	2.7	10 mg/l	APHA-5520-C
Chemical Oxygen Demand         mg/L         271.8         307.3         98.5         113.7           Maganete (Mn)         mg/L         N.D         N.D         N.D         N.D           Chloride (CI)         mg/L         698.0         567.0         226.0         219.0           Parameter         Unit         Interferant         Counter Result         Outlet Result           PH         Counter Result         Counter Result         Outlet Result           PH         Mg/L         594         541         53         47           Total Suspended Soild (TSS)         mg/L         119         12.4         3.9         2.8           Biological Oxygen Demand (BOD3 day, mg/L         mg/L         71         67         2.6         2.7           Chemical Oxygen Demand (BOD3 day, mg/L         mg/L         71         67         2.6         2.8           Maganese (Mn)         mg/L         70.0         821.0         119.0         12.4         3.9         2.8           Ast 27 OC)         Maganese (Mn)         mg/L         797.0         821.0         73.6         73.3           Chloride (CI)         mg/L         1746         1546         558         4.1         3.5	ın	Biological Oxygen Demand (BOD3 day, at 27 0C)	T/8m	69	78	25	28	30 mg/l	APHA-5210-B
Parameter   Unit	9	Chemical Oxygen Demand	mg/L	271.8	307.3	98.5	113.7	250 mg/l	APHA-5220-8
Parameter   Unit   Iniet Result   Outlet Besult   Outlet Result   Outlet Besult   Outlet Bes	1	Maganese (Mn)	mg/L	N.D	N.D	N.D	N.D	2 mg/l	APHA-3111 (B)
Parameter   Unit   Inlet Result   Outlet Result   Outlet Result	00	Chloride (CI)	mg/L	698.0	567.0	226.0	219.0	Not Specified	APHA -4500 (CI)
Parameter   Unit   Inlet Result   Outlet Result					February-2				
pH         O2.02.2023         16.02.2023	I. No		Unit	Inlet	Result	Outlet	Result	1000000	
pH         E-91         6.87         7.12         7.26           Total Suspended Solid (TSS)         mg/L         594         541         53         47           Total Disloved Solid (TDS)         mg/L         1874         1964         573         542           Oil & Greses (O&G)         mg/L         11.9         12.4         3.9         2.8           Oil & Greses (O&G)         mg/L         71         67         26         27           Oil & Greses (O&G)         mg/L         735         327         101         129           Biological Oxygen Demand (BOD3 day, mg/L         mg/L         797.0         N.D         N.D         N.D         N.D           Chloride (CI)         mg/L         797.0         119.0         119.0         124.0         124.0           Anganese (Mn)         mg/L         797.0         821.0         119.0         124.0         124.0           Anganese (Mn)         mg/L         797.0         821.0         119.0         124.0         124.0           Anganese (Mn)         mg/L         1746         5.8         5.8         49         124.0         124.0         124.0         124.0         124.0         124.0         124.0         124.0				02.02.2023	16.02.2023	02.02.2023	16.02.2023	Standards (CPCB)	Protocoal
Total Suspended Solid (TSS)         mg/L         594         541         53         47           Total Disloved Solid (TDS)         mg/L         1874         1964         573         542           Total Disloved Solid (TDS)         mg/L         11.9         12.4         3.9         2.8           Biological Oxygen Demand (BOD3 day, at 27 OC)         mg/L         71         67         26         27           Chemical Oxygen Demand (BOD3 day, mg/L         mg/L         352         327         101         129           Maganese (Mn)         mg/L         797.0         821.0         119.0         124.0           Chloride (CI)         mg/L         797.0         821.0         119.0         124.0           Chloride (CI)         mg/L         797.0         821.0         119.0         124.0           Phd         mg/L         797.0         821.0         119.0         124.0           Fotal Disloved Solid (TDS)         mg/L         348         298         58         49           Total Suspended Solid (TDS)         mg/L         13.6         13.0         114.0           Biological Oxygen Demand (BOD3 day, mg/L         mg/L         13.4         24         22           Chemical Oxygen Deman	-	рн		6.91	6.87	7.12	7.26	5.5-9.0	APHA-4500-H+
Total Disloved Solid (TDS)         mg/L         1874         1964         573         542           Oil & Greses (O&G)         mg/L         11.9         12.4         3.9         2.8           Biological Oxygen Demand (BOD3 day, at 27 OC)         mg/L         71         67         26         27           Chemical Oxygen Demand (BOD3 day, mg/L         mg/L         352         327         101         129           Maganese (Mn)         mg/L         797.0         821.0         119.0         124.0           Chloride (CI)         mg/L         797.0         821.0         119.0         124.0           Chloride (CI)         mg/L         797.0         821.0         119.0         124.0           Chloride (CI)         mg/L         797.0         821.0         119.0         124.0           Parameter         Unit         inlet Result         0.000	7	Total Suspended Solid (TSS)	mg/L	594	541	53	47	100 mg/l	APHA-2540-B
Oil & Gress (O&G)         mg/L         11.9         12.4         3.9         2.8           Biological Oxygen Demand (BOD3 day, at 27 OC)         mg/L         71         67         26         27           Chemical Oxygen Demand (BOD3 day, at 27 OC)         mg/L         352         327         101         129           Maganese (Mn)         mg/L         797.0         821.0         119.0         124.0           Chloride (CI)         mg/L         797.0         821.0         119.0         124.0           At 20 (Mi)         mg/L         348         298         6.74         7.36         7.33           At 21 (Mis Greses (O&G)         mg/L         1746         1546         568         59         49           At 27 OC)         mg/L         13.0         10.5         4.1         3.5         A           Abordacical Oxygen Demand (BOD3 day, mg/L         mg/L         612.0         310.0         N.D <td>m</td> <td>Total Disloved Solid (TDS)</td> <td>mg/L</td> <td>1874</td> <td>1964</td> <td>573</td> <td>542</td> <td>Not Specified</td> <td>APHA-2540-C</td>	m	Total Disloved Solid (TDS)	mg/L	1874	1964	573	542	Not Specified	APHA-2540-C
Singlogical Oxygen Demand (BOD3 day, mg/L 352 327 101 129	4	Oil & Greses (O&G)	mg/L	11.9	12.4	3.9	2.8	10 mg/l	APHA-5520-C
Chemical Oxygen Demand         mg/L         352         327         101         129           Maganese (Mn)         mg/L         N.D         N.D         N.D         N.D           Chloride (Cl)         mg/L         797.0         821.0         119.0         124.0           Chloride (Cl)         January-23         January-23         January-23         January-23           PATAIR Suspended Colld (TSS)         Unit         Inlet Result         Outlet Result         Outlet Result           PATAIR Suspended Solid (TSS)         mg/L         348         5.36         5.33         7.33           Total Disloved Solid (TDS)         mg/L         13.46         5.68         5.32         7.33           Biological Oxygen Demand (BOD3 day, mg/L         mg/L         13.0         10.5         4.1         3.5           Chemical Oxygen Demand (BOD3 day, mg/L         mg/L         612.0         310.0         N.D         N.D           Chemical Oxygen Demand (M)         mg/L         N.D         N.D         N.D         N.D	N)	Biological Oxygen Demand (BOD3 day, at 27 0C)	mg/L	77	19	26	27	30 mg/l	APHA-5210-B
Maganese (Mn)         mg/L         N.D         N.D         N.D         N.D           Chloride (Cl)         mg/L         797.0         821.0         119.0         124.0           Chloride (Cl)         January-23           January-	9	Chemical Oxygen Demand	mg/L	352	327	101	129	250 mg/l	APHA-5220-8
Chloride (CI)         mg/L         797.0         821.0         119.0         124.0           January-23           pH         Co.01.2023         16.01.2023         16.01.2023           pH         mg/L         348         298         58         49           Total Disloved Solid (TDS)         mg/L         1746         1546         568         532           Biological Oxygen Demand (80D3 day, mg/L         mg/L         13.0         10.5         4.1         3.5           Chemical Oxygen Demand (80D3 day, mg/L         mg/L         612.0         310.0         N.D         N.D           Maganese (Mn)         mg/L         N.D         N.D         N.D         N.D	7	Maganese (Mn)	mg/L	N.D	N.D	N.D	N.D	2 mg/l	APHA-3111 (B)
January-23           Parameter         Unit         Inlet Result         Outlet Result           pH         02.01.2023         16.01.2023         16.01.2023           pH	00	Chloride (CI)	mg/L	797.0	821.0	119.0	124.0	Not Specified	APHA -4500 (CI)
Parameter         Unit         Inlet Result         Outlet Result           PH         02.01.2023         16.01.2023         16.01.2023         16.01.2023           PH         02.01.2023         16.01.2023         16.01.2023         16.01.2023           PH         mg/L         348         298         58         49           Total Disloved Solid (TDS)         mg/L         1746         1546         568         532           Oll & Greses (O&G)         mg/L         13.0         10.5         4.1         3.5           Biological Oxygen Demand (BOD3 day, at 27 0C)         mg/L         13.0         10.5         4.1         3.5           Chemical Oxygen Demand         mg/L         612.0         310.0         120.0         114.0           Maganese (Mn)         mg/L         N.D         N.D         N.D         N.D					January-23				
pH         02.01.2023         16.01.2023         16.01.2023         16.01.2023           pH         mg/L         6.98         6.74         7.36         7.33           Total Suspended Solid (TSS)         mg/L         1746         1546         58         49           Total Disloved Solid (TDS)         mg/L         1746         1546         568         532           Oli & Greses (O&G)         mg/L         13.0         10.5         4.1         3.5           Biological Oxygen Demand (BOD3 day, at 27 OC)         mg/L         92         54         24         22           Chemical Oxygen Demand (BOD3 mg/L)         mg/L         612.0         310.0         120.0         114.0           Maganese (Mn)         mg/L         N.D         N.D         N.D         N.D	I. N		Unit	Inlet	Result	Outlet	Result	Canada (epen)	
pH         6.98         6.74         7.36         7.33           Total Suspended Solid (TSS)         mg/L         348         298         58         49           Total Disloved Solid (TDS)         mg/L         1746         1546         568         532           Oil & Greses (O&G)         mg/L         13.0         10.5         4.1         3.5           Biological Oxygen Demand (BOD3 day, at 27 0C)         mg/L         92         54         24         22           Chemical Oxygen Demand mg/L         mg/L         612.0         310.0         120.0         114.0           Maganese (Mn)         mg/L         N.D         N.D         N.D         N.D				02.01.2023	16.01.2023	02.01.2023	16.01.2023	standards (CPCB)	Protocoal
Total Suspended Solid (TDS)         mg/L         1746         298         58         49           Total Disloved Solid (TDS)         mg/L         1746         1546         568         532           Oil & Greses (O&G)         mg/L         13.0         10.5         4.1         3.5           Biological Oxygen Demand (BOD3 day, at 27 0C)         mg/L         92         54         24         22           Chemical Oxygen Demand mg/L         mg/L         612.0         310.0         120.0         114.0           Maganese (Mn)         mg/L         N.D         N.D         N.D         N.D	н	рН	*******	86'9	6.74	7.36	7.33	5.5-9.0	APHA-4500-H+
Total Disloved Solid (TDS)         mg/L         1746         1546         568         532           Oli & Greses (O&G)         mg/L         13.0         10.5         4.1         3.5           Biological Oxygen Demand (BOD3 day, at 27 0C)         mg/L         92         54         24         22           Chemical Oxygen Demand (Maganese (Mn))         mg/L         612.0         310.0         120.0         114.0           Chickles (CI)         mg/L         N.D         N.D         N.D         N.D	2	Total Suspended Solid (TSS)	mg/L	348	298	58	49	1/2m 001	APHA-2540-B
Oil & Greses (O&G)         mg/L         13.0         10.5         4.1         3.5           Biological Oxygen Demand (BOD3 day, at 27 0C)         mg/L         92         54         24         22           Chemical Oxygen Demand (Maganese (Mn))         mg/L         612.0         310.0         120.0         114.0           Chieddoctil         mg/L         N.D         N.D         N.D         N.D	m	Total Disloved Solid (TDS)	mg/L	1746	1546	568	532	Not Specified	APHA-2540-C
Biological Oxygen Demand (BOD3 day, mg/L 92 54 24 22	4	Oil & Greses (O&G)	mg/L	13.0	10.5	4.1	3.5	10 mg/l	APHA-5520-C
Chemical Oxygen Demand         mg/L         612.0         310.0         120.0         114.0           Maganese (Mn)         mg/L         N.D         N.D         N.D         N.D	w	Biological Oxygen Demand (BOD3 day, at 27 0C)	mg/L	92	54	24	22	30 mg/l	APHA-5210-8
Maganese (Mn) mg/L N.D N.D N.D N.D	9	Chemical Oxygen Demand	mg/L	612.0	310.0	120.0	114.0	250 mg/l	APHA-5220-8
Chlorida (Cil)	-	Maganese (Mn)	mg/L	N.D	N.D	N.D	N.D	2 mg/l	APHA-3111 (B)
Children (U) 124.0 124.0 138.0	00	Chloride (CI)	mg/L	812.0	762.0	124.0	138.0	Not Specified	APHA -4500 (CI)

नवीन कुमार / NAVIN KUMAR एव वहारकाक (क्वारण कवन) (DGM (ENVT MGMT.) (मध्येती क्वार्यक (क्वार) ATPC Limited कोवल काम प्रियेकको (COAL MANNG PROJECTS हजारीवान / Hazaribag

				December-22	2			
SI. No.	Parameter	Unit	Inlet Result	esult	Outlet	Outlet Result	to a tenant	
			01.12.2022	16.12.2022	01.12.2022	16.12.2022	Standards (CPCB)	Protocoal
	pH Hq	*******	6.95	6.93	7.43	7.34	5.5-9.0	APHA-4500-H+
	Total Suspended Solid (TSS)	mg/L	567.0	543.0	78.0	0'69	100 mg/l	APHA-2540-8
	Total Disloved Solid (TDS)	mg/L	1849.0	1873.0	461.0	449.0	Not Specified	APHA-2540-C
(8)	Oil & Greses (O&G)	mg/L	11.3	11.7	2.8	2.2	10 mg/l	APHA-5520-C
N)	Biological Oxygen Demand (BOD3 day, at 27 0C)	mg/L	57.0	65.0	27.0	28.0	30 mg/l	APHA-5210-B
9	Chemical Oxygen Demand	mg/L	220.6	256.1	107.7	113.1	250 mg/l	APHA-5220-B
7	Maganese (Mn)	mg/L	N.D	N.D	N.D	N.D	2 mg/l	APHA-3111 (B)
00	Chloride (CI)	mg/L	827.0	836.0	167.0	174.0	Not Specified	APHA -4500 (CI)
				November-22	2			
SI. No.	Parameter	Unit	Inlet Result	esult	Outlet	Outlet Result		
			01.11.2022	15.11.2022	01.11.2022	15.11.2022	Standards (CPCB)	Protocoal
9	pH Hq	40000	6.88	6.92	7.22	7.16	5.5-9.0	APHA-4500-H+
2	Total Suspended Solid (TSS)	mg/L	584	561	78	69	100 mg/l	APHA-2540-B
m	Total Disloved Solid (TDS)	mg/L	1904	1896	478	459	Not Specified	APHA-2540-C
	Oil & Greses (O&G)	mg/L	11.5	12.2	3.1	2.4	10 mg/l	APHA-5520-C
5	Biological Oxygen Demand (BOD3 day, at 27 0C)	mg/L	49	55	28	53	30 mg/l	APHA-5210-B
	Chemical Oxygen Demand	mg/L	207	241	122	135	250 mg/l	APHA-5220-8
7	Maganese (Mn)	mg/L	O.N	N.D	N.D	N.D	2 mg/l	APHA-3111 (B)
8	Chloride (Ci)	mg/L	827.0	836.0	174.0	191.0	Not Specified	APHA -4500 (CI)
		35		October-22	72.6			
SI. No.	Parameter	Unit	Inlet Result	lesult	Outlet	Outlet Result	Tone 1 1 Constant	
			01.10.2022	15.10.2022	01.10.2022	15.10.2022	standards (CPCB)	Protocoal
	, Hd	******	6.83	6.97	7.19	7.15	5.5-9.0	APHA-4500-H+
2	Total Suspended Solid (TSS)	mg/L	592	578	29	72	100 mg/l	APHA-2540-B
	Total Disloved Solid (TDS)	mg/L	1896	1933	469	485	Not Specified	APHA-2540-C
	Oil & Greses (O&G)	mg/L	11.2	11.7	2.5	2.7	10 mg/l	APHA-5520-C
S	Biological Oxygen Demand (BOD3 day, at 27 0C)	mg/L	34	43	26	72	30 mg/l	APHA-5210-B
9	Chemical Oxygen Demand	mg/L	167	208	125	135	250 mg/l	APHA-5220-B
	Maganese (Mn)	mg/L	N.D	O'N	N.D	N.D	2 mg/l	APHA-3111 (B)
00	Chloride (CI)	mg/L	834.0	852.0	183.0	197.0	Not Specified	APHA -4500 (CI)

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				AKRI BARWADIH COAL MINING PROJECT, TPC LIMITED, HAZARIBAGH , JHARKHAND	
				TION / DISTRIBUTION DONE BY NTPC	LTD
SI No	Year	No of plants planted / Distributed	Cum no. of plants	Location	Remarks
1	2008	200	200	Inside Site Office, Barkagaon	Misc shady plants
2	2010	70	270	Rani talab, Budua mahadev mandir	Mango plants
3	2010	200	470	Distributed to villagers	Fruit bearing plants
4	2011	125	595	Distributed to villagers	Fruit bearing plants
5	2012	225	820	Distributed to villagers	Fruit bearing plants
6	2012	130	950	Plantation at Vinobha bhave university	Shady plants
7	2013	480	1430	Distributed to villagers	fruit bearing and shady plants
8	2013	40	1470	Infront of site office, barkagaon	Casurina, Bottle plam
9	2013	30	1500	on the bund barka ahar	pakribarwadih
10	2013	25	1525	Ramsagra talab , back of site office	Barkagaon
11	2014	300	1825	Distribution	
12	2015	118	1943	m	
13	2015	30	1973	Site office, barkagaon	Kanel , bouganvilia
14	2015	90	2063	Utkramith madya vidyalay, kusumbha	Kanel , bouganvilia
15	2015	220	2283	Chhath talab, hazaribagh	
16	2015	417	2700	Distributed to villagers	Shady plants
17	2013	1000	3700	Distributed to villagers	Shady and fruit bearing plants
17		1000	3700	In and around langathu site office and approach	snady and from bearing plants
18	2016	4500	8200	road	Shady plants through MDO
19	2017	690	8890	In and around Sikri township and langathu site office	On 05.06.17, 09.06.17, Misc shady an fruit bearing plants
20	2017	5000	13890	In and around Hazaribagh, Neem , Karanj, Jamun , Kathal,	Distributed through SDM, Hazaribagh in and around Hazaribagh on 17.06.17
21	2017	800	14690	In Village Langathu at the vacant place, Gulmohar, Neem, Arjun, Karanj, Imli, Jamun, Kathal, Amrud	Involving the villagers of Langathu on 20.06.17
22	2017	500	15190	In Village Langathu at the vacant place, Gulmohar, Neem, Arjun, Karanj, Imli, Jamun, Kathal, Amrud	Involving the employees on 21.06.17
23	2017	580	15770	In Village Langathu at the vacant place, Gulmohar, Neem, Arjun, Karanj, Imli, Jamun, Kathal, Amrud	Involving the employees on 22.06.17
24	2017	150	15920	Plantation at SSB Camp, Nagari , Neem and Karanj	Involving the SSB security Personnnel
25	2017	1550	17470	For plantation in and around Hazaribagh, Neem , Karanj, Jamun , Kathal,	Distributed through DFO, Hazaribagh West Forest Division in and around Hazaribagh on 13.07.17
26	2017	2500	19970	In Village Langathu at the vacant place, Gulmohar, Neem, Arjun, Karanj, Imli, Jamun, Kathal, Amrud	On 15.07.17 during Van Mahotsav involving villagers and employees
27	2017	500	20470	Plantation along the dividers, sides of the haul road, Kanel	At the mining premise
28	2017	935	21405	Plantation near the top soil dump	At the mining premise on topsoil dump along with the grass seeding
29	2017	1000 Kg	-	Mixed Grass seeding on the top soil dump	At the Mine
30	2017	260	21665	In Village Arahara near the dump, garfand drain and fencing, Mine approach. Gulmohar, Neem, Arjun, Karanj,	On 17.07.17 during Van Mahotsav involving villagers and employees
31	2017	2450	24115	In Village Arahara at the vacant place, Gulmohar, Neem, Arjun, Karanj, Jamun, Kathal.	Mix Plantation

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SI No	Year	No of plants planted / Distributed	Cum no. of plants	Location	Remarks
32	2017	1150	25265	In the village Devaria Khurd, on the edge of Khora Nala, Neem, Arjun, Karanj, Jamun, Gulmohar	Block Plantation near Khora Nalla
33	2017	450	25715	In the village Arahara, on the edge of Khora Nala, Neem, Arjun, Karanj, Jamun, Gulmohar	Mix Plantation
34	2017	1300	27015	On the Dump Slope, Neem, Arjun, Karanj, Jamun, Gulmohar	Mix Plantation
35	2017	845	27860	In the village Devaria Khurd, on the edge of Khora Nala, Neem, Arjun, Karanj, Jamun, Gulmohar	Mix Plantation
36	2017	935	28795	Dispatch Road on the edge of Khora Nala, Neem, Arjun, Karanj, Jamun, Gulmohar	Mix Plantation
37	2018	2000	30795	Hazaribag, Jharkhand	Misc shady plants
38	2018	200	30995	GDM Girls High School	Misc shady plants
39	2018	250	31245	Middle School, Sonbarsa	Flower & Shady plants
40	2018	7500	38745	Safety Zone Plantation - Deworia Village, Urub Village	Misc shady plants
41	2018	3750	42495	Along the Pakwa Nala - East Quarry	Mix Plantation
42	2018	8750	51245	Near Sikri township, East Quarry dump area, langathu office.	Misc shady plants
43	2019	25500	76745	OB Dump*C* Slope	Misc shady plants
44	2019	520	77265	Along the dispatch Raod (Langatu to Substation)	
45	2019	2000	79265	Vacant land, Sonbarsa Village, Near Nursery	Misc shady plants
46	2019	8500	87765	Safety Zone Plantation - Deworia Village, Urub Village	Misc shady plants
47	2019	6200	93965	Dump*D* Slope East Quarry	Misc shady plants
48	2019	3200	97165	Plantation Program in Township area, Sikri	Misc shady plants
49	2019	1000	98165	R&R Colony	Misc shady plants
50	2019	2200	100365	Along the Pakwa Nala - East Quarry	Misc shady plants
51	2019	300	100665	Distributed to villagers and School	Misc shady plants
53	2019	500	101165	Gandhi Maidan, Matwari, Hazaribagh	Misc shady plants
54	2019	1080	102245	Banadag Railway Siding	Misc shady plants
-	-			Cartes and the control of the contro	
55	2020	14766 24340	117011	Along the Nallah Side (Embankment)	Misc shady plants Misc shady plants
	2.550		*****	OB Dump "C" Slope OB Dump "C" Surface	Misc shady plants
58	2020	400	144121	OB Dump "C" Surface Banadag Railway Siding	Misc shady plants
60	2020	160	144681	Along the dispatch Raod (Sonbarsa village to Langatu)	Misc shady plants
61	2021	9065	153746	Along the Lathorwa Nala	Misc shady plants
62	2021	54763	208509	OB Dump *C* Slope	Misc shady plants
63	2021	3437	211946	OB Dump "C" Surface	Misc shady plants
64	2021	1630	213576	Along the Pakwa Nala	Misc shady plants
65	2021	2204	215780	In and around Sikri township	Misc shady plants
66	2021	3018	218798	the state of the s	Misc shady plants
67	2021	142	218940	Langatu)	Misc shady plants
68	2021	5735	224675	Lathorwa Nala	Misc shady plants
69	2021	575	THE RESERVE OF THE PERSON NAMED IN COLUMN 1	- Control of the Cont	Misc shady plants
70	2022	13175			Misc shady plants
71	2022	100	238525	and a final color of the color factors and other annual color field from the color factors and the color facto	Fruity & shady plants
72	2022	1620	2000	Along the northern sides of main approach	Misc shady plants Misc shady plants
73	2022	3720	243865	road, Conveyor Line	Musc sharry plants

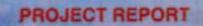
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NTPC LIMITED Detail of ESCROW deposits for the FY 2022-33:

				FY 2022-23			
Unitrastic	No an on 01.04.2022	Deput	Reinflusioner	Withdrawal (If any)	Bitment	108	Bits art on \$1,05,2023
NTPC Limited Pulm Sansadth CMP	43,17,13,380.72	7,60,00,000,00			1587529108	15.89 564.00	C 16 66 609 79
NTPC Limited Dulanga CMP	17,21,06,946.76	3.67,00,000,00			64 40 004 08	6.64.013.00	31 AE OR ONE SA
NTPC Limited Talaquili CMP	19,79,11,869,88	4,11,08,000,00		4	25,51,015,34	7 55 108.00	34 68 16 377 13
NTPC Limited Chatti Baratu CMP	2,74,90,392,00	2.88.00.000.00			19.55.043.47	1.05 506.00	C 95 30 G9 G9
Total	82,42,12,569,36	18,75,08,000,00	The second		NAME OF SECOND	THE REAL PROPERTY.	THE RESERVE AND THE PARTY OF

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SATELLITE IMAGE & DIGITIZATION FOR LAND USE LAND
COVER PRE AND POST MINING FOR YEAR 2019 & 2022 AT
PAKRI BARWADI COAL MINING PROJECT NTPC (PBCMP)
HAZARIBAGH, JHARKHAND







DR. AJAY KUMAR SINGH

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Department of Forestry, Wildlife & Environmental Sciences
Guru Ghasidas Vishwavidyalaya (A Central University)

Bilaspur, Chhattisgarh

Satellite Image & Digitization for Land Use Land Cover
Pre and Post Mining for Year 2019 & 2022 at
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Hazaribagh, Jharkhand

A Consultancy Project Report 2022



By Dr. Ajay Kumar Singh Assistant Professor

Department of Forestry, Wildlife & Environmental Sciences
Guru Ghasidas Vishwavidyalaya
(A Central University) Bilaspur, Chhattisgarh

नवीन कुमार / NAVIN KUMAR का बातकाक (पर्यक्त कार्य) DGM (ENVT MCMT) (प्रश्रीकी निविदेश NTPC Limited कोवल स्थन परिवेजनाई/ COAL MINING PROJECTS हजारीबाग / Hazaribag

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Satellite Image & Digitization for Land Use Land Cover Pre and Post Mining for Year 2019 & 2022 at Pakri

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Jharkhand

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## Introduction

### Coal Mining

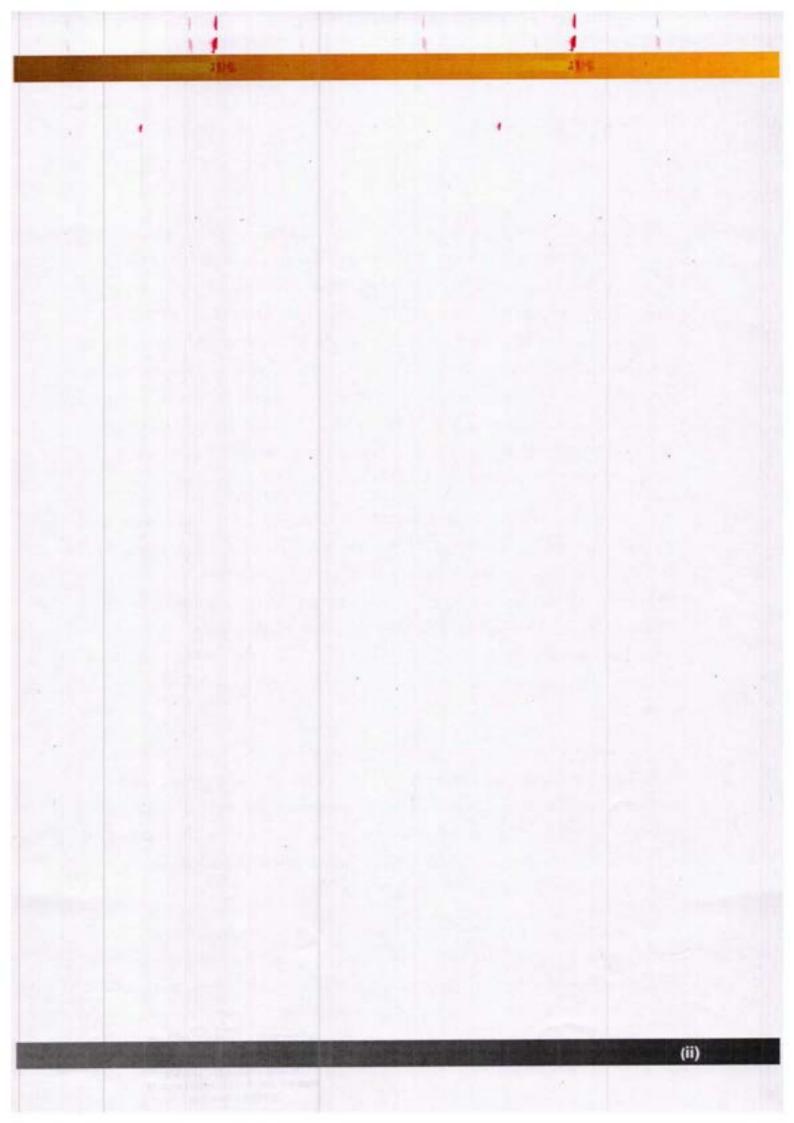
Coal is the most important and abundant fossil fuel in India. It accounts for 55% of the country's energy need. The country's industrial heritage was built upon indigenous coal. Commercial primary energy consumption in India has grown by about 700% in the last four decades. The current per capita commercial primary energy consumption in India is about 350 kgoe/year, which is well below that of developed countries. Energy use in India is anticipated to increase as a result of the country's booming economy, growing population, and desire for a better quality of life. Coal will continue to play a major role in India's energy picture due to the low reserve potentiality of petroleum and natural gas, eco-conservation restrictions on hydropower projects, and the geopolitical perspective of nuclear power.

Being an affordable source of energy with substantial reserve, coal is going to stay as major source of energy in the foreseeable future. Despite push for renewables, country will require base load capacity of coal-based generation for stability and also for energy security. Coal is also used as an intermediary by many industries such as steel, sponge iron, cement, paper, brick-kilns etc. Similarly, with increase in growth of industries using coal, their demand for coal has also been increasing; hence, there has been an overall increase in the demand of coal over the years.

Indian coal offers a unique eco-friendly fuel source to domestic energy market for the next century and beyond. Hard coal deposit spread over 27 major coalfields, are mainly confined to eastern and south central parts of the country. The Geological Survey of India estimates that the potential coal reserves of India are dispersed in the patches covering around 42,953 sq. km out of which about 32% of the coal reserves fall within Chhattisgarh, Jharkhand and Odisha.

As a developing country, the energy requirement in India is increasing day by day and the coal mining industries are eventually increasing their production to meet the requirement of energy production through thermal power plants, where coal is used for generation of electricity. There is no doubt that the coal mining expansion

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benefits the local GDP significantly, but also causes environmental degradation and destroy original ecosystem balance due to the destruction of original land cover types. Mining area caused a great deal of changes in landscape structure and enormous environmental disturbances, among them open-pit coal mine is one of the greatest landscape altering activities, and it's difficult to restore surface coal mine to the original ecological landscape. In this context, it is essential to scrutinize the effect of mining on land use land cover change to minimize its impact on environment as well as for proper land management and decision making.

In view of the urgent need of creating the geo-environmental database of coalfields for monitoring the impact of coal mining on land use and land cover, M/s Pakri Barwadi Coal Mining Project NTPC (PBCMP) Hazaribag, Jharkhand directed Guru Ghasidas Viashwavidyalaya, Bilaspur to take up the study through the techniques of Remote Sensing.

## Land Use Land Cover Change

Change detection is the process of identifying differences in the state of an object or phenomenon by observing it at different times. The earth's surface changes are divided into two categories i.e. land use and land cover (LULC). The term land use stands for the purpose for which the specific piece of land is used for e.g. agriculture, urbanization, mining, etc. The term land cover stands for the features which are present on the earth's surface for e.g. buildings, pavement, trees etc.

From environmental point of view, the dynamic process of land use/land cover change is an indispensable concern all over the world, which indicates global environmental change and this has been recount as the most remarkable regional anthropogenic disruption of environment. Although land is the natural resource of utmost importance and original source of all material wealth of human being, the mining of natural resources is invariably associated with land use land cover changes. Modern techniques of mining using heavy equipment can produce dramatic alternations in land cover, both ecologically and hydrologically. Further mining activities result in change of topography and drainage pattern and principal environmental impact comes out as physical disturbance such as landscape change and degradation, soil erosion and degradation and general environmental changes.

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Land use and land cover (LULC) is one of the major factor which is a combination of natural and human-induced phenomenon controlled by the physicochemical aspects of the terrain and anthropogenic activity. Spatial pattern of LULC of an area indicates the nature of terrain setting, gradient, human activity and climate. Its occurrence and spread reflect the geological condition of an area, degree of evolution of landforms due to the process of weathering and denudation, soil composition, slope aspect, availability of water resources besides amount of rainfall. The combination of these factors is reflected by the presence of LULC exhibited in the form of different land cover classes. Since LULC is the external reflection of the internal setting of terrain, any change in its pattern may be attributed to certain deviation in the above parameters and would have impact on the local environment.

The study of LULC is essential to determine the natural resources, land capability reflecting limitations of terrain condition and to understand the sustainable capacity of an area. Disturbance in the surface objects or LULC brought on by industrial, infrastructure, mining, and related development activities may always have an impact on the environment. Periodic monitoring of LULC nearby is necessary to determine the extent of such influence and their effect on the environment. For this purpose, the usefulness of remote sensing satellite image (RSI) is well recognised. Because of the nature of synoptic view, repetitive coverage under uniform illumination, and temporal RSI data help in extracting significant information about LULC at a periodical interval. The interpretation of the RSI to generate information of LULC could be transformed into a geo-referenced spatial database using Geographic Information System (GIS). This helps in understanding the spatial distribution and scope of LULC categories.

Acquiring timely remote sensing data and application of GIS technology are very useful to observe and analyze the periodical changes of land forms and land cover and thus these two technologies together perform a multifaceted and cost effective way for LULC change study. The space borne imagery helps in assessing and monitoring the environmental impacts due to its synaptic and repetitive coverage and this tool is very useful for cost effective decision making. Usually, the most standard method used for land use land cover change detection is the post classification comparison method, which entails the comparison of independently नवीन कुमार I NAVIN KUMAR produced classified images.

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## Objective

The objective of the present study is to prepare a regional land use and land cover map of Pakri Barwadi Coal Mining Project NTPC (PBCMP) Hazaribag, Jharkhand on 1:50,000 scale based on IRS R2 LISS-IV satellite data of the year 2022, using digital image processing technique for accessing the impact of coal mining and associated industrial activities on the land use/ land cover in the coalfield area with respect to the earlier study carried out in the year 2019.

### Study area

The Pakri Barwadih Coal Block is located in the North Eastern part of North Karanpura Coalfields. Its Longitudes 85°10' E to 85°15' E and Latitude 23°51'30" N to 23°55'30" N and is under the Survey of India Toposheet No. 73E/1 & 73E/5 (R.f 1:50000). The coal block has been allocated to NTPC Limited by Government of India, Ministry of Coal, New Delhi in 2004 for Captive Coal Mining. The total project area is 33194.20 sq. km and the rated capacity of the mine is 15 MTPA. The notice of mine opening was given in May 2016 but active mines operations have started from December 2016.

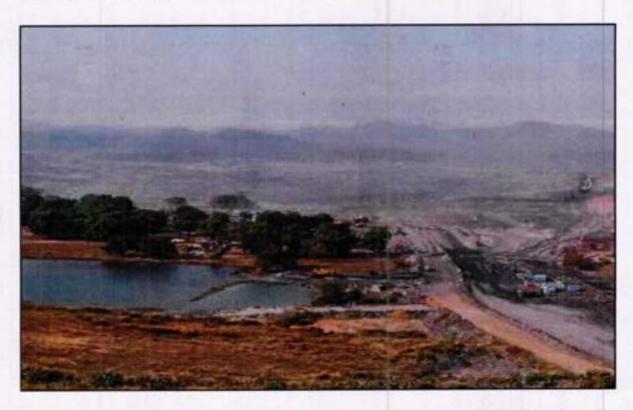


Figure 1 - Study site of Pakri Barwadi Coal Mining Project NTPC (PBCMP)

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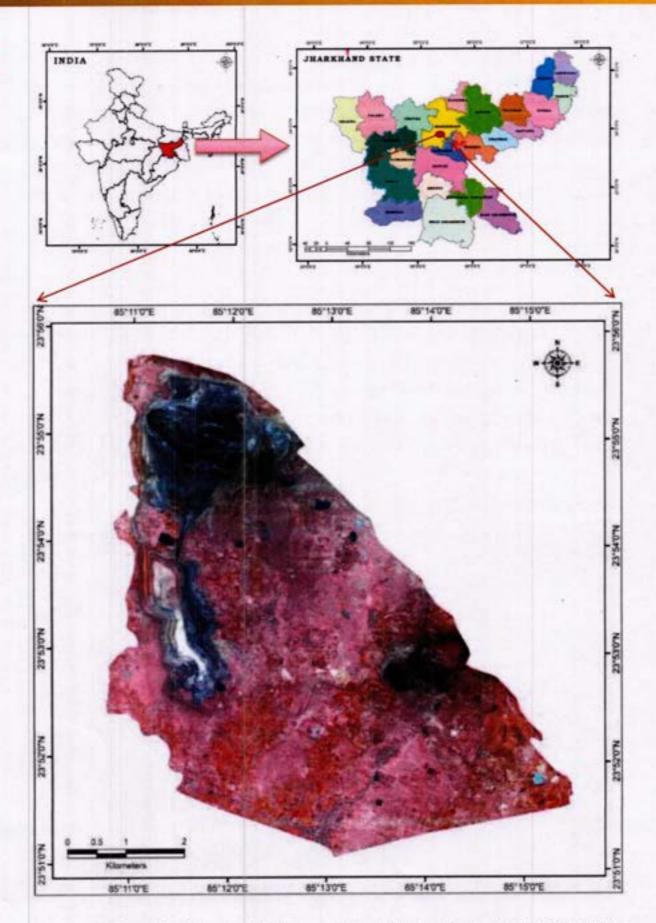


Figure 2 - Location Map of Pakri Barwadi Coal Mining Project NTPC (PBCMP)

The terrain of the study area is mountainous and hilly with scattered plains and valleys. The hard rock terrain is often covered with wooded area of varying density with multitudes of flora and fauna. Such floral distribution gives rise to mixed forest cover of varying density of vegetation cover such as dense, sparse, open and degraded forest. The altitude of the area ranges around 430 m above MSL near the plains and around 560 m above MSL in the hilly region. These varying altitudes provide environment for growth of scrubs, shrubs, climbers and tall trees such as Palas, Pipal, Kend, Sal, Jamun, Ghorneem, Arjun, Mahua, Babul, Teak, Bel and Mango. Similarly shrubs such as Sisal, Satawar, Ber, Calotropis and Amarbel climbers are reported from the study area along with Bamboo and Munj. This vegetative cover may be thin and degraded in some places either naturally or due to anthropogenic activity which may cause some degradation in the forest cover. Similarly, many trees stand as isolated groves or in singles are also seen. Plains in the study area encompass vast tracts of agricultural land.

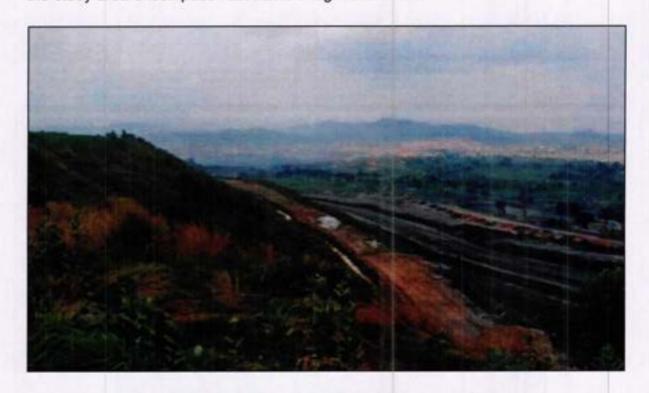


Figure 3 – Topography of the Study area

There are number of villages present in the 10 Km buffer range of the mining area named: Kadwa, Garri Kalan, Patra Kalan, Badam, Langatu, Chepa khurd, Chepa Kalan, Pakri Balwadih, Sinduari, Sirma, Jugra and Barkagaon. There is no major town in the buffer area and among these villages Barkagaon is relatively a

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larger settlement. The buffer area is drained by few first order seasonal streams and some nalas such as Lathorwa nala, Pakwa nala are seen. Higher order streams such as river Hendraj, river Ghagra and river Horhori are observed within the study area.

Climate in the study area enjoys tropical to sub-tropical with monsoon - southwest monsoon and northeast monsoon - summer and winter climatic periods. The Southwest monsoon is the most predominant period contributing major precipitation (nearly 80%) in the study area recording an average rainfall of 1200 mm. The summer period extends from March to mid-June recording temperature as high as 41°C and winter the lowest temperature varies in the range of 11°C to 4°C.

Geomorphologically, the study area is predominated with structural hills, buried pediments, residual hills, pediment, intermontane valley, plains and erosional surface. Since landform is intrinsically related to soil, slope and drainage, it has an effective influence on the LULC of the study area. Because of such intrinsic nature any disturbance in the terrain is reflected on LULC pattern and the impact of such disturbances could be inferred, especially in the case of mining activities.

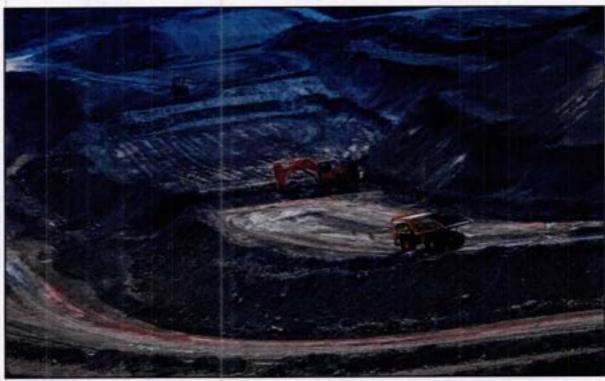


Figure 4 - Mining Activities in the Study area

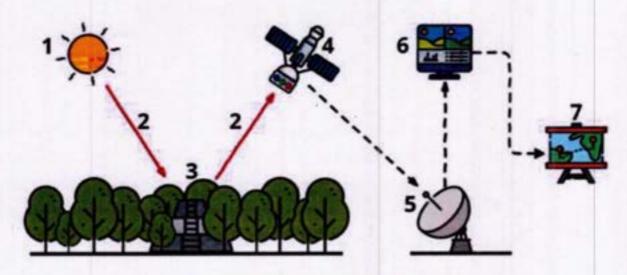
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# Remote Sensing Concepts and Methodology

### Remote Sensing

Remote sensing is the science and art of obtaining information about an object or area through the analysis of data acquired by a device that is not in physical contact with the object or area under investigation. The term remote sensing is commonly restricted to methods that employ electro-magnetic energy (such as light, heat and radio waves) as the means of detecting and measuring object characteristics.

All physical objects on the earth surface continuously emit electromagnetic radiation because of the oscillations of their atomic particles. Remote sensing is largely concerned with the measurement of electro-magnetic energy from the Sun, which is reflected, scattered or emitted by the objects on the surface of the earth. Figure - 5 schematically illustrate the generalised processes involved in electromagnetic remote sensing of the earth resources.



#### Elements Involved in Remote Sensing:

- 1. Energy Source or Illumination
- 2. Radiation and the Atmosphere
- 3. Interaction with the Object
- 4. Recording of Energy by the Sensor
- 5. Transmission, Reception and Processing
- 6. Interpretation and Analysis
- 7. Application

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Figure 5 – General process of Remote Sensing

## **Electromagnetic Radiation Spectrum**

The electromagnetic radiation (EMR) spectrum is the continuum of energy that ranges from meters to nanometres in wavelength and travels at the speed of light. Different objects on the earth surface reflect different amounts of energy in various wavelengths of the EM spectrum.

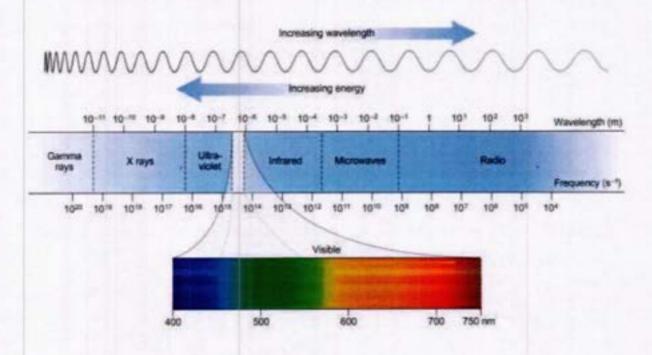


Figure 6 - Electromagnetic Radiation Spectrum

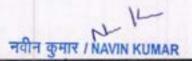
Figure - 6 shows the electromagnetic spectrum, which is divided on the basis of wavelength into different regions that are described in Table - 1. The EM spectrum ranges from the very short wavelengths of the gamma-ray region to the long wavelengths of the radio region. The visible region (0.4 - 0.7 μm wavelengths) occupies only a small portion of the entire EM spectrum.

Energy reflected from the objects on the surface of the earth is recorded as a function of wavelength. During daytime, the maximum amount of energy is reflected at 0.5 µm wavelengths, which corresponds to the green band of the visible region, and is called the reflected energy peak. The earth also radiates energy both day and night, with the maximum energy 9.7 µm wavelength. This radiant energy peak occurs in the thermal band of the IR region.

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Table 1 - Electromagnetic spectral regions

Region	15	Wav	elength		Remarks
Gamma ray		<	0.03	nm	Incoming radiation is completely absorbed by the upper atmosphere and is no available for remote sensing.
X-ray	0.03	to	3.00	nm	Completely absorbed by atmosphere. Not employed in remote sensing.
Ultraviolet	0.03	to	0.40	μm	Incoming wavelengths less than 0.3mm are completely absorbed by Ozone in the upper atmosphere.
Photographic UV band	0.30	to	0.40	μm	Transmitted through atmosphere Detectable with film and photo detectors but atmospheric scattering is severe.
Visible	0.40	to	0.70	μm	Imaged with film and photo detectors. Includes reflected energy peak of earth at 0.5mm.
Infrared	0.70	to	100.00	μm	Interaction with matter varies with wavelength. Absorption bands separate atmospheric transmission windows.
Reflected IR band	0.70	to	3.00	μm	Reflected solar radiation that contains no information about thermal properties of materials. The band from 0.7-0.9mm is detectable with film and is called the photographic IR band.
Thermal IR band	3.00 8.00	to	5.00 14.00	μm μm	Principal atmospheric windows in the thermal region. Images at these wavelengths are acquired by optical- mechanical scanners and special vediocon systems but not by film.
Microwave	0.10	to	30.00	cm	Longer wavelengths can penetrate clouds, fog and rain. Images may be acquired in the active or passive mode.
Radar	0.10	to	30.00	cm	Active form of microwave remote sensing. Radar images are acquired at various wavelength bands.
Radio		>	30.00	cm	Longest wavelength portion of electromagnetic spectrum. Some classified radars with very long wavelength operate in this region.



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The earth's atmosphere absorbs energy in the gamma-ray, X-ray and most of the ultraviolet (UV) region; therefore, these regions are not used for remote sensing. Wavelength regions with high transmission are called atmospheric windows and are used to acquire remote sensing data. The general reflection spectrum of some earth surface objects is shown in Figure - 7. Detection and measurement of the recorded energy enables identification of surface objects (by their characteristic wavelength patterns or spectral signatures), both from air-borne and space-borne platforms.

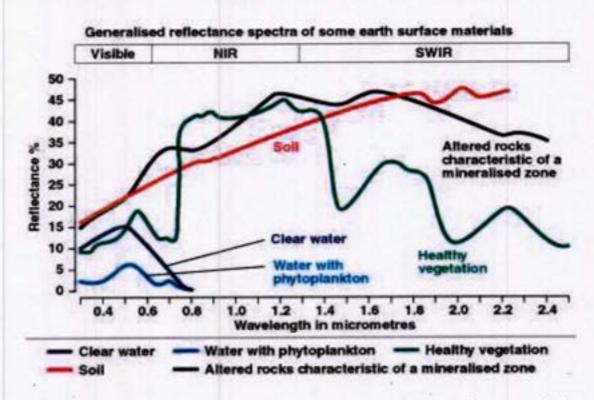


Figure 7 – General reflectance spectrum of some earth surface materials

### Scanning System

The sensing device in a remotely placed platform (aircraft/satellite) records EM radiation using a scanning system. In scanning system, a sensor, with a narrow field of view is employed; this sweeps across the terrain to produce an image. The sensor receives electromagnetic energy radiated or reflected from the terrain and converts them into signal that is recorded as numerical data. In a remote sensing satellite, multiple arrays of linear sensors are used, with each array recording simultaneously a separate band of EM energy. The array of sensors employs a spectrometer to disperse the incoming energy into a spectrum. Sensors (or detectors) are positioned to record specific wavelength bands of energy. The

information received by the sensor is suitably manipulated and transported back to the ground receiving station. The data are reconstructed on ground into digital images. The digital image data on magnetic/optical media consist of picture elements arranged in regular rows and columns. The position of any picture element, pixel, is determined on an x-y coordinate system. Each pixel has a numeric value, called digital number (DN) that records the intensity of electromagnetic energy measured for the ground resolution cell represented by that pixel. The range of digital numbers in an image data is controlled by the radiometric resolution of the satellite's sensor system. The digital image data are further processed to produce master images of the study area. By analysing the digital data/imagery, digitally/visually, it is possible to detect, identify and classify various objects and phenomenon on the earth surface.

Remote sensing technique (airborne/satellite) in conjunction with traditional techniques harbours in an efficient, speedy and cost-effective method for natural resource management due to its inherited capabilities of being multi-spectral, repetitive and synoptic areal coverage. Generation of environmental 'Data Base' on land use, soil, forest, surface and subsurface water, topography and terrain characteristics, settlement and transport network, etc., and their monitoring in near real - time is very useful for environmental management planning; this is possible only with remote sensing data.

#### **Data Source**

The following data are used in the present study:

Primary Data: Remote Sensing Satellite data viz. IRS R2 LISS-IV of year 2022 having 5 m. spatial resolution was used in the present study. The raw digital satellite data was obtained from NRSC, Hyderabad, on CD-ROM media.

Secondary Data: Secondary (ancillary) and ground data constitute important baseline information in remote sensing, as they improve the interpretation accuracy and reliability of remotely sensed data by enabling verification of the interpreted details and by supplementing it with the information that cannot be obtained directly from the remotely sensed data.

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## Characteristics of Satellite/Sensor

Table - 2 illustrates the basic properties of Resourcesat satellite/sensor that was used in the present study. The basic properties of a satellite's sensor system can be summarised in terms of (a) Spectral coverage/resolution, i.e., band locations/width; (b) Spectral dimensionality: number of bands; (c) Radiometric resolution: quantisation; (d) Spatial resolution/instantaneous field of view or IFOV; and (e) Temporal resolution.

Table 2 - Characteristics of the satellite/sensor used in the present project work

Platform	Sensor	Spectral Bands (in µm)	Radiometric Resolution	Spatial Resolution
RESOURCESAT	LISS-IV	B2 0.28 - 0.31 Green	10-bit	5.8 m
(R2)		B3 0.25 - 0.38 Red		5.8 m
- 350.00		B4 0.27 - 0.30 NIR		5.8 m

### **Data Processing**

The details of data processing carried out in the present study are shown in Figure 8. The processing methodology involves the following major steps:

- (a) Geometric correction, rectification and geo-referencing;
- (b) Image enhancement;
- (c) Training set selection;
- (d) Signature generation and classification;
- (e) Creation/overlay of vector database;
- (f) Validation of classified image;
- (g) Final thematic map preparation.

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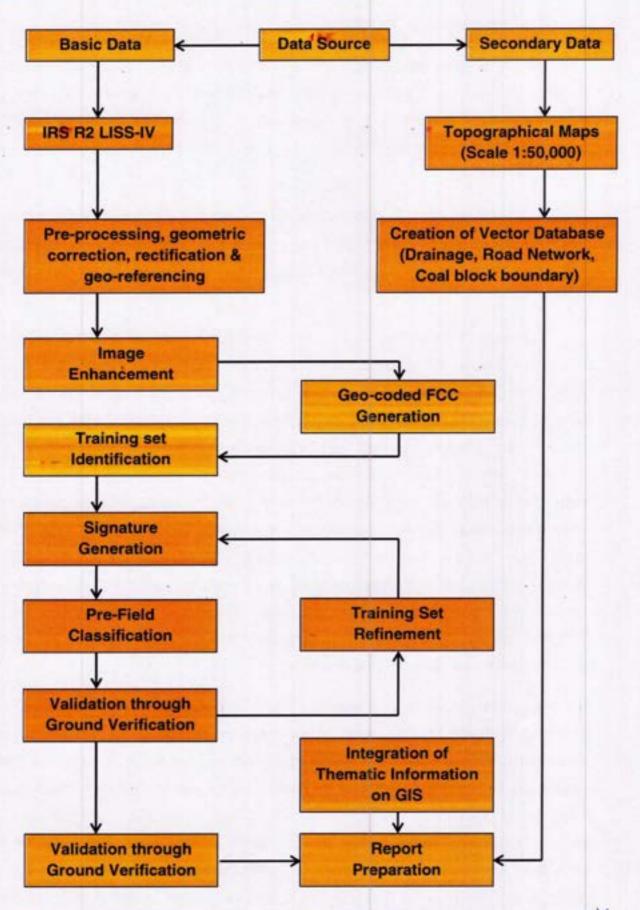


Figure 8 - Methodology of Land Use / Land Cover Analysis

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### (A) Geometric correction, rectification and geo-referencing

Inaccuracies in digital imagery may occur due to 'systematic errors' attributed to earth curvature and rotation as well as 'non-systematic errors' attributed to intermittent sensor malfunctions, etc. Systematic errors are corrected at the satellite receiving station itself while non-systematic errors/ random errors are corrected in pre-processing stage.

In spite of 'System / Bulk correction' carried out at supplier end; some residual errors in respect of attitude attributes still remains even after correction. Therefore, fine tuning is required for correcting the image geometrically using ground control points (GCP).

Raw digital images contain geometric distortions, which make them unusable as maps. A map is defined as a flat representation of part of the earth's spheroidal surface that should conform to an internationally accepted type of cartographic projection, so that any measurements made on the map will be accurate with those made on the ground. Any map has two basic characteristics: (a) scale and (b) projection. While scale is the ratio between reduced depiction of geographical features on a map and the geographical features in the real world, projection is the method of transforming map information from a sphere (round Earth) to a flat (map) sheet. Therefore, it is essential to transform the digital image data from a generic coordinate system (i.e. from line and pixel co-ordinates) to a projected co-ordinate system. In the present study geo-referencing was done with the help of Survey of India (SoI) topo-sheets so that information from various sources can be compared and integrated on a GIS platform, if required.

An understanding of the basics of projection system is required before selecting any transformation model. While maps are flat surfaces, Earth however is an irregular sphere, slightly flattened at the poles and bulging at the Equator. Map projections are systemic methods for "flattening the orange peel" in measurable ways. When transferring the Earth and its irregularities onto the plane surface of a map, the following three factors are involved: (a) geoid (b) ellipsoid and (c) projection. Figure - 9 illustrates the relationship between these three factors. The geoid is the rendition of the irregular spheroidal shape of the Earth; here the variations in gravity are taken into account. The observation made on the geoid is

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then transferred to a regular geometric reference surface, the ellipsoid. Finally, the geographical relationships of the ellipsoid (in 3-D form) are transformed into the 2-D plane of a map by a transformation process called map projection. As shown in Figure - 9, the vast majority of projections are based upon cones, cylinders and planes.

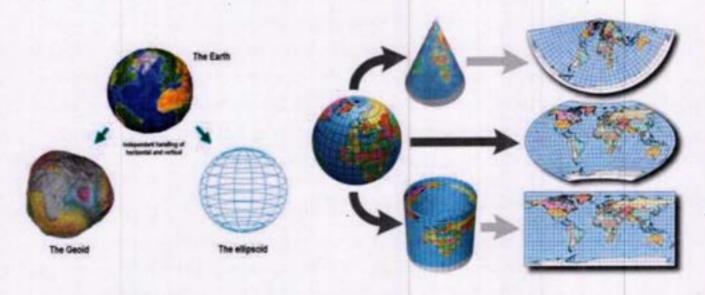


Figure 9 - Geoid - Ellipsoid - Projection Relationship

Maps prepared using these projections are a compromise of many properties; it is neither conformal perspective nor equal area. Distances, areas and shapes are true only along central meridian. Distortion increases away from central meridian. Image transformation from generic co-ordinate system to a projected co-ordinate system was carried out using Arc GIS digital image processing system.

### (B) Image enhancement

To improve the interpretability of the raw data, image enhancement is necessary. Most of the digital image enhancement techniques are categorised as either point or local operations. Point operations modify the value of each pixel in the image data independently. However, local operations modify the value of each pixel based on brightness value of neighbouring pixels. Contrast manipulations/ stretching technique based on local operation was applied on the image data using Arc GIS software.

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### (C) Training set selection

The image data were analysed based on the interpretation keys. These keys are evolved from certain fundamental image-elements such as tone/colour, size, shape, texture, pattern, location, association and shadow. Based on the image-elements and other geo-technical elements like land form, drainage pattern and physiography; training sets were selected/identified for each land use/cover class. Field survey was carried out by taking selective traverses in order to collect the ground information (or reference data) so that training sets are selected accurately in the image. This was intended to serve as an aid for classification. Based on the variability of land use/cover condition and terrain characteristics and accessibility, around 150 points were selected to generate the training sets.

#### (D) Signature generation and classification

Image classification was carried out using the maximum likelihood algorithm. The classification proceeds through the following steps: (a) calculation of statistics [i.e. signature generation] for the identified training areas, and (b) the decision boundary of maximum probability based on the mean vector, variance, covariance and correlation matrix of the pixels.

After evaluating the statistical parameters of the training sets, reliability test of training sets was conducted by measuring the statistical separation between the classes that resulted from computing divergence matrix. The overall accuracy of the classification was finally assessed with reference to ground truth data. The aerial extent of each land use class in the coalfield was determined using Arc GIS software.

### (E) Creation/overlay of vector database

Plan showing coal block boundary was superimposed on the image as vector layer in the Arc GIS database. Road network, rail network and drainage network were also digitised on Arc GIS database and superimposed on the classified image.

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### (F) Validation of classified image

Ground truth survey was carried out for validation of the interpreted results from the study area. Based on the validation, classification accuracy matrix was prepared.



Figure 10 - Ground truthing of study area

### (G) Final land use/ land cover map preparation

Final land use/ land cover map was prepared using Arc GIS software and attached in the report.

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# Land Use Land Cover Mapping

Land is one of the most important natural resource on which all human activities are based. Therefore, knowledge on different type of lands as well as its spatial distribution in the form of map and statistical data is vital for its geospatial planning and management for optimal use. In mining industry, the need for information on land use/ vegetation cover pattern has gained importance due to the all-round concern on environmental impact of mining. The information on land use/ cover inventory that includes type, spatial distribution, aerial extent, location, rate and pattern of change of each category is of paramount importance for assessing the impact of coal mining on land use/ cover.

Remote sensing data with its various spectral and spatial resolution offers comprehensive and accurate information for mapping and monitoring of land use/cover pattern, dynamics of changing pattern and trends over a period of time.. By analysing the data of different cut-off dates, impact of coal mining on land use and vegetation cover can be determined.

#### Land Use Land Cover Classification

The array of information available on land use/cover requires to be arranged or grouped under a suitable framework in order to facilitate the creation of a land use/cover database. Further, to accommodate the changing land use/cover pattern, it becomes essential to develop a standardised classification system that is not only flexible in nomenclature and definition, but also capable of incorporating information obtained from the satellite data and other different sources.

The present framework of land use/cover classification has been primarily based on the 'Manual of Nationwide Land Use/ Land Cover Mapping Using Satellite Imagery' developed by National Remote Sensing Center (NRSC), Hyderabad. Land use map was prepared on the basis of image interpretation carried out based on the satellite data for the year 2022 for Pakri Barwadi Coal Mining Project NTPC (PBCMP) coalfields and following land use/cover classes are identified (Table - 3).

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Table 3 - Land use/cover classes identified in the study area

S. No.	Level-I Major LULC Category	Level-II Land use unit
1	Build-Up Land	Village Town Industries / Infrastructure Buildings Roads, Railway Line
2	Agricultural Land	Crop land Fallow land Trees grove/ Plantation
3	Forest	Dense Mixed Forest Sparse Mixed Forest Open Mixed Forest Degraded Forest Forest Blank
4	Waste Land	Land with Scrub Barren / Rocky/ Stony waste Mining / Dump Area
5	Water bodies	Tanks / Ponds Rivers / Streams

The cloud free satellite data from Resourcesat 2 (LISS- IV) of the year 2022 was acquired and processed using Arc GIS image processing software in order to interpret the various land use/cover classes present in the study area of Pakri Barwadi Coal Mining Project NTPC (PBCMP).

The delineated LULC features were verified in the field for their accuracy. For this purpose, field visits were carried out from 24<sup>th</sup> March 2022 to 26<sup>th</sup> March 2022, 27<sup>th</sup> May 2022, and 23<sup>rd</sup> June 2022. The geo-referenced LULC features were verified in the field using hand held GPS (Global Positioning System) and available secondary baseline data such as toposheets and mining project plan.

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Figure 10 - Different Land Use/cover classes including mining area, infrastructure, dumping area, roads, water bodies, croplands etc.

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Post-field corrections were introduced wherever necessary and final LULC maps of 10 km and 2 km radial buffer areas and Mining lease (ML) area were generated. Images were enhanced and enlarged for extracting LULC information around 10 km and 2 km buffer zones and within the ML area of Pakri Barwadi Coal Mining Project NTPC (PBCMP).

## **Data Analysis & Change Detection**

The comparison of LULC maps of year 2022 with LULC maps of year 2019 was used to extract the LULC information and detection of change in each land use/cover class. Description of various LULC and their spatial extent are discussed in the following section.

# LULC pattern within 10 km radial buffer around the ML

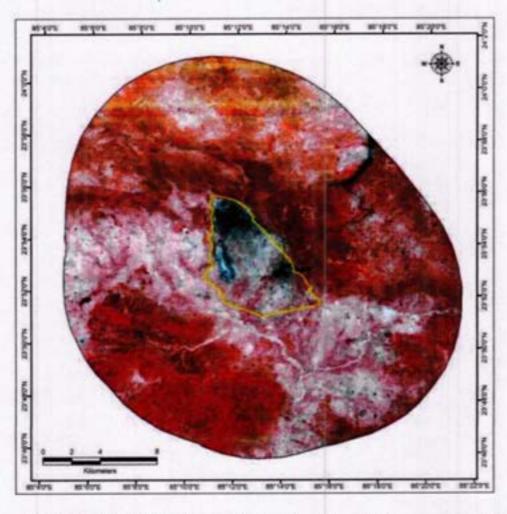


Figure 11 - IRS R2 LISS IV Satellite Data showing 10 km buffer area around the MUL

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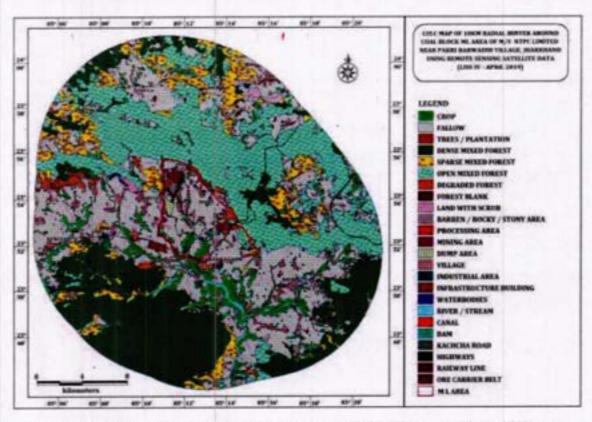


Figure 12 - LULC Map of 2019 for the 10 km radial buffer around coal ML area (Source: LULC map from 2019 report by Geosensing Information Pvt. Ltd., Chennai)

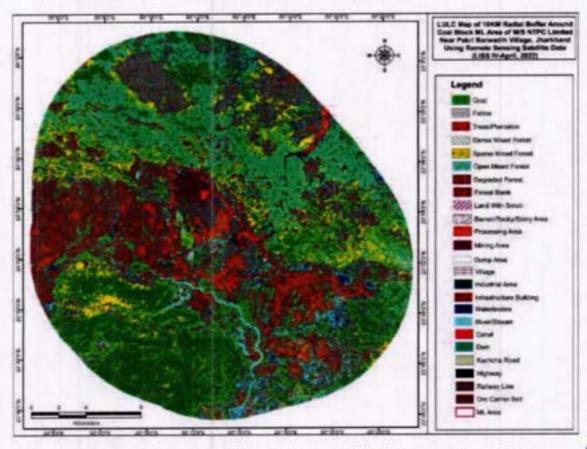


Figure 13 - LULC Map of 2022 for the 10 km radial buffer around coal ML area नवीन कुमार / NAVIN KUMAR

The LULC maps of 10 Km radial buffer area around ML area of Pakri Barwadi Coal Mining Project NTPC (PBCMP) and its surrounding for year 2019 and 2022 with are shown in Figure 12 and 13 respectively. LULC maps showing 10 Km buffer area around the ML falls within the boundaries of 85°03'56" E to 85°21' 23" E and latitudes of 23°45' 21" N to 24°01'12" N covering a total radial buffer area of 622.855 sq. km, depicting distinct spatial pattern of different major LULC categories such as built-up, agriculture, forest, wasteland and water bodies etc., are listed in Table - 4.

Table 4 - LULC units within 10 Km Buffer zone and their Spatial Extent

		_ Year	2019	Year 2	2022	Difference
S. No.	LULC Categories	Area (sq. km)	Area %	Area (sq. km)	Area %	% (2019- 2022)
1	Crop	31.340	5.03	32.679	5.25	0.22
2 -	Fallow	200.329	32.16	202.220	32.47	0.31
3	Trees / Plantation	1.442	0.23	4.719	0.76	0.53
4	Dense Mixed Forest	133.023	21.36	102.110	16.39	- 4.97
5	Sparse Mixed Forest	50.524	8.11	42.577	6.84	- 1.27
6	Open Mixed Forest	152.341	24.46	139.710	22.43	- 2.03
7	Degraded Forest	6.763	1.09	19.666	3.16	2.07
8	Forest Blank	0.135	0.02	2.121	0.34	0.32
9	Land with Scrub	9.814	1.58	15.373	2.47	0.89
10	Barren / Rocky/ Stony Area	3.847	0.62	4.506	0.72	0.1
11	Mining Area	1.629	0.26	6.986	1.12	0.86
12	Dump Area	0.849	0.14	4.432	0.71	0.57
13	Processing Area	0.152	0.02	1.973	0.32	0.3
14	Village	16.446	2.64	16.131	2.59	- 0.05
15	Industrial Area	0.720	0.12	31.384	5.10	4.98
16	Infrastructure Building	1.115	0.18	1.965	0.32	0.14
17	Waterbodies	2.294	0.37	4.017	0.64	0.27
18	Stream / River	7.427	1.19	7.501	1.20	0.01
19	Canal	0.117	0.02	2.962	0.48	0.46
20	Dam	0.508	0.08	1.499	0.24	0.16
21	Highways	1.109	0.18	2.610	0.42	0.24
22	Kacha Road	0.374	0.06	0.953	0.15	0.09
23	Railway Line	0.322	0.05	1.871	0.30	0.25
24	Ore Carrier Belt	0.235	0.04	2.361	0.38	0.34
	Total	622.855	100.00	622.855	100.00	Nil

नवीन कुमार / NAVIN KUMAR व्य वहारका (पर्वारत प्रवान) DOM (ENVT. MONT.) गन्दर्भाती क्षायुक्त NTPC Limited क्षेत्रस क्षाय चीकारती COAL MINING PROJECTS From the spatial extent of LULC as shown in Table - 4, it could be observed that "forest cover" is the predominant category covering 308.782 sq. km representing 49.57% of the buffer area followed by agricultural activity covering an area of 234.899 sq. km representing 37.71% of the buffer area. Together these two LULC categories occupy 87.28% of the buffer area.

## LULC pattern within 2 km radial buffer around the ML

A similar approach is undertaken to study changes in spatial pattern of LULC around 2 km radial buffer of the ML area, which is estimated to be 106.703 sq. km., was interpreted and mapped using satellite data acquired on April of 2022, which is shown in Figure - 14.

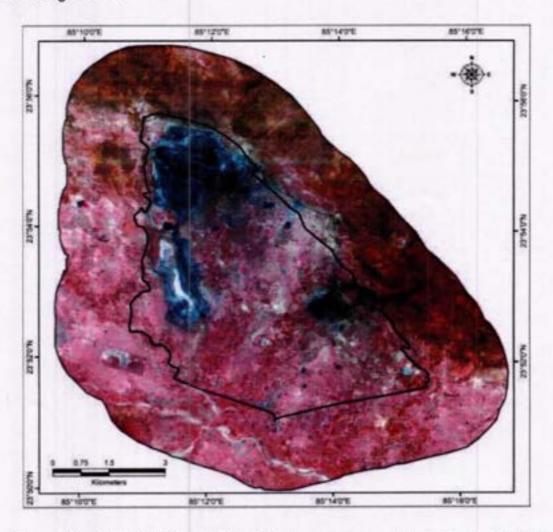


Figure 14 - LISS IV data of 2 Km Buffer area around the ML- April 2022

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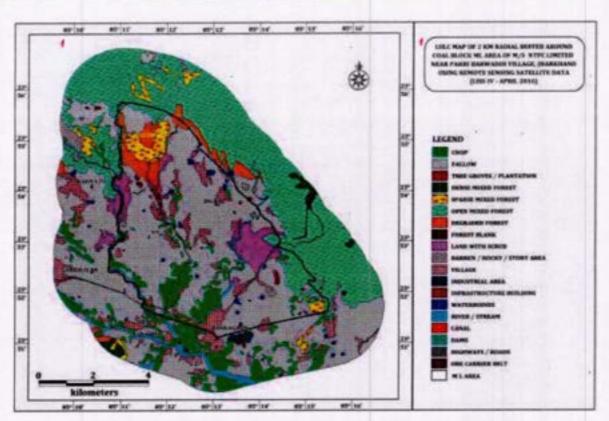


Figure 15 - LULC Map of 2 Km Buffer area around the ML- April 2019 (Source: LULC map from 2019 report by Geosensing Information Pvt. Ltd., Chennai)

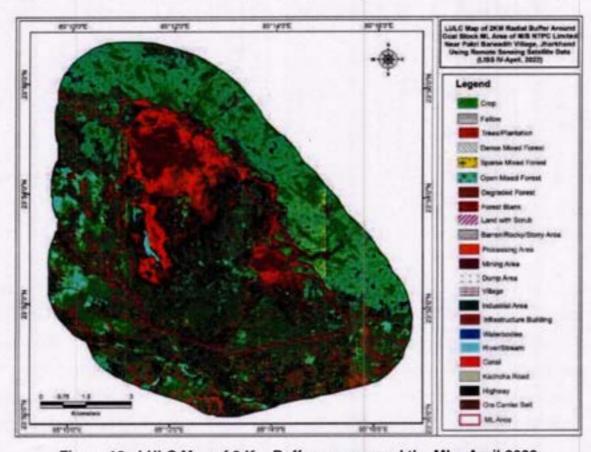


Figure 16 - LULC Map of 2 Km Buffer area around the ML- April 2022

For change detection in LULC categories, spatial pattern delineated using historical LULC data of 2019 (Figure - 15) is compared with recent LULC data of 2022 (Figure -16), which is discussed in the Table 5.

Table 5 - LULC units within 2 Km Buffer zone and their Spatial Extent

-	Samuel Annual Control	Year	2019	Year 2	2022	Difference
S. No.	LULC Categories	Area (sq. km)	Area %	Area (sq. km)	Area %	% (2019- 2022)
1	Crop	8.216	7.70	5.611	5.26	-2.44
2	Fallow	47.603	44.61	39.913	37.41	-7.20
3	Trees / Plantation	0.278	0.26	2.561	2.40	2.14
4	Dense Mixed Forest	0.728	0.68	1.103	1.03	0.35
5	Sparse Mixed Forest	2.778	2.60	3.812	3.57	0.97
6	Open Mixed Forest	27.392	25.67	22.921	21.48	-4.19
7	Degraded Forest	2.344	2.20	3.701	3.47	1.27
8	Forest Blank	0.019	0.02	0.461	0.43	0.41
9	Land with Scrub	2.007	1.88	3.460	3.24	1.36
10	Barren / Rocky/ Stony Area	1.925	1.80	2.859	2.68	0.88
11	Mining Area	1.629	1.53	2.212	2.07	0.54
12	Dump Area	0.849	0.80	1.799	1.69	0.89
13	Processing Area	0.152	0.14	1.942	1.82	1.68
14	Village	5.711	5.35	4.133	3.87	-1.48
15	Industrial Area	0.423	0.40	1.837	1.72	1.32
16	Infrastructure Building	0.969	0.91	1.725	1.62	0.71
17	Waterbodies	0.484	0.45	0.572	0.54	0.09
18	Stream / River	2.194	2.06	2.715	2.54	0.49
19	Canal	0.030	0.03	0.127	0.12	0.09
20	Highways	0.573	0.54	0.964	0.90	0.36
21	Kacha Road	0.329	0.31	0.853	0.80	0.49
22	Ore Carrier Belt	0.070	0.07	1.421	1.33	1.26
	Total	106.703	100.00	106.703	100.00	NIL

From the LULC map, it could be seen that major portion of the buffer area is covered by fallow land and monopolizes throughout the buffer area with intermittent presence of land parcels delineated as crop land. On the other hand, the northern and eastern periphery of the buffer area is observed with open mixed forest with a small patch of dense forest cover at the eastern periphery. Scrub land is observed as small and scattered land parcels among the fallow land and at the foothills in the eastern part of the buffer area. Similarly, degraded forest cover is seen in the

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northern part and in the north-eastern part of ML boundary along with a small patch of sparse forest cover. General condition of LULC implies that the buffer area is endowed with agricultural land followed by forest cover.

From the map, majority of the buffer area could be observed with "fallow" land and seen with large tract of crop land in the southern part growing towards the central part of the buffer area. The crop land is seen closely affined to a minor stream that is flowing from north and joining with a major stream, River Ghagra, in the southern part of the buffer area. Spatial extent of "agriculture" category – fallow and crop land – is estimated as 45.52 sq.km representing 42.67% of the buffer area.

In similar fashion, "forest cover" is seen in the northern and eastern parts of the buffer area, mostly open mixed forest. Presence of a small patch of dense forest cover is seen in the eastern periphery and small area of sparse forest cover is seen in the western part. There are also mining activities and few land parcels of infrastructure buildings observed in the buffer area. Presence of ore carrier belt starting from the mining area in the lower part of the buffer area is also delineated. Spatial extents of these categories such as forest cover (34.55 sq. km) and mining and dump area 4.011 sq. km) are estimated from the LULC map. Forest cover represents 32.37% of the buffer area. Agriculture and forest cover are the predominant LULC covering 75.04% of the area.

No evidence of mining operation is interpreted in the buffer area during this period. Because of the nature of distribution of LULC, care must be taken to see minimal influence on these LULC while undertaking any industrial and allied activities including "mining" activities in the buffer area.

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### LULC pattern within the Mining lease (ML) area

The satellite image of Mining lease (ML) area of Pakri Barwadi Coal Mining Project NTPC (PBCMP) is shown in Figure 17.

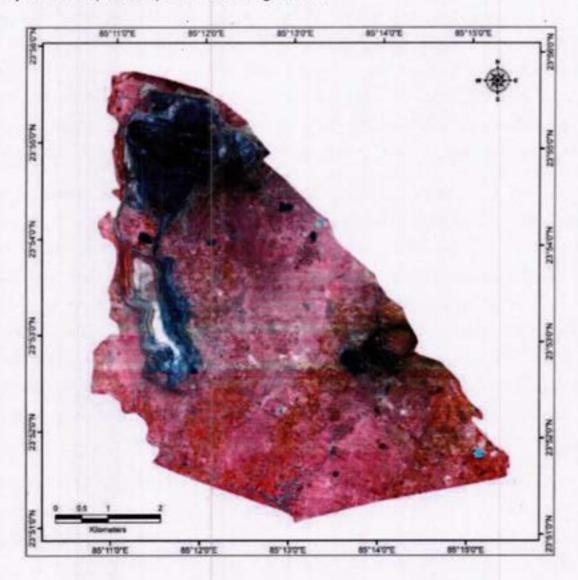


Figure 17 - LISS IV data of the Mining Lease area - April 2022

For change detection in LULC categories, spatial pattern delineated using historical LULC data of 2019 (Figure - 18) is compared with recent LULC data (Figure -19), which is discussed in the Table 6.

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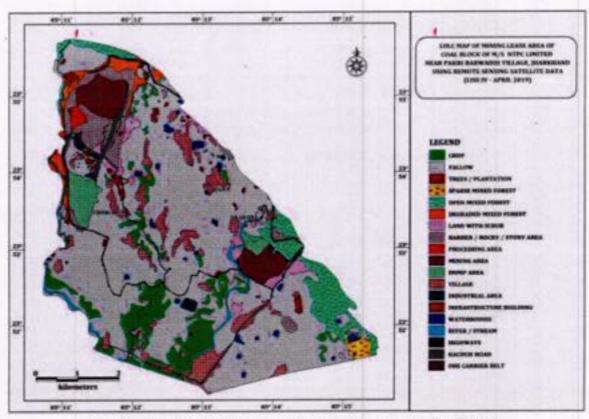


Figure 18 - LULC Map of the Mining Lease area -April 2019 (Source: LULC map from 2019 report by Geosensing Information Pvt. Ltd., Chennai)

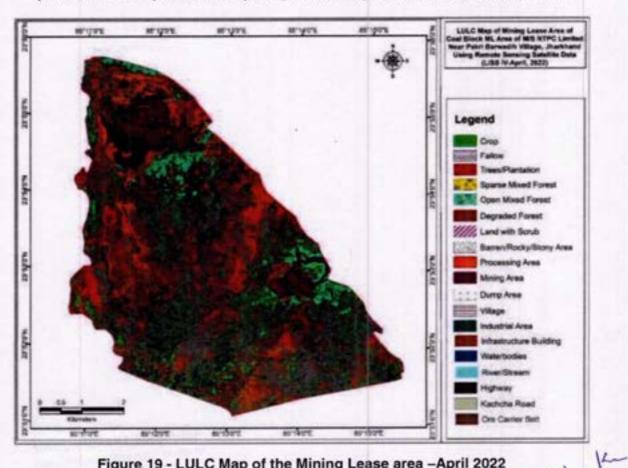


Figure 19 - LULC Map of the Mining Lease area -April 2022

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The LULC maps showing spatial pattern of LULC categories (Figure - 19) reiterated the similarity in their presence with that of LULC map of previous period – 2019 (Figure - 18). Significance of the LULC of the current period (2022) is the presence of mining activity in two parts of the ML – one in the northern part and the other on eastern part. This has certainly caused changes in the LULC but has not shown much influence on the nearby land parcels that are in the ML. Parts of degraded forest and open mixed forest in the northern part of the ML is delineated as mining area and similarly, degraded forest cover in the eastern part. Some fallow land near the mining area has changed and left as "barren".

The majority of the land use within ML is delineated as "fallow" and "crop" land representing 38.13% of the total 39.512 sq. km (Table - 6).

Table 6 - LULC units within ML area and their Spatial Extent

		Year	2019	Year :	2022	Difference
S. No.	LULC Categories	Area (sq. km)	Area %	Area (sq. km)	Area %	% (2019- 2022)
01	Crop	3.060	7.74	2.461	6.23	-1.51
02	Fallow	22.694	57.44	12.607	31.91	-25.53
03	Trees / Plantation	0.287	0.73	1.128	2.85	2.12
04	Sparse Mixed Forest	0.248	0.63	1.544	3.91	3.28
05	Open Mixed Forest	2.382	6.03	1.914	4.84	-1.19
06	Degraded Forest	0.851	2.15	1.811	4.58	2.43
07	Land with Scrub	0.901	2.28	2.362	5.98	3.70
80	Barren / Rocky/ Stony Area	1.806	4.57	2.374	6.01	1.44
09	Mining Area	1.660	4.20	2.104	5.33	1.13
10	Dump Area	0.823	2.08	1.721	4.36	2.28
11	Processing Area	0.152	0.38	1.642	4.16	3.78
12	Village	2.698	6.83	1.726	4.37	-2.46
13	Industrial Area	0.086	0.22	1.721	4.36	4.14
14	Infrastructure Building	0.269	0.68	0.825	2.09	1.41
15	Waterbodies	0.328	0.83	0.419	1.06	0.23
16	Stream / River	0.608	1.54	0.645	1.63	0.09
17	Highways	0.335	0.85	0.619	1.57	0.72
18	Kacha Road	0.314	0.79	0.766	1.94	1.15
19	Ore Carrier Belt	0.010	0.03	1.123	2.84	2.81
	Total	39.512	100.00	39.512	100.00	NIL

नवीन कुमार / NAVIN KUMAR का पहाडवाड (कांक्सक प्रकार) : DGM (ENVT MGMT) प्रविदेशी (MGMZ) / NTPC Limited Such changes may be well understood by comparing the spatial extent of "agriculture" and "forest cover" existed during previous period with the recent period. Agriculture area cumulatively showed 38.14% of the ML area showing 27.04% decreases during 2022, which is nearly 10.68 sq. km. Likewise "forest cover" showed 2.62 sq. km increase in area during 2022 when compared the cumulative area of forest cover during 2019. At the same time, mining and dump area covers an area of 3.825 sq. km during 2022, which is about 2.483 sq. km during 2019. Mining and dump area covers 3.335 sq. km representing nearly 9.68% of the ML area. Barren area near the mines, which is used for transport and other allied purposes, is around 1.84 Sq.km in excess of the previous period. The recent satellite data has shown presence of mining area and relative increase in barren area in the stating phase of degraded forest and parts of open forest along with few parcels of fallow land within the ML. Such time series comparison would highlight not only the quantum of such changes in LULC but also assist in environmental impact assessment and feasible mitigation measures in the ML and its environment.

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# Conclusion & Recommendations

#### Conclusion

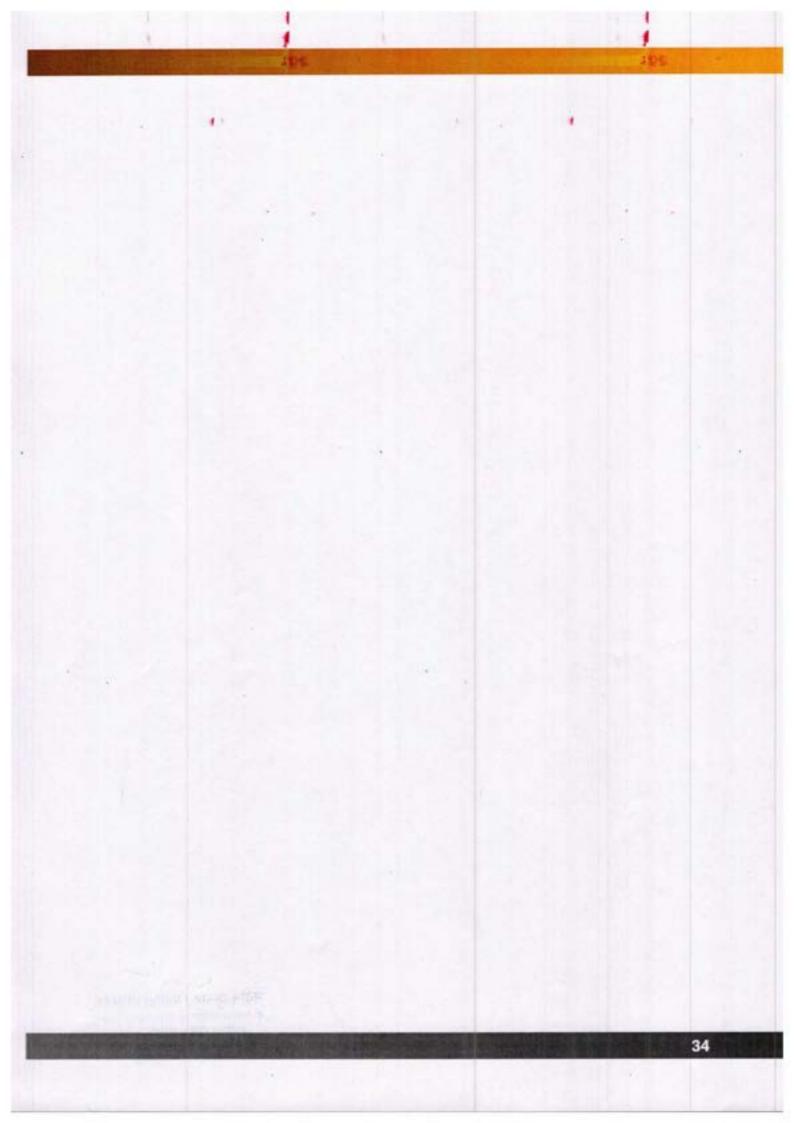
In the present study, land use/ vegetation cover mapping has been carried out based on IRS-R2 L4FMX satellite data of year, 2022 in order to generate the database on land use/ land cover in Pakri Barwadi Coal-field for monitoring the impact of coal mining on land environment. The land use/cover data will help in assessing the land restoration status as well as for formulating the mitigation measures required, if any.

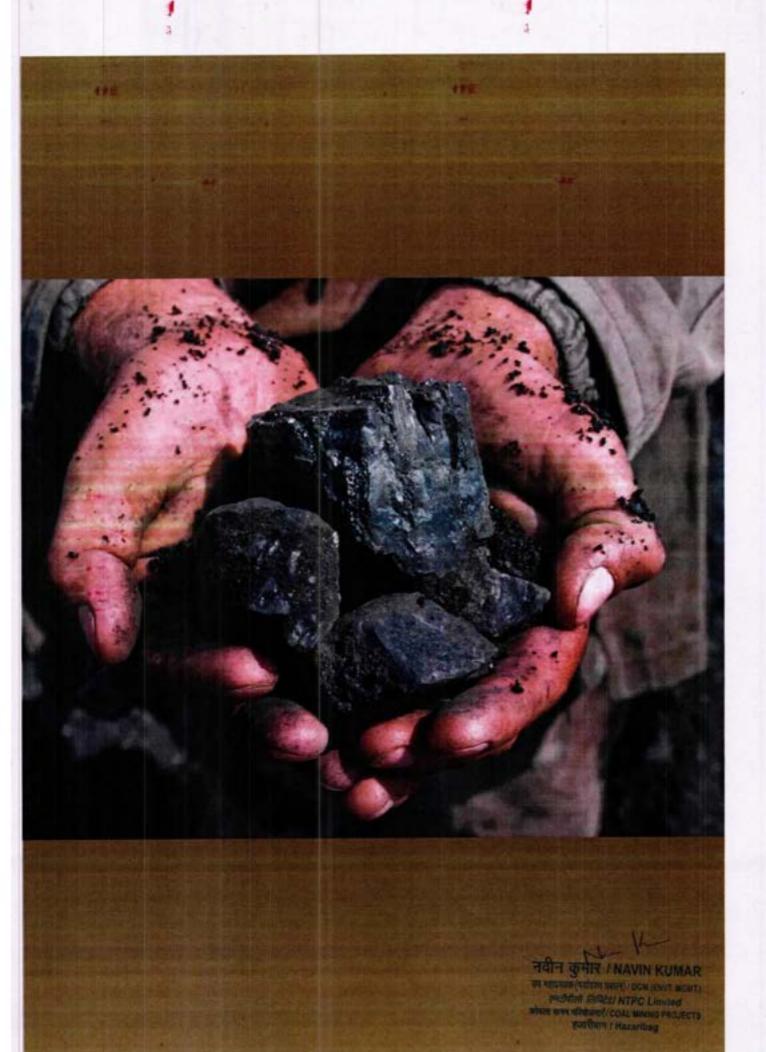
Study reveals that the total area in 10 km buffer zone of settlements which includes rural, infrastructure building and industrial settlements in the Pakri Barwadi Coal Mining Project NTPC (PBCMP) covers an area of 49.48 sq. km (7.94%). Vegetation cover, which includes dense mixed forests, sparse mixed forest, open mixed forests, degraded forest, trees/plantation and forest blank, covers an area of 308.782 sq. km (49.57%). The analysis further indicates that total agricultural land which includes both crop and fallow land covers an area of 234.899 sq. km (37.71%). The mining area which includes coal quarry, advance quarry site, barren OB dump and coal dump covers 11.418 sq. km (1.83%). Surface water bodies, canals, dam and stream/rivers covered an area of 15.979 sq. km (2.56%).

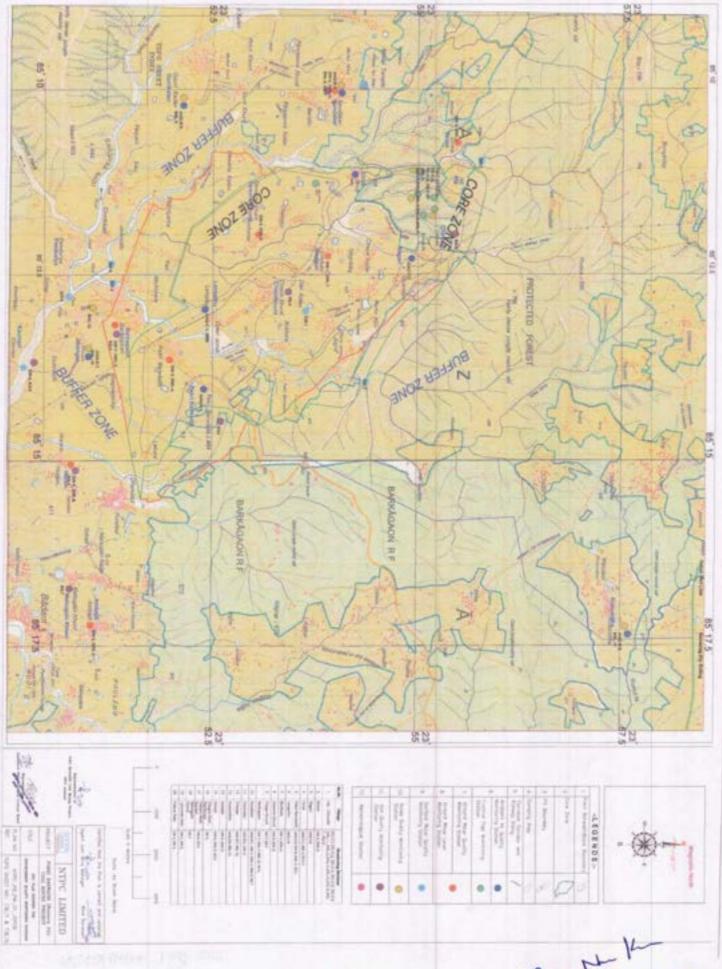
As the mining activities are progressing at a faster rate, the process of reclamation and restoration of the mined out areas need to be enhanced for geoenvironmental protection and social benefits.

#### Recommendations

Keeping in view the sustainable development together with coal mining in the area, it is recommended that similar study should be carried out regularly at an interval of two-three years to assess the impact of coal mining on land use pattern, vegetation cover and biodiversity assessment in the coalfield to formulate the remedial measures, if any, required for mitigating the adverse impact of coal mining on land environment. Such regional study will also be helpful in assessing the environmental degradation/ upgradation carried out by different industries operating in the coalfield area.

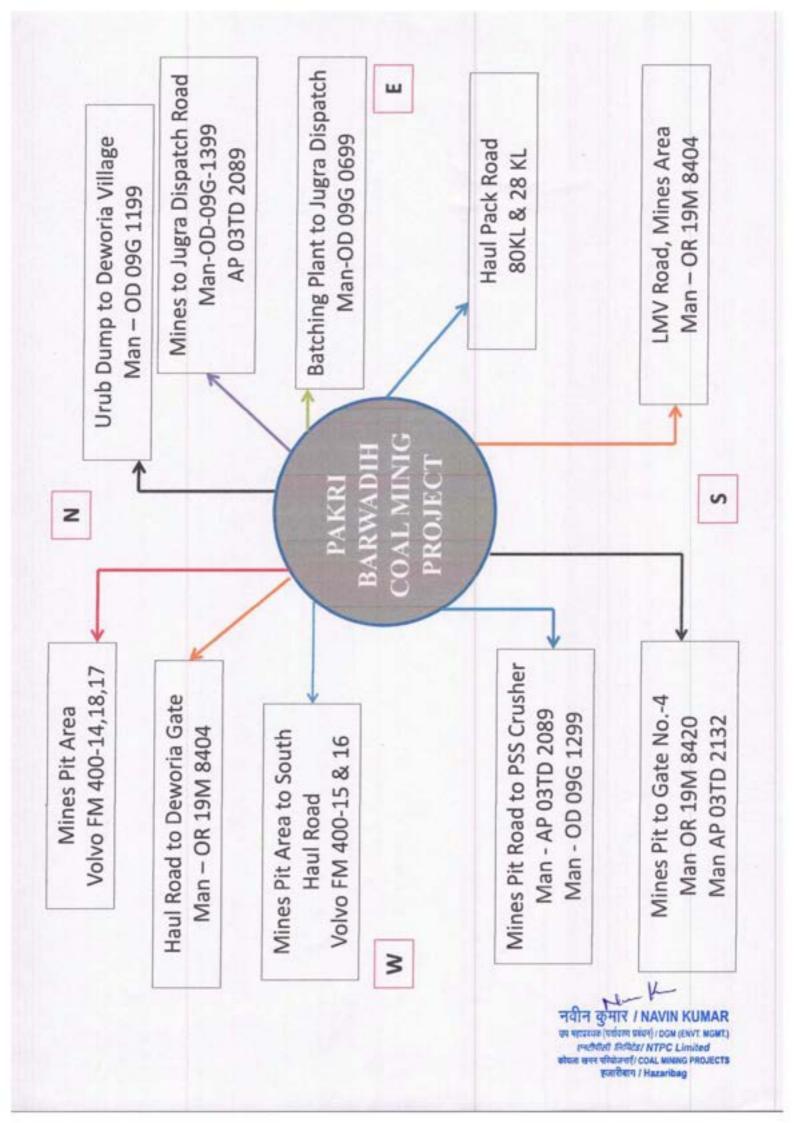






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No.	~	PM 2.5	60 sg/m3	26.1	35.2	513	90%	41.8	z	22.6	23.4	19.9	20.5	20.7	20.7	19.4	18.6	18.5	19
	-	205	Mughill	14.6	15.2	29.1	27.7	28.6	12.6	12.5	11.8	9.4	8.9	9.1	9.1	7.2	7.9	7.6	7.
	-	NO2	Bit up/m)	26.2	36.9	36.7	16.4	12.1	20.9	21.4	19.5	15	34	14.9	14.9	20.7	12.3	11.4	30
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	9	60	180 og/m3	20.7	21.3	19.9	30.6	21.8	22.5	25.2	27.4	28.3	29.3	27.2	28.4	29.1	36.2	18.9	39.
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Marche   March   Mar	1	NHS	400 ug/m3	800	801	804	901	BOX.	901	109	108	100	906	901	109	100	100	906	95
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CO         41 mights         0.62         0.74         0.18         0.48         0.53         0.43         0.43         0.41         0.63         0.44         0.53         0.44         0.53         0.44         0.53         0.44         0.53         0.43         0.53         0.44         0.53         0.44         0.53         0.44         0.53         0.43         0.53         0.53         0.53         0.53         0.53	-	MO2	Mingfull.	22	23.8	17.1	29.1	17	18.5	20.1	16.8	17.5	15.6	23	14.5	15.2	12.4	13.5	=
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नवीन कुमार / NAVIN KUMAR स्य प्रत्यक्षकः (पर्वत्यक्ष प्रयंपन) / DGM (ENVT MGMT.) एम्टीमीली (अपिटेड/ NTPC Limited क्षेत्रक स्यय परियंजनरी/ COAL MINING PROJECTS हजारीबाय / Hazaribag

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		60 sg/m3	34	35.7	39.7	39.85	54.8	33.8	33.8	34.9	90.9	33.2	32.8	33.3	29.1	28.5	27.8	28.2
		40 eg/m3	14.1	34.7	16.9	16.9	12.6	12.4	12.1	11.2	9.1	1.4	9.6	9.1	7.9	8.3	8.4	7.8
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		Septe 3	21.4	50.9	19.9	20.1	22.3	21.8	24.7	23.6	27.8	28.2	26.8	25.9	803	28.7	29.4	30.6
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7 60		3.0 mg/m3	0.19	0.72	0.75	0.81	0.56	99'0	85.0	0.55	0.36	0.51	0.51	0.47	0.77	0.81	99.0	0.72
2 /	Benzo (A)		804	108	100	804	NO.	108	108	3DK	108	101	906	108	906	108	909	108
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T	Ť	1	RDI	NO.	ADI	Belle	an	100	100	100	908	900	200	100	800	100	100	20.0
	T	10mg/m3	0.41	0.44	0.74	0.71	0.51	0.49	0.61	0.50	0.19	0.41	0.54	0.52	0.74	0.78	0.68	0.64
Г	10 [A]		100	-	200	-	940	-	100	-	-	-	-	-	-		-	
7	Person		900	100	900	100	BOL	100	800	100	100	904	901	900	900	200	100	108
٦	Benzene		901	900	901	100	108	900	901	901	100	80%	900	ND4	BOX	800	904	HDI.
	Arsenic		abi.	100	9DI.	900	800	900	300	108	101	80f.	901	900	900	100	900	BDL
	Mikel		108	100	108	109	308	803	804	109	109	900	901	109	108	900	901	BDK.
		1000	900	900	8DI.	900	308	801	801	8DL	109	906	109	NO.	900	804	308	30E
13 Or		-010	900	BOX	80t	900	800	109	108	8DI.	108	108	901	900	800	BDK	108	108
lead i	-		900	BD.	900	900	904	109	108	901	100	900	900	108	804	801	. 80K	801
_	_	-		81					March-23									
S.No. PAS	PARAMTERS NO	NORMS		4	WILAGE	NAGARI		-	PAKNI BARWADIH	ANNADRE	-			ARIKALAN	VILAGE	VILLAGE DHENGA	VILLAGE KUSUMBHA	USUMBH
I	ı	-	2	91	06.03.3023	25.03.2023	8	23	2	22	8	14	g	22	06.03.2023	25.03.2023	06.09.2023	15.03 202
	Ť	(Margina)	180		1 AND	11.1	876	86.3	61.7	100	176	192	35.6	20.3	52.2	205	24.8	51.9
T	200	Taraba on	100	23.7	100	707	100	200	23.42	24.0	24.2	100	20.5	34.4	683	677	660	787
T	t	- Contract		200	707	17.7	900	277	477	101		17	63	24	177	9.8	8.3	7.7
T	t	tu dina	200	200	10.0	201	1	200	24.6	40.0	740	977	14.5	181	202	13.5	12.0	10.6
6 100	T	to division in	100	801	80.0	800	8000	801	677 8UN	907	800	100	707	24.0	28.3	17.1	28.5	18.2
Т	T	2.0 mg/m3	0.44	0.47	0.71	0.74	950	0.46	0.60	190	0.41	0.10	0.52	0.54	0.71	0.84	0.65	0.68
	60 (A)		200	N/a	700	Non	200	arra	No.	100	Na.	100	-	- Park	200	200	1000	1
Т	Press	1					-				-	1	1	100	300	300	DIVE	ž
T	Bencene	1	100	BDI.	80X	800	800	901	8DI.	109	8Dr.	900	NOT	100	108	NO.	80Y	100
T	Arsenic	1	100	8Df.	800	804	804	306	8Df.	100	900	108	800	800	108	800	108	900
11	1	1	200	8D/	100	804	801	108	aDi.	100	900	NO.	80°	800	300	801	80r	900
Т	Mercury	1000	800	80f	900	800	901	800	108	100	904	108	109	109	906	900	HD1	100
Т	1	440	NO.	8DL	804	100	ND)	100	108	101	900	109	109	109	906	901	900	200
t Lead	pe	-	100	ND4	BD.	804	BDI.	801	801 801 801	109	8DF	9Df.	901	900	108	804	MD1.	90K

नवीन कुमार / NAVIN KUMAR वर पायकाक (पर्वावक प्रकार) / DGM (ENVT. MGMT.) (अर्थावीको (मिन्देश NTPC Limited कोचल अस्त परिवोजकों) COAL MINING PROJECTS हजारीयान / Hazaribag

		PAKRI BARWADIH COAL MINE	S, NTPC Ltd.	
を でき		FUGITIVE DUST MONITORING	REPORT	
		October-22		
SI. No.	Date	Station	Result	Norms
	01.10.2022	Excavation Area	343	600 ug/m3
1	16.10.2022	Excavation Area	377	600 ug/m3
-	05.10.2022	Haul Road	219	600 ug/m3
2	17.10.2022	Haui Road	236	600 ug/m3
	06.10.2022	Wasta Burna	248	600 ug/m3
3	19.10.2022	Waste Dump	229	600 ug/m3
	08.10.2022	To a Call Divinis	263	600 ug/m3
4	20.10.2022	Top Soil Dump	295	600 ug/m3
-	09.10.2022		241	600 ug/m3
5	21.10.2022	Work Shop	252	600 ug/m3
120	12.10.2022		349	600 ug/m3
6	22.10.2022	Drilling Location	371	600 ug/m3
The same	13.10.2022		378	600 ug/m3
7	26.10.2022	PSS Area (Village Nagari)	405	600 ug/m3
		November-22		
SI. No.	Date	Station	Result	Norms
200	01.11.2022		369	600 ug/m3
1	15.11.2022	Excavation Area	378	600 ug/m3
-	02.11.2022		246	600 ug/m3
2	16.11.2022	Haul Road	252	600 ug/m3
0	03.11.2022	W - P	287	600 ug/m3
3	17.11.2022	Waste Dump	265	600 ug/m3
	04.11.2022	T C-11 D	292	600 ug/m3
4	18.11.2022	Top Soil Dump	284	600 ug/m3
1 20	05.11.2022		243	600 ug/m3
5	19.11.2022	Work Shop	256	600 ug/m3
	06.11.2022		371	600 ug/m3
6	20.11.2022	Drilling Location	366	600 ug/m3
	07.11.2022		417	600 ug/m3
7	21.11.2022	PSS Area (Village Nagari)	436	600 ug/m3

नदीन कुमार / NAVIN KUMAR का बारवराक (वर्गारक प्रवेश) IDGM (ENVI MONT) हन्दीरीती (निविदेश NTPC Limited क्रोडल सका परिवेशनाई/ COAL MINIO PROJECTS हजारीबार / Hazaribag

	and a second	December-22		Market Sales
SI. No.	Date	Station	Result	Norms
	01.12.2022	-	352	600 ug/m3
1	16.12.2022	Excavation Area	349	600 ug/m3
-	02.12.2022	11 18 1	258	600 ug/m3
2	17.12.2022	Haul Road	237	600 ug/m3
	03.12.2022	Maria Burna	241	600 ug/m3
3	18.12.2022	- Waste Dump	229	600 ug/m3
	04.12.2022	T C-11 D	246	600 ug/m3
4	19.12.2022	Top Soil Dump	254	600 ug/m3
-	05.12.2022	Wal Shar	263	600 ug/m3
5	20.12.2022	-Work Shop	256	600 ug/m3
_	06.12.2022	Delling Learning	282	600 ug/m3
6	21.12.2022	- Drilling Location	274	600 ug/m3
-	07.12.2022	DCC A (VEII No)	396	600 ug/m3
7	22.12.2022	PSS Area (Village Nagari)	372	600 ug/m3
ES		January-23		
SI. No.	Date	Station	Result	Norms
1	02.01.2023	Excavation Area	371	600 ug/m3
1	16.01.2023	Excavation Area	365	600 ug/m3
2	03.01.2023	Haul Road	264	600 ug/m3
-	17.01.2023	naui koau	274	600 ug/m3
3	04.01.2023	Wasta Dump	234	600 ug/m3
-	18.01.2023	Waste Dump	245	600 ug/m3
4	05.01.2023	Top Soil Dump	281	600 ug/m3
*	19.01.2023	Top Soil Dump	277	600 ug/m3
5	06.01.2023	Work Shop	254	600 ug/m3
3	20.01.2023	Work Shop	238	600 ug/m3
	07.01.2023	Delling Location	374	600 ug/m3
6	21.01.2023	Drilling Location	358	600 ug/m3
-	08.01.2023	DSS Area (Village Nageri)	381	600 ug/m3
7	22.01.2023	PSS Area (Village Nagari)	396	600 ug/m3

नवीन कुमरि / NAVIN KUMAR वर्ष प्राप्तक (क्वंदरन प्रकार) / DGM (ENVT. MGMT) शब्दर्गतीय निविदेश NTPC Limited श्रीवास सम्ब परिवेजनी/ COAL MINING PROJECTS हवारीवाम / Hazanbag

Topic I		February-23		A THE REAL PROPERTY.
SI. No.	Date	Station	Result	Norms
-	01.02.2023	Excavation Area	383	600 ug/m3
1	16.02.2023	Excavation Area	377	600 ug/m3
-	02.02.2023	U-JP-J	261	600 ug/m3
2	17.02.2023	Haul Road	279	600 ug/m3
3	03.02.2023	W-4- B	257	600 ug/m3
3	18.02.2023	Waste Dump	273	600 ug/m3
	04.02.2023	Tan Call Dance	294	600 ug/m3
4	19.02.2023	Top Soil Dump	287	600 ug/m3
_	05.02.2023	W-1 ct	259	600 ug/m3
5	20.02.2023	Work Shop	278	600 ug/m3
	06.02.2023	S	381	600 ug/m3
6	21.02.2023	Drilling Location	364	600 ug/m3
SUE S	07.02.2023	055 4 (1511 11 13	394	600 ug/m3
7	22.02.2023	PSS Area (Village Nagari)	373	600 ug/m3
USA		March-23		
SI. No.	Date	Station	Result	Norms
	01.03.2023	Excavation Area	391	600 ug/m3
1	16.03.2023	Excavation Area	384	600 ug/m3
2	02.03.2023	Haul Road	284	600 ug/m3
-	17.03.2023	naui koad	275	600 ug/m3
-	03.03.2023	Wasta Duma	249	600 ug/m3
3	18.03.2023	Waste Dump	267	600 ug/m3
	04.03.2023	Top Soil Dump	302	600 ug/m3
4	20.03.2023	Top Soil Dump	291	600 ug/m3
2	05.03.2023	Work Shop	287	600 ug/m3
5	21.03.2023	Work Shop	266	600 ug/m3
	06.03.2023	Delling Location	345	600 ug/m3
6	22.03.2023	Drilling Location	315	600 ug/m3
	07.03.2023	DSS Asset (VIIIIs Nosset)	369	600 ug/m3
7	23.03.2023	PSS Area (Village Nagari)	345	600 ug/m3

नवीन कुमार / NAVIN KUMAR का नहरकाक (पर्वारण प्रवान) / DGM (ENVT. MGMT) हन्यर्थिती वितिष्टेश NTPC Limited कोवल सन्त्र परिवोजनाई / COAL MINING PROJECTS हजारीकान / Hazaribag

		IIICOIIII	Spala	MICHA		Z07-U2	3				
Monitoring Location :- EXCAVATION AREA(WORK 20NE)	矢	0			10	Monitoring L	Monitoring Location :- HAUL ROAD (WORK ZONE)	UL ROAD (W	<b>JORK ZONE)</b>	Cont. The	
Result		Standards (CPCB/FACTORIES ACT)	ands DRIES ACT)	St. No.	Date	Monitoring Code	Description noise level db(A)	Result	#	Standards (CPCB/FACTORIE	Standards (CPCB/FACTORIES ACT)
Day Night		Day	Night					Day	Night	Day	Night
							Average	67.0	63.8		
		25/90	30		100 03 3033	ANII.3	Maximum	70.8	66.3	76,000	Se .
		400			DE-DOS EDOS		Minimum	63.2	61.3	13/30	2
	3						Leg db(A)	67.7	64.4		
							Average	9.89	64.5		
	32	75/90	96		17 03 3033	AMI.3	Maximum	73.5	68.5	- No. 1900	
65.2 59.2		-			47.00.00	******	Minimum	63.6	60.4	ne/er	2
	2	-					Leg db(A)	70.4	1.99		
Monitoring Location > WASTE DUMP, (WORK ZONE)	ž		7		2	onitoring Lo	Monitoring Location :- TOP SOIL DUMP (WORK ZONE)	SOIL DUMP	WORK ZON	10	-
Result		Standards (CPCB/FACTORIES ACT)	ands ORIES ACT)	St. No.	Date	Monitoring Code	Description noise level dNA1	Result	#	Stand (CPCB/FACI	Standards CPCB/FACTORIES ACT)
Day Night	_	Day	Night					Day	Night	Day	Night
67.9 63.5		10000	20000000				Average	0.69	65.2		
71.3 66.6		75/90	20		04 03 3033	AND A	Maximum	73.2	9'89	36,600	96
					DATE OF THE PARTY		Minimum	64.8	219	ne les	2
68.7 64.2							(ed dp(A)	70.4	66.5		
7.73 6.99	5						Average	73.2	63.3		
74.1 69.6		75/90	30		TONE STANK	ANI A	Maximum	74.9	67.3	A 100	4
		ac ir.	2		-	-	Minimum	71.4	59.2	Rich	2
							Leg db(A)	72.7	64.8		
Monitoring Location :- WORK SHOP ( WORK ZONE)	띭				Mo	itoring Loca	Monitoring Location :- DRILLING LOCATION (WORK ZONE)	NG LOCATIO	N (WORK 20	(JNE)	
Result		Standards (CPCB/FACTORIES ACT)	ands ORIES ACT)	SI. No.	Date	Monitoring	Description noise level db(A)	Result	4	Stant (CPCB/FACT	Standards (CPCB/FACTORIES ACT)
Day Night	_	Day	Night					Day	Night	Day	Night
70 64,0	(3)						Average	70.2	65.7		
72.6 67.7	1	26,600	-		200 000 000		Maximum	73.1	689	200	1
67.4 60.2		ne he i	2	4	00,03,0023	ANLO	Minimum	67.3	62.5	08/87	N
70.9 65.2	~						Leq db(A)	71.4	1.99	100	
	0						Average	63.6	709		
72.9 67.3	67	20,000	of.		27.02.20.00	440.5	Maximum	65.8	63.7	A 1000	-
+	_	ne he .			44.00.000.0	D. Mary	Minimum	61.4	57.6	06/6/	2
71.2 65.8						Ī	A to the state of	000	41.4		

नवीन कुमार / NAVIN KUMAR वर बाव्यवक (वर्षात्व प्रवेदन)। DGN (ENVT. MGMT.) (न्योगीली सिविटेड) NTPC Limited कोवल वर्षात्व वर्षात्व (COAL MINING PROJECTS हजारीबाग / Hazaribag

Dennig L	Monitoring Location :- OPERATOR CABIN (W	TOR CABIN	(WORK ZONE)	63	the fact the		Me	onitoring Loc	Monitoring Location :- PSS AREA: I NAGRI (WORK ZONE)	REA-1 NAGR	WORK ZON	(E)	
Monitoring Code	Description noise level db(A)	Result	*	Standards (CPCB/FACTORIES ACT)	ards ORIES ACT)	SI. No.	Date	Monitoring Code	Description noise level db/A)	Result	N.	Standards (CPCB/FACTORIES ACT)	ands ORIES ACT)
		Day	Night	Day	Night					Day	Night	Day	Night
1	Average	649	1.09						Average	68.7	62.5		
	Maximum	68.2	64.7	20100		,			Maximum	71.6	1.99	are from	-
	Minimum	9.19	55.5	06/6/	2		08.03.2023	AML-8	Minimum	65.8	58.8	19/19/0	2
	Leq db(A)	65.4	62.2				100		(v)qp ba1	69.2	63,4		
	Average	64.5	89						Average	9'02	979		
	Maximum	899	8.18	30,000	8	,	24.02 3032	9 1144	Maximum	73.5	70.8	26/00	***
	Minimum	62.1	56.2	OS/S	2	7	24.03.2023	WAL-8	Minimum	67.7	64.4	15/50	2
	Leg db(A)	64.9	59.4						Leq db(A)	71.2	689		
Q	Monitoring Location 1- PSS AREA-2 NAGARI [	A-2 NAGAR	( WORK ZONE)	NE)			Mon	itoring Locat	Monitoring Location :-VILLAGE KANDABER ( AMBIENT ZONE)	KANDABER	( AMBIENT 2	ONE)	
Monitoring Code	B noise level	Result	n)	Standards (CPCB/FACTORIE	Standards CPCB/FACTORIES ACT)	St. No.	Date	Monitoring Code	Description noise level db(A)	Result	ult	Standards (CPCB/FACTORIES ACT)	ands ORIES ACT)
		Day	Night	Day	Night	500				Day	Night	Day	Night
	Average	71.2	1.79						Average	47.7	38.6		
	Maximum	73.9	68.5	76.000	96		2000 5000	04 100	Maximum	53.8	44.6	22	***
MAL 3	Minimum	68.5	65.7	ne le i	2	•	03/03/50/53	OH-TAG	Minimum	41.6	32,5	66	ç
	Leg db(A)	213	66.2						Leq db(A)	49.8	41.2		
	Average	6'69	65.1						Average	47.6	39.6		
O INV	Maximum	723	888	75/90	30		25 02 2022	DAL ING	Maximum	51.5	41.4	22	AE
	Minimum	67.5	61.4	No. No.		*	43.03.6063	nur. to	Minimum	43.7	37.8	20	Ch.
	Leq db(A)	70.2							Leq db(A)	49.3	39.9		
ž	Monitoring Location :- VILLAGE GARIKALAN ( A	SARIKALAN	( AMBIENT ZONE)	(ONE)	Section Sec	1000	Mo	nitoring Loca	Monitoring Location > VILLAGE DHENGA ( AMBIENT ZONE)	E DHENGA	AMBIENT 20	ONE)	
Monitoring Code	Bescription noise level	Result	ult	Stand (CPCB/FACT	Standards (CPCB/FACTORIES ACT)	St. No.	Date	Monitoring Code	Description noise level	Result	ult	Stand (CPCB/FAC)	Standards (CPCB/FACTORIES ACT)
		heq	Night	Day	Night	9				Day	Night	Day	Night
	Average	48.2	39.2						Average	47.1	39.3		
** 1000	Maximum	51.5	42.5	25	37		11 02 3032	640 43	Maximum	51.4	42.5	4.6	46
1	Minimum	644.9	35.8	00	2		44.00.0063	DIAL-14	Minimum	42.8	36.1	R	40
	Leg db(A)	49.4	40.1						Leq db(A)	48.9	40.6		
	Average	42.4	33.6						Average	47.0	38.9		
11. INB	Maximum	48.6	37.5	33	100	,	27 03 3073	SMI.12	Maximum	51.5	42.4	22	45
1	Minimum	36.2	29.7	4	,		47 CO. TOO CO.		Minimum	42.5	35.3	2	ę
	Leg db(A)	44.7	35.1						Leq db(A)	48.2	39.7		

नवीन कुमार / NAVIN KUMAR वर माजवाक (पर्वाचन प्रवेचन) / DGM (ENVI. MGMT) (म्प्टीमीली जिन्छिटेड/ NTPC Limited कोवल धाना पीर्वाचनशे/ COAL MINING PROJECTS हजारीबान / Hazaribag

Monitoring Location :- VILLAGE KUSUMBHA	ION 1- VILLAGE KUSUMBHA	USUMBHA		AMBIENT ZONE	ONE)		Mo	nitoring Loca	tion > VILLA	Monitoring Location >- VILLAGE BLOCK OFFICE AREA BARKAGAON ( AMBIENT ZONE)	ICE AREA BA	RKAGAON	( AMBIENT 2	ONE
Monitoring Description Result (CPCB/FACTORIES ACT)  db(A)	Result			Standard (CPCB/FACTOR	dand	Is IES ACT)	St. No.	Date	Monitoring	Description noise level db(A)	Result	ų.	Stan (CPCB/FAC	Standards (OPCB/FACTORIES ACT)
Day Night Day h	Night Day	Night Day	Day	Н	_	Night					Day	Night	Day	Night
Average 48.6 35,1	2	2	35,1			Ţ				Average	49.2	40.5		
BAIL 13 Maximum 53.6 38.4 cc	53.6 38.4 cc	38.4			-	4		*100 1001		Maximum	52.8	41.6		-
Minimum 43.5 31.8 33	43.5 31.8 33	31.8	8					13.03.0023	BMC-14	Minimum	45.5	39.4	8	g-
Leg db(A) 49.8 36.5	49.8		36.5			Ť				(v)qp ban	50.4	39.2		1
Average 44.6 36.7	44.6		36.7							Average	41.5	31.2		
Maximum 49.4 40.6	40.6	40.6		-	-			20.00 20.00	** ***	Maximum	48.7	38.9	1	3
Minimum 39.8 32.8 35	39.8 32.8 33	32.8	a		*	0	,	29.03.2023	BNL-14	Minimum	34,3	23.5	8	45
Leg db(A) 46.2 38.1	46.2		38.1							Leg db(A)	44.2	33.8		

नवीन कुमार / NAVIN KUMAR वर पराज्यक (पर्वाचन प्रकेश) I DGM (ENVT. MGMT) (प्रत्येगीती विभिन्नेत NTPC Limited कोवल सन्त्र परिवोचनी COAL MINING PROJECTS हजारीया। / Hazaribag

Monitoring Location :- HAUL ROAD (WORK ZONE) Monitoring Description	Monitoring		Date	+	ON D	Standards	Standards Ct No.	Standards	Standards	Standards	Description Description Standards Standards Standards
db(A)	Code				_	F	(CPCB/FACTORIES ACT)	(CPCB/FACTORIES ACT)	(CPCB/FACTORIES ACT)	(CPCB/FACTORIES ACT)	Code nose revel neson (CPCB/FACTORIES ACT)
+			Г			+		677	677 707	677 707	677 707
Maximum 70.4	_		-	27				67.2	67.2	Maximum 71.4 67.2	Maximum 71.4 67.2
Minimum 64.8	ANK-2	02.02.2023			2	+	8	02/00	65.8 61.4 75/90 70	65.8 61.4 75/90 70	Minimum 65.8 61.4 75/90 70
Leq db(A) 68.2			T/				65.1	69.7 65.1		69.7	69.7
Average 67.5							64.7	70 64.7		70	70
Maximum 72.8	C.IMA	16.00 3033			9		24/80	24/80	68.1	72.4 68.1 75.40 70	Maximum 72.4 68.1 75.90 20
Minimum 62.1		10.02.2023		4	_	2	2	Or Parker	61.2	Minimum 67.6 61.2 /3/30	Minimum 67.6 61.2 (2) 70
Leg db(A) 69.2							65.9	70.9 65.9	1	70.9	70.9
Monitoring Location :- TOP SOIL DUMP[WORK ZONE]	Monitoring						WORK ZONE)			WASTE DUMP (V	
B noise level Result	Monitoring Code	Date		St. No.		Standards (CPCB/FACTORIES ACT) SI. No.	Standards (CPCB/FACTORIES ACT)		Standards (CPCB/FACTORIES ACT)	Standards (CPCB/FACTORIES ACT)	Description Standards noise level Result (CPCB/FACTORIES ACT)
Day					Night	Day Night	-	Day	Day Night Day	Day Night Day	Day Night Day
Average 68.8							647			9'69	9'69
Maximum 71.4	ANIA	OM 02 2023		-	30		75,900 70	25,590	67.5 75,800 70	72.8 67.5 75,80 70	Maximum 72.8 67.5 75,900 70
Minimum 66.2					_			818	618	Minimum 66.4 61.8	Minimum 66.4 61.8
Leq db(A) 69.5			1	ı			65.8			70.4	70.4
Average 69.5							64.4	68.2 64.4	35	68.2	68.2
Maximum 74.1	4301.4	1007 3033			8		90	75,600	67.8 TEATON 20	71.7 67.8 35.4800 20	Maximum 71.7 67.8 ze.ton zn
Minimum 64.8		40.04-4043			2	_	_	~	609	Minimum 64,6 60.9	Minimum 64.6 60.9
Leq db(A) 71.2							65.7	69.4 65.7	Leg db(A) 69.4 65.7	Leg db(A) 69.4 65.7	Leg db(A) 69.4 65.7
Monitoring Location :- DRILLING LOCATION(WORK ZONE)	fonitoring Le	M				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NORK ZONE)	DRK SHOP( WORK ZONE)	Location 1- WORK SHOP( WORK ZONE)	Monitoring Location I- WORK SHOP( WORK ZONE)	Monitoring Location i- WORK SHOP( WORK ZONE)
B Description Result de AMAI	Monitoring Code	Date	.04	St. No.		Standards St. n (CPCB/FACTORIES ACT)	Standards (CPCB/FACTORIES ACT)		Standards (CPCB/FACTORIES ACT)	Result (CPCB/FACTORHES ACT)	Description Standards noise level Result (CPCB/FACTORIES ACT)
Day					Night	Day Night		Day	Day Night Day	Day Night Day	Day Night Day
Average 68.9							63.7	69.9 63.7		6'69	6'69
Maximum 72.2	AMILE	06.00 30030		7	OE.		QE.	25,000	66.1 He too	73,1 66.1 75.00 70	Maximum 73.1 66.1 re.ton 20
Minimum 65.6		00.00.000				2	2	200	61.2	Minimum 66.7 61.2	Minimum 66.7 61.2 13500 10
Leq db(A) 69.8							64.5	70.8 64.5		70.8	70.8
Average 70	1	0		Į.			65.8	69.4 65.8		69.4	69.4
Maximum 72.7	A AME A	20.02 20.23			OK.	75,490 70	75/90	75/90	69.1 75/90	72.6 69.1 75,900	Maximum 72.6 69.1 75,790
Minimum 67.3	_	and and and	6			_		62.5	62.5	Minimum 66.1 62.5	Minimum 66.1 62.5
Leg db(A) 70.9		30					66.7	70.5 66.7		70.5	70.5

नवीन कुमार / NAVIN KUMAR वय गाउरवाव (पर्वारण प्रवेदन)। DGM (ENVT. MGMT.) (अध्येशता विशेष्टेड/ NTPC Limited कोवता वाना परिवारण)। COAL MINING PROJECTS हजारीबान / Hazaribag

canonia.	OFFERNIO.	Monitoring Location :- OPERATOR CASIN( W	VORK ZONE)	E)		Section 2	Mic	onitoring Loc	Monitoring Location >- PSS AREA-1 NAGRI[ WORK ZONE]	REA-1 NAGR	III WORK 20	NE)	
Description noise level db(A)		Result		Standards (CPCB/FACTORIES ACT)	lards ORIES ACT)	SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	#	Stans (CPCB/FAC)	Standards (CPCB/FACTORIES ACT)
	_	Day	Night	Day	Night					Day	Night	Day	Night
Average		89	65						Average	69.4	64.1		
Maximum		71.8	67.2	76,000	ut.		00.00 3003	0 1144	Maximum	72.4	899	1	1
Minimum		64.2	62.8	ne Je i	2	,	06.02.2023	WIL-8	Minimum	699	61.4	06/67	9
Leg db(A)		69.4	65.9						(eq db(A)	70.5	649		
Average	9	67.7	61.8						Average	1.89	65.7		
1 5 1	Maximum 7	71.4	64.5	76,100	04		22.00 20022	9 114	Maximum	72.7	68.7	-	1
Minimum		63.9	59.1	ou in a	2		22.02.2023	WHI. 0	Minimum	63.4	62.6	06/6/	2
(A)qp ba)		68.7	62.9						Leg db(A)	8'69	66.2		
197	S AREA-2	Monitoring Location :- PSS AREA-2 NAGARI (	WORK ZONE	NE)			Mon	toring Locat	Monitoring Location :-VILLAGE KANDABER ( AMBIENT ZONE)	KANDABER	( AMBIENT )	ZONE)	
P 3 4	Description noise level db(A)	Result		Standards (CPCB/FACTORIES ACT)	lards ORIES ACT)	St. No.	Date	Monitoring Code	Description noise level db(A)	Result	ele ele	Stain (CPCB/FAC	Standards (CPCB/FACTORIES ACT)
		Day	Night	Day	Night					Day	Night	Dav	Night
Average	9	1.69	65.2					100	Average	50.3	40,8		
1 4 1	Maximum 7	73.7	68.4	76.100	*		00.00 0000	State and	Maximum	53.4	43.8	ं	
5	Minimum	64.5	619	ne le i	2		09/06:0063	DWC-10	Minimum	47.2	37.8	8	g
	Leg db(A) 7	70.4	66.3						(ed db(A)	51.2	41.4		
Average	9	8.89	63.1						Average	48.8	37.7		
	Maximum 7	72.4	66.4	75/90	200		23.02.3023	BMI.10	Maximum	52.2	42.3	**	
	Minimum	65.1	59.8	ou les			63.06.4063	07-760	Minimum	45.3	33.1	2	G.
	Leg db(A) 6	6.69						The second second	(ed db(A)	50.1	39.2		
	Monitoring Location = VILLAGE GARIKALAN ( AL	KALAN (A	MBIENT ZONE)	ONE)			Mor	litoring Local	Monitoring Location :- VILLAGE DHENGA ( AMBIENT ZONE)	E DHENGA	AMBIENT 2	ONE)	
scripti pise lev db(A)	Description noise level db(A)	Result		Standards (CPCB/FACTORIES ACT)	Sards ORIES ACT)	St. No.	Date	Monitoring Code	Description noise level	Result	#	Stan (CPCB/FAC	Standards (CPCB/FACTORIES ACT)
		Day	Might	Day	Night					Day	Night	Dav	Night
	Average 4	47.7	39.8						Average	47.7	39.7		
	Maximum 5	52.5	43.8	25	46		44 05 3033	Sec. 12	Maximum	51.8	42.3		3
	Minimum 4	42.9	35.8	-	,		41.04.0063	DIME-14	Minimum	43.6	37.1	8	9
-5.1	Leg db(A)	48.9	41.1					300	Leq db(A)	48.9	40.5		
	Average 4	49.3	38.7						Average	49.8	39.2		
	Maximum	52.8	41.8	55	45	3	35.00.2033	086.13	Maximum	53.2	42.8		24
		45.8	35.6		2		2000.000	DIAL-14	Minimum	46.4	35.6	8	40
-	Leq db(A)	50.5	39.5						Leq db(A)	90.6	40.9		

नवीन कुमार / NAVIN KUMAR स्य महत्त्ववक (पर्वत्यन प्रवेपन) / DGM (ENVT. MGMT.) (म्पटीमीटी किस्टिट) NTPC Limited कोवल स्थन कीवोजनहीं COAL MIRING PROJECTS हजारीकाप / Mazaribag

	Moni	toring Locati	Monitoring Location :- VILLAGE KUSUMBHA ( AM	CUSUMBHA	( AMBIENT ZONE)	ONE)		Mo	nitoring Loca	tion :- VILLA	Monitoring Location :- VILLAGE BLOCK OFFICE AREA BARK	CE AREA BA	RKAGAON (	AMBIENT ZONE)	ONE)
St. No.	Date	Monitoring Code	Description noise level db(A)	Result	4	Standards (CPCB/FACTORIE	Standards (CPCB/FACTORIES ACT)	St. No.	Date	Monitoring Code	Description noise level db(A)	Result	th.	Stanc (CPCB/FAC)	Standards (CPCB/FACTORIES ACT)
				Day	Night	Day	Night					Day	Night	Day	Night
			Average	49.6	39.3						Average	49.3	38.8		
	*** 44 44 4443		Maximum	52.7	42.5	20	-		22.02.20.23		Maximum	52.7	42.7	***	
	12.02.0023	DMC-13	Minimum	46.5	36.1	8	ç		13.02.20.63	61.74d	Minimum	45.8	34.8	8	ç
			Leg db(A)	808	40.2		9				(ed db(A)	50.4	40.1		
			Average	49.4	40						Average.	48.7	38		
1	20 00 2000	1.8	Maximum	53.4	44.4	20		*	23 00 2012		Maximum	53.1	40.6	2.0	. 24
	20.02.20.23	BNL-13	Minimum	45.3	35.6	8	45	9	27.00.0003	GML-14	Minimum	44.2	35.3	8	G
			Leg db(A)	50.9	41.7						Leg db(A)	50.3	38.4		

नवीन कुमार / NAVIN KUMAR स्प महत्त्वक (पर्वतिक प्रस्त्त)) DGM (ENVT. MGMT.) रणदीर्वासी वित्तिदेश / NTPC Limited क्षेत्रक स्वत्व चरित्तेज्ञारी। COAL MINING PROJECTS रूजविवाय / Hazaribag

			Standards (CPC8/FACTORIES ACT)	Night		-	2			*	2		STATE OF	Standards (CPCII/FACTORIES ACT)	Night		ik.	2			8	2			Standards (CPCB/FACTORIES ACT)	Night		-	5			100	2	
	S-100		Stan (CPCB/FAC	Day		200 000	15/30			24 000	06/6/		0	Stan (CPCB/FAC	Day		24.600	ne ke			ar los	neles		(JIN	Stan (CPCB/FAC	Day		-	06/6/			75,000	06/67	
		ORK ZONE)		Night	64.8	1.89	61.4	65.6	64	97.9	60.4	64.8	WORK ZONE	-	Night	64.5	66.4	62.6	64.9	65	97.9	62.4	65.5	N(WORK 20	#	Night	67.8	69.4	66.2	67.9	99	9'29	64.4	677
		JL ROAD (W	Result	Day	66.4	9'89	64.2	1.79	68.4	72.6	642	69.4	OIL DUMP!	Result	Day	69.3	70.4	68.2	68.2	6'69	73.2	66.5	71.2	IG LOCATIO	Result	Day	70.8	72.9	68.6	71.1	70.2	72.7	67.7	30.4
	3	scation :- HAL	Description noise level db(A)		Average	Maximum	Minimum	Leg db(A)	Average	Maximum	Minimum	(ed db(A)	ation > TOP 5	Description noise level db(A)		Average	Maximum	Minimum	Leg db(A)	Average	Maximum	Minimum	Leq db(A)	ion > DRILLIN	Description noise level	-	Average	Maximum	Minimum	Leg db(A)	Average	Maximum	Minimum	San distant
ect	ary-202	Monitoring Location >- HAUL ROAD (WORK ZONE)	Monitoring		×		ANL-Z	12	V		VIII.	13	Monitoring Location >- TOP SOIL DUMP(WORK ZONE)	Monitoring		V	A NAME A		7		A		_	Monitoring Location >- DRILLING LOCATION(WORK ZONE)	Monitoring				WHI.D			AMILE		
Pakri Barwadih Coal Mining Project	se Monitoring Data Month of January-2023		Date			200 00 0000	03,01,2023			43.04 3013	17.01.0023		M	Date			06.01.3032	200010000			10.01 3033	13/01-0063		Mo	Date			04.04.30.00	07.01.0023			21 01 3032	21.01.0023	
al Min	Month	Sec. Sec.	SI. No.								4			St. No.			-					4		1	St. No.							,	7	
adih Co	Data l		ards ORIES ACT)	Night		*	5			*	2		1	ands ORIES ACT)	Night	3337.113	30	2			u	2		200	ards ORIES ACT)	Night		*	2	j		96	2	
i Barwa	nitoring	()	Standards (CPCB/FACTORIES ACT)	Day		20 000	06/6/			24 600	ne/ci			Standards (CPCB/FACTORIES ACT)	Day	1000	25/90				76,100	13/30			Standards (CPCB/FACTORIES ACT)	Day		25 /20	ne/er			25/90	13/30	
Pakr	ise Moi	(WORK ZONE)	4	Night	99	68.5	63.4	66.7	65.4	68.6	62.1	65.8	WORK ZONE)	4	Night	63.9	66.3	61.4	64.2	64.6	9'89	9'09	62.9	VORK ZONE)	4	Night	66.4	9.89	64.2	8'99	62.3	66.4	58.2	757
	Noi	ATION ARE	Result	Day	4.69	72.6	1,99	70.4	70.9	73.2	9'89	71.2	TE DUMP,()	Result	Day	69.8	72.4	67.2	70.7	69.4	72.3	66.4	70.4	RK SHOP( V	Result	Day	69.3	72.4	66.2	70.2	71.1	73.8	68.4	71.4
		tion :- EXCAV	Description noise level db(A)		Average	Maximum	Minimum	Leg db(A)	Average	Maximum	Minimum	Leg db(A)	cation > WAS	Description noise level db(A)		Average	Maximum	Minimum	(ed dp(A)	Average	Maximum	Minimum	Leg db(A)	ocation I- WC	Description noise level		Average	Maximum	Minimum	Leq db(A)	Average	Maximum	Minimum	Lan others
	0.826	Monitoring Location :- EXCAVATION AREA	Monitoring				AMICI			* 1000			Monitoring Location WASTE DUMP, (W	Monitoring Code			AMI.3				4 101 3			Monitoring Location 1- WORK SHOP( W	Monitoring Code				C-NAV			ANI.S	AUNC.3	
	190 and	Me	Date			2000 3000	02.01.4023			46.00 3033	10.01.0023		SACS ALC:	Date			04 01 3033			8	18 01 3033	10.01.404.3		The contract	Date			00.00 3033	00.01.0023			30.01 3033	60/04:40/63	
		Name of Street	St. No.								,			St. No.							,		-	The state of	SI. No.				•				4	

नवीन कुमार / NAVIN KUMAR स्व बारकार (प्रवेदन प्रवान) / DGM (ENVT. MGMT.) (प्रदेशीली क्षित्रिकेट NTPC Limited बोक्क व्यस्त विकेदनहीं / COAL MANNG PROJECTS हजारीवान / Hazaribag

p.	nitoring Loc	Monitoring Location >- OPERATOR CABIN( W	<b><i>TOR CABIN</i></b>	( WORK ZONE)	(E)	100 March 100 Ma		M	onitoring Loc	Monitoring Location :- PSS AREA-1 NAGRIJ WORK ZONE)	EA-1 NAGR	( WORK ZOM	(E)	
	Monitoring Code	Description noise level db(A)	Result	4	Stand (CPCB/FACT	Standards (OPCB/FACTORIES ACT)	SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	W.	Standards (CPCB/FACTORIES ACT)	Standards FACTORIES ACT)
			Day	Night	Day	Night					bay	Night	Day	Night
		Average	9'69	66.4						Average	8'69	65.9		
_	* ****	Maximum	72.5	683	THE STORY	-		CCOC 10 00	4411.0	Maximum	723	979	36,000	4
	VOME-1	Minimum	66.7	64.4	ne/e/	2		03:01-00:03	WAL-9	Minimum	67.2	64.2	raca	5
		Leg db(A)	70.4	65.4						Leg db(A)	68.3	663		
		Average	68.2	60.4						Average	9'69	66.4		
_		Maximum	71.4	62.1	200.000	- 200		22.00 20123	0 1111	Maximum	72.5	683	are inn	-
	AME!	Minimum	649	58.6	neker	2	4	63.04.0063	MACO	Minimum	66.7	64.4	06/6/	2
_		Leg db(A)	9.89	9'09						(ed db(A)	70.4	65.4		
10	nitoring Loca	Monitoring Location :- PSS AREA-2 NAGARI (	EA-2 NAGAR	II ( WORK ZONE)	ONE)	No.		Mon	Itoring Locat	Monitoring Location :- VILLAGE KANDABER ( AMBIENT 20NE)	KANDABER	AMBIENT 2	ONE)	0000
	Monitoring Code	Description noise level db(A)	Result	JI,	Stand (CPCB/FACT	Standards CPCB/FACTORIES ACT)	SI. No.	Date	Monitoring	Description noise level db(A)	Result	4	Stan (CPCB/FAC	Standards (CPCB/FACTORIES ACT)
1			Day	Night	Day	Night					Day	Night	Day	Night
		Average	69.2	63.1						Average	50.4	40.4		
2000 1000	AMI O	Maximum	72.9	67.2	35,650	*		2005 1001	DAY . NO.	Maximum	52.6	44.1	22	- 10
_	MARCO	Minimum	65.5	58.9	OL IC	2		10.01.4042	DIAT-100	Minimum	48.2	36.7	8	ç
_		Leq db(A)	70.3	643						(ed db(A)	50.8	40.4		
		Average	8'69	63.9						Average	1.64	38.9		
33.04.3033	ANI O	Maximum	72.4	66.3	75,000	ķ		24.01.3032	DATE NO	Maximum	52.9	42.7	33	98
_	MARCO	Minimum	67.2	61.4	ne/er	2		64.01.0063	DOK-300	Minimum	46.4	35.1	8	40
_		Leq db(A)	70.7	m						Leg db(A)	50.7	39.7		
100	toring Locati	Monitoring Location :- VILLAGE GARBKALAN (	GARBKALAN	( AMBIENT ZONE)	ZONE)			Mo	nitoring Loca	Monitoring Location :- VILLAGE DHENGA ( AMBIENT ZONE)	E DHENGA (	AMBIENT 20	ONE)	A 1. C.
	Monitoring Code	Description noise level dNA)	Result	#5	Stans (CPCB/FACT	Standards (CPCII/FACTORIES ACT)	St. No.	Date	Monitoring Code	Description noise level	Result	H.	Stan (CPCB/FAC	Standards (CPCB/FACTORIES ACT)
			Day	Night	Day	Night					Day	Night	Day	Night
		Average	47.4	38.5						Average	48.6	39.7		
11 01 3033	0 Mil. 11	Maximum	50.4	43.2	20	46		13.04 3033	0.41.13	Maximum	52.5	42.3	***	. 46
-	TT-THE	Minimum	44.4	33.8		2	4	14.01.0063	DIALTE	Minimum	44.6	37.1	8	ç
		Leg db(A)	48.1	40.3						Leg db(A)	49.4	40.5		
		Average	50.1	38.5						Average	46.3	39.7		
35.01 3033	BMI.11	Maximum	53.4	43.2	25	46	•	27.01.3033	GN1.43	Maximum	51.4	42.9	22	46
-	Durcitt	Minimum	46.8	33.8	8	2		47.01.6045		Minimum	41.2	36.5	8	9
		Leq db(A)	50.8	40.3					-	(ed db(A)	47.5	40.2		

नवीन कुमार / NAVIN KUMAR त्व महत्रकात (पर्वाराण प्रवेग) / DGN (ENVI. NGMI.) (अटीपीसी निर्मिटेड/ NTPC Limited कोवात स्वरूप परियोजनी/ COAL MINING PROJECTS हजारीबाग / Hazaribag

Monitoring Location :- VILLAGE BLOCK OFFICE AREA BARKAGAON ( AMBIENT ZONE)	Standards	(CPCB/FACTORIES ACT)	(CPCB/FACTORIES ACT) Night Day Night							
200	Result		Day Night	+						
Description	160			Average	Average	Average Maximum Minimum	Average Maximum Minimum Leq db(A)	Average Maximum Minimum Leg db(A) Average	Average Maximum Minimum Leq db(A) Average Maximum	Average Maximum Minimum Leq db(A) Average Maximum Minimum
	No. Date Monitorin Code					1 14.01.2023 BNL-14	1000			
	St. No.					-	-	-		1 7
	Standards /FACTORIES ACT)	Minhe	usidin.	11001	-	45	45	8	8 1	\$ £
	Standards (CPCB/FACTORIES ACT)	Dave	Ann	1		s	8	S S	8 1	8 8
	1000	Night	21.00	38.9	38.9	38.9	38.9 42.7 35.1	38.9 42.7 35.1 39.7 38.1	38.9 42.7 35.1 39.7 38.1	38.9 42.7 35.1 39.7 38.1 40.2 35.9
	Result	Dav		49.7	49.7	49.7	49.7 52.9 46.4 50.7	49.7 46.4 50.7 49.9	49.7 52.9 46.4 50.7 49.9 53.4	49.7 46.4 50.7 49.9 53.4 46.3
	Description noise level db(A)			Average	Average	Average Maximum Minimum	Average Maximum Minimum Leg db(A)	Average Maximum Minimum Leg db(A) Average	Average Maximum Minimum Leg db(A) Average Maximum	Average Maximum Minimum Leg db(A) Average Maximum Minimum
	Monitoring Code				0,000	BNL-13	BNL-13	BNL-13	BNL-13	BNL-13 BNL-13
	Date				45.04.3003	13.01.2023	13.01.2023	13.01.2023	13.01.2023	13.01.2023
	St. No.						1	-		7 7

नवीन कुमार / NAVIN KUMAR या पायरवा (पर्वारात प्रवेशन) I DGM (ENVT. MGMT.) हन्दीनीशी स्थितिश NTPC Limited शोधना सन्तर परियोजना (I COAL MINING PROJECTS हजारीनाम / Hazaribag

Noise   Monitoring   Data   Monitoring   Locations   Standards	Standards   CPCB/FACTORIES ACT)   St. No.   Date   Monitoring   Lead Bib(A)   T.1.2.3022   ANI2	Standards   Stan	tion :- EXC	-	-					-		ı	ı	I	
Standards   Standards   Standards   Standards   Standards   Standards   Standards   Standards	Standards   St. No.   Date   Monitoring   Description   Result   Code   Abirth   Code   Co	Standards   St. No.   Date   Code   Code   Average   Code   Average   Aver	AVATIO	IOIS	e Mon	toring	Data M	onth o	f Decen	nber - 2	022				
Cooke	Carcillation   Standards   St. No.   Date   Code   Code   Abida   Code	Code   Average   Standards   St. No.   Date   Code   Average   Code   Average   Code   Average   Code   Average   Code   Code   Average   Code   Co	6 7	ARE	<b>WORK 20</b>	NE)	100			Monitoring I	ocation :- HA	UL ROAD (	WORK ZONE)		
Day   Night	Day   Night	Day   Night		Resu		Stand (CPCB/FACT	ands ORIES ACT)	St. No.	Date	Monitoring Code	Description noise level db(A)	Re	nult	Stand (CPCB/FACT	ands ORHES ACT)
75,90   70   1   02.12.2022   ANL-2   Maximum   71.3   69.2     75,90   70   2   17.12.2022   ANL-2   Maximum   74.2   69.6     75,90   70   1   04.12.2022   ANL-4   Maximum   65.6   65.6     75,90   70   1   04.12.2022   ANL-4   Minimum   67.4   62.4     75,90   70   2   19.12.2022   ANL-4   Minimum   67.4   68.7     81	75/90   70   1   02.12.2022   ANU-2   Maximum   71.3   69.2     75/90   70   2   17.12.2022   ANU-2   Maximum   66.3   66.9     75/90   70   2   17.12.2022   ANU-2   ANU-2   Anumarin	75/90   70   1   02.12.2022   AMI-2   AMI-2   AMI-2   AMI-2   AMI-2   AMI-2   AMI-2   AMI-2   AMI-3	å	AR	Night	Day	Night					Day	Night	Day	Night
75/90   70   1   02.12.2022   ANL-2   Maximum   71.3   69.2     75/90   70   2   17.12.2022   ANL-2   Maximum   66.3   64.6     Standards	75/90   70   1   02.12.2022   ANL-2   Maximum   71.3   69.2     75/90   70   2   17.12.2022   ANL-2   Minimum   66.3   64.6     75/90   70   2   17.12.2022   ANL-3   Minimum   73.2   63.9     75/90   70   1   04.12.2022   ANL-4   Minimum   67.4   62.4     75/90   70   1   04.12.2022   ANL-4   Minimum   67.4   63.6     75/90   70   2   19.12.2022   ANL-4   Minimum   67.4   63.6     75/90   70   2   19.12.2022   ANL-4   Minimum   67.4   63.6     75/90   70   1   04.12.2022   ANL-4   Minimum   67.4   63.6     75/90   70   1   06.12.2022   ANL-4   Average   70.2   66.2     75/90   70   1   06.12.2022   ANL-6   Average   70.5   66.2     75/90   70   70   70   70   70   70     75/90   70   70   70   70   70   70     75/90   70   70   70   70   70   70   70	75/90   70   1   02.12.3022   ANU-2   Maximum   71.3   69.2   64.6	X	8.0	19						Average	68.8	6.99		
75/90   70   2   17.12.2022   ANL-2   Maximuum   66.3   64.6	75/90   70   2   17.12.2022   ANL-2   Minimuum   66.3   64.6     75/90   70   2   17.12.2022   ANL-2   ANL-2   ANL-3   ANL-3   ANL-4   Antimuum   66.3   67.1     Standards	75/90   70   2   17.12.2022   ANIL-2   ANIL-2   ANIL-2   ANII-6   ANIL-3   ANIL-3   ANIL-3   ANII-6	Maximum 73	3	68.3	200 000	-		000000000000000000000000000000000000000		Maximum	71.3	69.2	20 100	-
Table   Tabl	Table   Tabl	75,90   70   2   17,12,2022   ANL-2   Average   70,2   66,8		3.1	65.7	13/36	2		02.12.2022	AMPLE	Minimum	66.3	64.6	nerer.	2
75,90   70   2   17,12,2022   ANIL-2   ANIL-2   ANIL-2   ANIL-2   ANIL-2   ANIL-3	75/90   70   2   17.12.2022   ANIL-2   Maximuum   AL-2   66.8   ANIL-2   ANIL-2   ANIL-2   ANIL-3	75,90   70   2   17.12.2022   ANL-2   ANE-2	7	9	66.2						Leg db(A)	69.3	67.1		
75/90   70   2   17.12.2022   ANIL-2   ANIL-2   ANIL-2   ANIL-2   ANIL-2   ANIL-3	75/90   70   2   17.12.2022   ANIL-2   ANIL-2   ANIL-2   ANIL-2   ANIL-2   ANIL-3	Standards   70   2   17.12.2022   ANL-2   Maximuum   74.2   69.6	1	0.3	65.2						Average	70.2	8'99		
Standards   70   2   27.12.2022   ANIL-4   Monitoring Location = TOP SOIL DUMP[WORK ZONE]     Standards   Si. No.   Date   Monitoring   Description   Result   Animum   65.4   65.6	Standards   Stan	Standards   Stan	Maximum 7	3.2	68.2	24 100	-		****	*	Maximum	74.2	9'69	36 000	-
Standards   Standards   Standards   Standards   Standards	Standards   St. No.   Date   Monitoring   Description   TOP SOIL DUMP WORK ZONE	Standards   St. No.   Date   Monitoring Location   Day   Night   Day   Day   Night   Day   Day   Night   Day   Day   Night   Day   D		67.4	62.1	ne/er	2	7	17.12.0022	AME-2	Minimum	66.2	63.9	06/6/	2
Standards   Si. No.   Date   Monitoring location := TOP SOIL DUMP[WORK ZONE]	Standards   Si. No.   Date   Monitoring location = TOP SOIL DUMP[WORK ZONE]	Standards   Stan	H	71.3	66.3						Leq db(A)	71.6	1.79		
Standards (CPCB/FACTORIES ACT)         Si. No.         Date Date Date Day         Monitoring db(A) Description dots level db(A)         Description db(A)         Result db(A)         Night db(A)	Standards   St. No.   Date   Monitoring   Description   Result	Standards   St. No.   Date   Code   Absolute   Code   C	VASTI	DUMP,(	WORK ZONE	0			-	Applitoring to	cation :- TOP	SOIL DUM	P(WORK ZON)	(3	
Day         Night         Day         Night           75/90         70         1         04.12.2022         ANIL-4         Maximuum A7.4         65.6           75/90         70         2         19.12.2022         ANIL-4         Maximuum A7.4         66.3           75/90         70         2         19.12.2022         ANIL-4         Maximuum A7.4         65.4           Standards         Standards         St. No.         Date         Monitoring Location - DRILLING LOCATION/WORK ZOA Gb/A         Avverage         70.3         65.6           Day         Night         Result Gb/A)         71.1         65.6         Average         70.2         66.2           Day         Night         Code         Gb/A)         Average         70.2         66.2           75/90         70         1         06.12.2022         ANI-6         Maximuum A7.2         66.1         68.1	Day         Night         Day         Night           75/90         70         1         04.12.2022         AML-4 Average         70.5         65.6           75/90         70         2         19.12.2022         AML-4 Average         70.3         66.3           75/90         70         2         19.12.2022         AML-4 Average         70.3         67.4         65.6           Standards         Standards         St. No.         Date         Monitoring Location :- DRILLING LOCATION(WORK Zon Golds)         77.1         65.6           Day         Night         Average         70.2         66.2         65.6           Day         Night         Code         Average         70.2         66.2           75/90         70         1         06.12.2022         ANL-6 Average         70.2         66.2           75/90         70         1         06.12.2022         ANL-6 Average         70.2         69.1           75/90         70         1         06.12.2022         ANL-6 Average         70.2         69.1           75/90         70         1         06.12.2022         ANL-6 Average         70.2         66.1         67.2           75/90         70	Day   Night	Description noise level db(A)	Resu			lands ORIES ACT)	SI. No.	Date	Monitoring Code	Description noise level db(A)	Re	suft	Stanc (CPCB/FACT	ards ORIES ACT)
75/90 70 1 04.12.2022 AML-4 Maximum 73.5 65.6  75/90 70 2 19.12.2022 AML-4 Minimum 67.4 66.3  Standards  Stan	75/90 70 1 04.12.2022 AML-4 Maximum 73.5 65.6  75/90 70 2 19.12.2022 ANL-4 Minimum 67.4 66.3  Standards  Standards  Day Night  Day Night  T5/90 70 1 06.12.2022 ANL-6 Maximum 773.2 67.3  T5/90 70 1 06.12.2022 ANL-6 Maximum 773.2 65.2  ANL-6 Minimum 67.4 58.6  Anterage 70.2 65.2  ANL-6 Maximum 773.2 65.2  ANL-6 Minimum 773.2 65.3  Anterage 70.2 66.2	75/90 70 1 04.12.2022 ANIL-4 Maximum 73.5 68.7 68.3 Leg db[A] 71.4 66.3 ANIL-4 Minimum 67.4 62.4 ANIL-4 ANIL-6 ANIL-4 ANIL-4 ANIL-6 ANIL-4 ANIL-6 ANI	_	yec	Night	Day	Night					Day	Night	Day	Night
75/90   70   1   04.12.2022   ANIC-4   Maximum   73.5   68.7     15/90   70   2   19.12.2022   ANIC-4   Maximum   67.4   66.3     25/90   70   2   19.12.2022   ANIC-4   Minimum   67.4   66.3     25/90   70   2   19.12.2022   ANIC-4   Minimum   67.4   58.6     25/90   70   1   06.12.2022   ANIC-6   Minimum   74.2   66.1     25/90   70   1   06.12.2022   ANIC-6   Minimum   74.2   69.1     25/90   70   1   06.12.2022   ANIC-6   Minimum   66.1   63.2     25/90   70   70   70   70   66.2     25/90   70   70   70   70   66.2     25/90   70   70   70   70   66.2     25/90   70   70   70   70   66.2     25/90   70   70   70   70   70   70     25/90   70   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70     25/90   70   70   70   70   70   70     25/90   70   70   70   70   70   70     25/90   70   70   70   70   70   70     25/90   70   70   70   70   70   70     25/90   70   70   70   70   70   70   70     25/90   70   70   70   70   70   70   70	75/90 70 1 04.12.2022 ANIL-4 Minimum 73.5 68.7 66.3 575/90 70 2 19.12.2022 ANIL-4 Minimum 67.4 66.3 68.3 58.4 58.4 58.4 58.4 58.4 59.4 58.4 59.4 58.6 59.3 58.4 59.4 59.4 59.4 59.4 59.4 59.4 59.4 59	75/90 70 1 04.12.2022 ANIL-4 Minimum 73.5 68.7  75/90 70 2 19.12.2022 ANIL-4 Minimum 67.4 66.3  Average 70.3 63.3  Anil-6 Maximum 73.2 67.3  Anil-6 Average 70.3 63.3  Anil-6 Minimum 73.2 67.3  Anil-6 Average 70.3 63.3  Average 70.3 63.3  Average 70.4 66.2  Average 70.4 66.3  Average 70.4 66.3  Average 70.2 66.3  Average 70.2 66.2  Average 70.2 66.2  Average 70.4 64.6		70.2	1.99						Average	70.5	65.6		
75/90   70   2   19.12.2022   ANL-4   Minimum   67.4   66.3	75/90   70   2   19.12.2022   ANL-4   Minimum   67.4   66.3	75/90   70   2   19.12.2022   ANL-4   Maximum   67.4   66.3	Maximum 7	14.1	9.89	75/90	20	-	04 12 2022	AMI.A	Maximum	73.5	68.7	75/90	200
75/90   70   2   19.12.2022   ANL-4   Average   70.3   6.5.3     Average   70.3   6.3     Average   70.2   6.6     Average   70.2     A	75/90   70   2   19.12.2022   ANL-4   Average   70.3   6.5.3     Average   70.3   6.3     Average   70.2   6.5.3     Average   70.2   6.5.3     Average   70.2   6.5.2     Average   70.2   6.5.3     Average   70.3   6.5.3     Average   70.2   6.5.3     Average   70.3   6	75/90   70   2   19.12.2022   ANL-4   Maximum   73.2   63.3     Average   70.3   63.3     Average   70.3   63.3     Average   70.3   63.3     Average   70.3   63.3     Average   70.1   65.6     Average   70.2   65.3     Average   70.2   66.2     Average   70.2   66.2     Average   70.2   66.2     Average   70.2   66.2     Average   70.4   64.6     Average   70.5     Average   70.6     Average   70.7     Average   7	9	6.2	63.5	ne fe :	2		-		Minimum	67.4	62.4	200	2
75/90   70   2   19.12.2022   ANL-4   Maximum   73.2   67.3   63     Maximum   73.2   67.3   63.3     Leg db[A]   71.1   65.6     Leg db[A]	75/90   70   2   19.12.2022   ANL-4   Maximum   73.2   67.3   63     Maximum   73.2   67.3   63.3     Item   Antiporting Location DRILLING LOCATION/WORK ZON     Standards   St. No.   Date   Code   Able   Average   70.2   65.2     T5/90   70   1   06.12.2022   ANL-6   Mishimum   66.1   63.2     Maximum   74.2   69.1     Maximum   66.1   63.2     Maximum   66.1   67.2     Maximum   66.1   67.2     Maximum   66.1   67.2     Maximum   66.1   63.2     Maximum   66.1   67.2     Maxi	75/90   70   2   19.12.2022   ANL-4   Maximum   73.2   67.3   63	7	8	66.7						Leg db(A)	71.4	66.3		
75/90   70   2   19.12.2022   ANL-4   Maximum   73.2   67.3   67.3     Item	75/90   70   2   19.12.2022   ANL-4   Maximum   73.2   67.3   67.3	75/90   70   2   19.12.2022   ANL-4   Maximum   73.2   67.3		888	63.1						Average	70.3	63		
Standards   St. No.   Date   Monitoring   Description   Day   Night     75/90   70   1   06.12.2022   ANI-6   Minimum   67.4   58.6     1.1	Standards   St. No.   Date   Average   70.2   65.6	Standards   Stan	Maximum 7	72.4	66.4	75/90	OK.		19 12 2022	4101.4	Maximum	73.2	67.3	75/90	92
Standards   Standards   St. No.   Date   Monitoring   Description   Result	Standards   St. No.   Date   Monitoring   Description   P.6.5	Standards   Standards   Standards   Standards   Standards		65.1	59.8	20.00	2		******	-	Minimum	67.4	58.6	-	2
Standards   Standards	Standards   Standards	Standards   Standards   St. No.   Date   Monitoring Description   Result	Leg db(A)	66.69	64.4						Leg db(A)	71.1	65.6		
Night   Standards ACT)   St. No.   Date   Monitoring   Description   Result	Might         Day         Night         Day         Night         Average         70.2         66.2         ANL-6         ANL-6         Maximum         Ant-6         Minimum         66.1         65.2         65.2         65.2         66.1         65.2         66.1         65.2         66.2         67.2 <td>  Standards</td> <td>WORK</td> <td>SHOP( V</td> <td>VORK ZONE</td> <td></td> <td></td> <td>2</td> <td>Mc</td> <td>unitoring Loca</td> <td>vtion :- DRILLI</td> <td>NG LOCAT</td> <td>ION(WORK 20</td> <td>ONE)</td> <td></td>	Standards	WORK	SHOP( V	VORK ZONE			2	Mc	unitoring Loca	vtion :- DRILLI	NG LOCAT	ION(WORK 20	ONE)	
Might         Day         Night         Day         Night         Day           66.1         66.1         70.2         66.2         66.2           68.5         75/90         70         1         06.12.2022         ANI-6         Maximum         74.2         69.1         75/90	Might         Day         Night         Day         Night         Day           66.1         66.1         Average         70.2         66.2           63.6         75/90         70         1         06.12.2022         ANL-6         Maximimum         74.2         69.1         75/90           63.4         65.4         71.5         66.1         63.2         ANL-6         ANL-6         ANL-6         ANL-6         66.1         63.2         75/90	Might         Day         Night         Day         Night         Day           66.1         66.1         Average         70.2         66.2         66.2           68.5         75/90         70         1         06.12.2022         ANL-6         Maximum         74.2         69.1         75/90           65.4         65.4         ANL-6         Minimum         66.1         63.2         75/90           65.4         65.4         Average         70.4         64.6         75/90           66.4         75,70         2         2112.2022         ANL-6         Maximum         73.1         67.3	Description noise level db(A)	Resu	4	Stanc (CPCB/FACT	Sards ORIES ACT)	St. No.	Date	Monitoring Code	Description noise level db(A)	Re	sult	Stanc (CPCB/FACT	ands ORIES ACT)
66.1 Average 70.2 66.2 ANL-6 Maximum 74.2 69.1 75/90 43.6 ANL-6 Minimum 66.1 63.2 75/90	66.1 68.5 75/90 70 1 06.12.2022 ANL-6 Minimum 66.1 63.2 F/90 75.4 65.4 67.2	66.1 68.5 75/90 70 1 06.12.2022 ANI-6 Minimum 74.2 69.1 75/90 75.4 65.4 65.4 66.1 63.2 65.4 65.4 64.6 66.4 66.4 64.6 75/90 70 2 21.12.2022 ANI-6 Maximum 73.1 67.3 75/90		Day	Night	Day	Night				100000	Day	Night	Day	Night
69.5 75/90 70 1 06.12.2022 ANL-6 Maximum 74.2 69.1 75/90 Minimum 66.1 63.2 75/90	63.6 75/90 70 1 06.12.2022 ANL-6 Minimum 66.1 63.2 75/90 15.5.4	63.6 75/90 70 1 06.12.2022 ANt-6 Maximum 74.2 69.1 75/90 75.4 64.6 65.4 65.4 65.4 75/90 70 2 21.12.2022 ANt-6 Maximum 73.1 67.3 75/90		70	1.99						Average	70.2	66.2		
63.6 (315) /U LLAZZOZZ AMILO Minimum 66.1 63.2 (3150)	63.6 (3.2 (3.20) 1 (0.14.40)22 (3.10) 1 (6.1 63.2 (3.10) 1 (6.1 65.2 (3.10) 1 (6.10) 1 (6.1 65.2 (3.10) 1 (6.1 65.2 (3.10) 1 (6.1 65.2 (3.10) 1 (6	63.6 (3.4) (65.4) (65.4) (65.1) (63.2 (3.2) (3.2) (65.4) (	Maximum	73.8	68.5	76 ANA	8		06 13 3033		Maximum	74.2	1.69	ar mo	or.
	65.4 Leg db(A) 71.5	65.4 66.4 75,90 70 2 21.12.2022 ANII-6 Maximum 73.1 67.3 75,90		66.2	63.6	ne le	2	4	00.14.4044		Minimum	1.99	63.2	06/6/	2
63.1 Average 70.4		DE 75 TO	Maximum	73.1	66.4	26/90	20		21 12 2022		Maximum	73.1	67.3	25/90	02
65.4 75/90 70 2 21.12.2022 ANL-6 Maximum 67.6 Minimum 67.6	59.8 75/90 70 2 21.12.2022 ANL-6 Minimum 73.1 67.3 75/90 Minimum 67.6 61.8		(v)qp ba)	70.9	64.2						Leg db(A)	71.3	65.8		

नवीन कुमार / NAVIN KUMAR वर्ष महास्थाक (पर्यावल प्रकार) / DGM (ENVI. MGMT) (न्वर्गमीली स्थितेश NTPC Limited कोवला कान परियोजनाई) COAL MINING PROJECTS हजारीबाग / Hazaribag

3	on :- Orena	Monitoring Location :- OPERATOR CABIN( WO	( WORK ZONE)	NE)			Mi	onitoring Loca	Monitoring Location :- PSS AREA-1 NAGRI( WORK ZONE)	REA-1 NAGR	I WORK ZO	NE)	
Description noise level db(A)	-	Result	4	Stanc (CPCB/FACT	Standards CPCB/FACTORIES ACT)	SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	ık	Standards (CPCB/FACTORIE	Standards (CPCB/FACTORIES ACT)
	_	Day	Night	Day	Night				0.00	Day	Night	heq	Night
Average		20.6	1.99		0.0000000				Average	71.4	65.7		
Maximum	-	74.3	9.89	ar loo	100		00 43 3033	0 104	Maximum	73.1	68.5	and lane	-
Minimum		8.99	63.5	06/6/	2	-	08.12.2022	AML-8	Minimum	9.69	62.8	75/90	8
Leg db(A)		72.1	6.99					0.63	Leg db(A)	71.5	9.99		
Average		68.9	64.4						Average	8.89	65.2		
Maximum	8	73.2	67.4	36,000	g.		23 13 3033	444.0	Maximum	72.1	67.7	The first	-
Minimum		64.6	61.3	13/30		4	43.14.6066	nan-e	Minimum	65.5	62.6	ne/e/	2
Leg db(A)	-	70.2	65.5						Leg db(A)	8.69	65.6		
n > PS	SARE	A-2 NAGAR	Monitoring Location :- PSS AREA-2 NAGARI ( WORK ZONE)	(and		1000	Mon	Monitoring Location :-VILLAGE KANDABER ( AMBIENT ZONE)	on :-VILLAGE	KANDABER	( AMBIENT 2	ONE)	-
Description noise level db(A)	hwel	Result	ık	Stanc (CPCB/FACT	Standards (CPCB/FACTORIES ACT)	St. No.	Date	Monitoring Code	Description noise level db/A1	Result	4	Stan (CPC8/FACI	Standards (CPCB/FACTORIES ACT)
		Day	Night	Day	Night					Ved	Night	Day	Night
Average		1.69	65.5						Average	50.4	40.3		
Maximum	g.	73.9	9'89	75 /00	30		*** ** ***	011 100	Maximum	54.2	43.2		4
Minimum	8	64.3	62.3	ne her			11.12.2022		Minimum	46.6	37.4	8	49
Leg db(A)	A)	70.6	66.4						Leq db(A)	51.9	41.1		
Average		6.69	64.9						Average	49.7	39.6		
Maximum	E	73.4	67.3	75/00	20	,	26 17 2022	BAS. 10	Maximum	53.8	43.7	22	46
Minimum	6	66.4	62.4	action.			*0.15.406	ne and	Minimum	45.6	35.4	22	9
Leq db(A)	A)	71.2	65.7						Leg db(A)	51.1	40.7		
- VILL	AGE	Monitoring Location :- VILLAGE GARIKALAN ( AM	( AMBIENT ZONE)	ZONE)	1		Mo	Monitoring Location :- VILLAGE DHENGA ( AMBIENT ZONE)	tion :- VILLAG	SE DHENGA (	AMBIENT Z	(JNC)	-
Description noise level db(A)	5 Te	Result	4	Stanc (CPCB/FACI	Standards (CPC8/FACTORIES ACT)	St. No.	Date	Monitoring Code	Description noise level db(A)	Result	4	Stan (CPCB/FAC	Standards (CPCB/FACTORIES ACT)
		Day	Night	Day	Night					Day	Night	Day	Night
Average		49.8	39.2						Average	48.2	39.1		
Maximum	un	53.2	42.8	25	AC		43 43 5033	040.03	Maximum	52.8	42.8		
Minimum	un	46.4	35.6	2			13.16.6026		Minimum	43.5	35.4	25	g
Leq db(A)	A)	50.6	40.9						Leg db(A)	49.9	40.4		
Average		49	39.1						Average	38	48.7		
Maximum	mn	53.1	42.8	22	. 46	•	2013 3033		Maximum	40.6	53.1		
Minimum	E I	44.9	35.3		2	4	20.12.0022	DIAL-14	Minimum	35.3	44.2	6	6
Leg db(A)	A	20.9	40.1						Lea db(A)	38.4	50.3		

नवीन कुमार / NAVIN KUMAR ज्य पहाडका (पर्यास्त प्रकार) IDGM (ENVI MGMT) एमटीमीली काम्प्रेड/ NTPC Limited कांक्स खरन परिकेशनी/ COAL MINING PROJECTS हजारीकाप / Hazaribag

ı			I			The same of the same of	SE BROKE OF	MONITORING LOCADON :- VILLAGE BLOCK OFFICE AREA BARKAGAON ( AMBIENT ZONE	N ( AMBIENI ZONE)
SI. No.		Standards (CPCB/FACTORIES ACT) SI. N		o o	Date	Monitoring	Description noise level db(A)	Result	Standards (CPCB/FACTORIES ACT)
	Night	Night				1		Day Night	Day Night
	-	200000					Average	-	H
					1000000		Maximum	53.4 44.4	
+	÷	ç	-		15.12.2022	8MC-14	Minimum	45.3 35.6	25
			_				Leg db(A)	50.9 41.7	
				-			Average	48.7 38.2	
	*						Maximum	53.4 42.8	
*	40	5	7		30.12.2022	8NL-14	Minimum	43.9 33.5	25
							Leg db(A)	50.4 39.6	

नवीन कुमार / NAVIN KUMAR वर महाद्ववक (पर्वदान प्रदेव) I DGM (ENVT. MGMT.) (म्बर्टमीली जिल्लेट्टा NTPC Limited कोवल क्षत्र परिवेजन्दी COAL MINING PROJECTS हजारीबान / Hazaribag

		K ZONE)	Standards (CPCB/FACTORIES ACT)	Night Day Night	$\vdash$		66.8 75/90 70	1.69	62.2	63.6 75.000 70	00.7 00.70	619	IRK ZONE)	Standards (CPCB/FACTORIES ACT)	Night Day Night	65.1	68.4		66.2	63	67.3	58.6	65.6	VORK ZONE)	Standards (CPCB/FACTORIES	ACT	Night Day Night	Т	61.5 75/90 70	65.7	64		0/ 06/6/ 817
		ROAD (WOR	Result	Day	9.89	70.9	66.2	68.3	65.8	70.2	61.4	689	L DUMP(WG	Result	Day	202	71.7	68.3	1.69	69.4	71.5	67.2	69.3	LOCATION(N	Result	-	20 A	73.3	67.4	71.6	70.1	72.5	47.4
	2022	Monitoring Location :- HAUL ROAD (WORK ZONE)	Description noise level db(A)		Average	Maximum	Minimum	Leg db(A)	Average	Maximum	Minimum	Leg db(A)	Monitoring Location >- TOP SOIL DUMP(WORK ZONE)	Description noise level db(A)		Average	Maximum	Minimum	Leq db(A)	Average	Maximum	Minimum	Leq db(A)	Monitoring Location :- DRILLING LOCATION(WORK ZONE)	Description noise level	(B)(A)	Account	Maximum	Minimum	Leg db(A)	Average	Maximum	Minimum
ject	onitoring Data Month of November - 2022	Aonitoring Lo	Monitoring	St			ANL-2			ANIL.3	WHE'S		onitoring Loca	Monitoring			ANIL A	- William			AMILA	MINE-4		itoring Locati	Monitoring				ANL-6			AMI. 6	AME-0
akri Barwadih Coal Mining Project	f Nover	N	Date				02.11.2022			17 11 3033	17.11.0022		Mc	Date										Mon	Date				06.11.2022			21 11 2022	7707'11'77
al Min	nth o	10000	SI. No.			,	-	,			4			St. No.							,			W 10 10 10 10 10 10 10 10 10 10 10 10 10	St. No.				-	ľ			,
lih Co	ita Mo		ards CTORIES T)	Night		-	2			30	2		Charles Co	ands CTORIES TI	Night		30	2			200	2			ards		regnt		02			70	2
arwad	ring Da	(1)	Standards (CPCB/FACTORIES ACT)	Day		20.000	06/6/			75/90	ne le i		S BHILLS	Standards (CPCB/FACTORIES ACT)	Day		25/90	oc les			25/90	ock:			Standards (CPCB/FACTORIES	V	Cay		75/90			75/90	06/6/
Pakri B	<b>Jonitor</b>	WORK ZON	_	Night	67.2	67.5	8'99	65.4	63.4	66.4	60.3	64.7	ORK ZONE)	_	Night	1.99	68.2	63.9	9.99	62.3	64.7	59.8	62.8	ORK ZONE)	-	- Constitution	yellow YY	67.7	62.3	65.1	1.19	64.5	57.7
	Noise Mo	ITION AREA(	Result	Day	70.9	73.1	9.89	71.4	68.5	71.9	65.1	1.69	TE DUMP, (W	Result	Day	4.69	73.1	65.7	71.5	8.89	72.2	65.3	70.5	RK SHOP( WC	Result	-	40.5	72.4	999	70.7	69.3	73.1	65.4
		Monitoring Location >- EXCAVATION AREA(WORK ZONE)	Description noise level db(A)		Average	Maximum	Minimum	Leq db(A)	Average	Maximum	Minimum	teq db(A)	Monitoring Location WASTE DUMP, (WOR	Description noise level db(A)		Average	Maximum	Minimum	(ed db(A)	Average	Maximum	Minimum	Leg db(A)	Monitoring Location :- WORK SHOP( WOR	Description noise level	(B)(A)	Acerson	Maximum	Minimum	Leq db(A)	Average	Maximum	Minimum
	000000	nitoring Local	Monitoring Code	2			ANL-1			ANI.3			fonitoring Lo	Monitoring Code			AMI.3	200			ANN-3			Monitoring Lo	Monitoring				ANL-5			ANILE	COMP.
		Moi	Date			2001 11 10	01.11.2022			16 11 2022	10.11.6064		N	Date			5505 11 2022	200.00			18 11 2022	10.11.6066		TENTON IN	Date				05.11.2022			2011 3022	20.11.2022
	377		SI. No.				-	0		2	4		No. of Lot	St. No.								4		Section 2	St. No.				-			,	4

नवीन कुमार / NAVIN KUMAR व्य प्रसारक (पर्यारण प्रत्या) / DOM (ENVT MONT) (प्रत्योक्ष क्रिक्टर) NTPC Limited कोद्या स्थल पीर्याजनी (COAL MINNS PROJECTS हजारीबाग / Hazaribag

	Mc	onitoring Loca	Monitoring Location :- OPERATOR CABIN( WO	TOR CABIN	WORK ZONE)	0			Mon	nitoring Local	Monitoring Location :- PSS AREA-1 NAGRI( WORK ZONE)	A-1 NAGRI	WORK ZOP	(E)	Se source
	-		Decombasion			Chandarde	1				Dansadation			L	dende
SI. No.	Date	Monitoring Code	noise level	Result	#	(CPCB/FACTORIES ACT)	CTORIES	SI. No.	Date	Monitoring Code	noise level db(A)	Result	alt	(CPCB/F	CPCB/FACTORIES ACT)
				Day	Night	Day	Night					Day	Night	Day	Night
			Average	71	63.2						Average	70	65.2		8
	5505 11 50		Maximum	74.1	65.5	26 400	ç		CCOC 11 00	A BELL O	Maximum	71.6	1.79	20,000	900
	07-11-0062	AMIL-1	Minimum	67.8	6'09	ne/e/	2		08.11.2022	AML-6	Minimum	68.3	63.2	06/6/	0
			Leg db(A)	72.3	63.4						Leq db(A)	69.2	65.5		
			Average	67.7	63						Average	89	64.2		
-	-	Ц	Maximum	71.6	67.1	-					Maximum	70.9	66.7		
2	22.11.2022	ANL-7	Minimum	63.8	58.9	75/90	2	7	23.11.2022	ANL-8	Minimum	65.1	9.19	75/90	20
			Lea db(A)	69.7	65.5						Lea db(A)	68.2	64.3		
1	Mor	nitoring Locat	Monitoring Location :- PSS AREA -2 NAGARI WORK ZONE	A-2 NAGAR	I WORK ZO!	VE)			Monit	oring Locatio	Monitoring Location :-VILLAGE KANDABER ( AMBIENT ZONE)	ANDABER (	AMBIENT 2	ONE)	
St. No.	Date	Monitoring	Description noise level	Result	4	Standards (CPCB/FACTORIES	ards	SI. No.	Date	Monitoring	Description noise level	Result	4	Star (CPCB/I	Standards (CPCB/FACTORIES
		anna.	(b(A)	SALE.		ACT	_		10000	2000	(A)db	000			ACT.
				Day	Night	Day	Night					Day	Night	Day	Night
			Average	1.69	63.5		0.00				Average	59.5	39.5		
	00 44 3033		Maximum	73.7	68.2	35 100	92		** ** **	010	Maximum	53.1	42.3		
4	09.11.2022	AMES	Minimum	64.4	58.8	ne/c/	2	+	11.11.6022		Minimum	45.8	36.7	6	45
			Leq db(A)	71.2	66.2						Leq db(A)	51.5	40.2		
			Average	6.69	63.1						Average	48.8	39.1		
	24 44 3000	_	Maximum	73.6	5'99	26 100	30		25 44 3033		Maximum	53.2	40.5		
4	24.11.4022	AME-3	Minimum	66.2	59.7	ne/e/	2	7	7707 11.07	01-70	Minimum	44.4	37.6	6	6
		The same of	Leq db(A)	71.1	64.2	Contractor of			-	100	Leq db(A)	51.7	38.6		
	Monit	toring Locatio	Monitoring Location :- VILLAGE GARIKALAN ( AM	ARIKALAN	( AMBIENT ZONE)	ONE)			Mon	itoring Locati	Monitoring Location :- VILLAGE DHENGA ( AMBIENT ZONE)	DHENGA (A	AMBIENT ZO	(3NC	
SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	all.	Standards (CPCB/FACTORIES	lards CTORIES TI	SI. No.	Date	Monitoring	Description noise level db(A)	Result	ult	Sta (CPCB/)	Standards (CPCB/FACTORIES ACT)
				Day	Night	Day	Night					Day	Night	Day	Night
			Average	48.9	38.6						Average	47.6	38.9		
	13 11 3033	DAI: 11	Maximum	51.5	41.7	33	46	,	12 11 3033	C4. 140	Maximum	52.4	43.1	25	14
	***************************************		Minimum	46.2	35.5	3	2		43.44.6066		Minimum	42.8	34.6	20	9
			Leq db(A)	48.4	40.6		-				Leg db(A)	49.7	41,3		
			Average	48.5	35.1						Average	46.5	37.2		
,	27 11 2022	PANI. 11	Maximum	51.1	38.8	25	AK	,	28 11 3033	SMI.13	Maximum	52.2	40.1	33	Ve
	47.11.000		Minimum	45.9	31.3	3	2		7303'11'07		Minimum	40.7	34.2	22	ç
			Leg db(A)	49.3	36.1	y see					Leg db(A)	50.4	38.2		

नवीन कुमार / NAVIN KUMAR जन महाज्यक (वर्षावान प्रवेश)/ DGM (ENVT. MGMT.) (म्म्ट्रीपीली किप्टिंड/ NTPC Limited कोवल खनन चीरवेज्ञन्ती/ COAL MINING PROJECTS हजारीबान / Hazaribag

The same of	Monit	toring Location	Monitoring Location :- VILLAGE KUSUMBHA ( AMB	USUMBHA (	AMBIENT ZONE)	ONE)		Monit	oring Locat	Monitoring Location :- VILLAGE BLOCK OFFICE AREA BARKAGAON ( AMBIENT ZONE)	BLOCK OFFIC	E AREA BA	REAGADN (	AMBIENT	ZONE)
SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	4	Standards (CPCB/FACTORIES ACT)	ands CTORIES D	St. No.	Date	Monitoring Code	Description noise level db(A)	Result	alt	Stan (CPCB/F	Standards (CPCB/FACTORIES ACT)
			Day	Night	Day	Night					Day	Night	Day	Night	Night
		Average	48.2	36.9						Average	47.3	40.2			
14 11 3033	BA11.13	Maximum	51.8	42.4	2	-		2003		Maximum	51.5	44.1			
77077	DMC-13	Minimum	44.5	31,3	99	C.		13.11.202	BNC-14	Minimum	43.1	36.2	S	6	6
Ĭ		Leg db(A)	49.3	40.1						Leq db(A)	46.4	42.2			
		Average	47.9	37.4						Average	46.9	36.7			
2000	0 min	Maximum	50.5	41.4	***	**				Maximum	53.6	42.9			
2707.11.6	DIAL-13	Minimum	45.3	33.3	C.	6	*	20711.00	DNC-14	Minimum	40.1	30.4	22	45	45
		Leq db(A)	48.7	39.9						Leq db(A)	51.5	40.8			

मवीन कुमार / NAVIN KUMAR एव महात्मंग्रक (पर्वारण प्रवेदन) / DGM (ENVT. MGMT.) श्रूप्तिकी त्वाप्तेक्ष्त NTPC Limited श्रोपता सनव प्रविद्यान्ति / CDAL MANNO PROJECTS हजारीवान / Hazzerbag

नवीन कुमार / NAVIN KUMAR वय महाप्रकार (पर्वारल प्रवेशन) / DGM (ENVI. MGMI.) रणारीवीली विनिवेश NTPC Limited कोमाल क्षत्रन परिकारकों / COAL MINING PROJECTS हजारीकार / Hazaribag

	1	onitoring Loc	Monitoring Location :- OPERATOR CABIN( WI	TOR CABIN	( WORK ZONE)	(2)	8		Monitori	ng Location :	Monitoring Location :- PSS AREA -1 NAGARI CRUSHER( WORK ZONE)	MAGARI LA	USHER( WOR	IK ZONE)	
SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	nt.	Standards (CPCB/FACTOI ACT)	Standards (CPCB/FACTORIES ACT)	SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	TIN .	Stand (CPCB/FA	Standards (CPCB/FACTORIES ACT)
			5	Day	Night	Day	Night				2000	Day	Night	Day	Night
			Average	6.69	1.99						Average	70.2	8.99		
	10.02 20.01		Maximum	73.1	67.7	Te Abo	ş		*** ** **	0 1144	Maximum	70.4	1.89	2007	,
	10.07.4022	VANIL-1	Minimum	66.7	64.4	06/6/	2		17.10.2022	ANL-8	Minimum	669	65.4	06/5/	0/
			Leg db(A)	71.6	65.7						(ed db(A)	683	9.99		
			Average	11.09	665						Average	72.6	67.2		
,			Maximum	70.4	62.1		-		***************************************	-	Maximum	73.9	1.89	-	
N	22.10.0022	ANL-7	Minimum	64.9	57.6	06/6/	0/	7	23.10.2022	ANL-8	Minimum	71.3	66.4	75/90	2
1			Leg db(A)	68.4	603						(eq db(A)	72.1	66.2		
	Mc	unitoring Local	Monitoring Location :- PSS AREA-2 NAGARI( WORK ZONE)	A-2 NAGA	UL WORK ZO	NE)	Commence of the last	-	Mon	toring Locati	Monitoring Location :- VILLAGE KANDABER ( AMBIENT ZONE)	KANDABER	( AMBIENT 2	ONE)	
SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	H <sub>1</sub>	Stans (CPCB/FJ	Standards (CPCB/FACTORIES ACT)	St. No.	Date	Monitoring Code	Description noise level db(A)	Result	oft.	Stand (CPCB/FA	Standards (CPCB/FACTORIES ACT)
				Day	Night	Day	Night					Day	Night	Day	Night
			Average	689	1.19						Average	50.2	39		
	13 10 3033	A total di	Maximum	72.7	64.5	25,000	9	,	200 00 00	04 040	Maximum	52.1	41.3	22	
	13.10.6022	WHI.3	Minimum	65.1	57.6	ne/er	2	,	03.10.0022	DNC-10	Minimum	48.3	36.7	8	6
			Leg db(A)	70.5	62.2						Leg db(A)	90%	39.9		
			Average	9.89	63.6						Average	47.8	39.9		
	33 10 3033	AMI.0	Maximum	71.3	65.4	25,000	or.	,	36 10 3033	04 ING	Maximum	52.6	41.2	22	**
4	43.10.1016	C THE S	Minimum	62.9	61.7	ar ir	2		10.10.1055	017-700	Minimum	42.9	38.6	2	90
			Leg db(A)	888	63.6	7					Leg db(A)	50.1	39.7		
	Mon	itoring Locati	Monitoring Location :- VILLAGE GARIKALAN ( AN	JARIKALAN	( AMBIENT ZONE)	(ONE)			Moi	vitoring Local	Monitoring Location :- VILLAGE DHENGA ( AMBIENT ZONE)	E DHENGA	AMBIENT 20	NE)	
4	-	Monitoring	_	- Parent	4	Stan	Standards		-	Monitoring	-		-	Stant	Standards
36. mg.	Date	Code	db(A)	u u	5	(CPCB/F)	ICPCB/PACTORIES ACT)	31. 180.	Uste	Code	db(A)	Hespit	110	(CPCB/F)	(CPCB/FACTORIES
				Day	Night	Day	Night					Day	Night	Day	Night
			Average	49.1	38.2						Average	47.6	39.5		
-	10 10 3032	11. IMB	Maximum	50.4	43.1	22	46	,	13 10 3033	C4 1040	Maximum	50.5	42.3	***	**
		_	Minimum	47.8	33.3		7		46.10.2020		Minimum	44.6	36.6	e e	ç
			(v)qp bən	48.6	42.2						Leq db(A)	49.1	4.5	015	
			Average	48.5	35.9						Average	45.6	39.7		
,	27 10 3022	RMI.115	Maximum	50.2	39.6	22	46		28 10 3033	641.15	Maximum	49.9	42.8	22	24
		_	Minimum	46.8	32.1	-	2	4	20.10.2022		Minimum	41.2	36.5	6	9
			Leg db(A)	48.8	38.1						Leg db(A)	47.4	37.0		

नदीन कुमार / NAVIN KUMAR जन नात्रकाक (वर्षात्रका प्रकार) / DGM (ENVT. MGMT.) (न्द्रतिवित्तं स्थितेश NTPC Limited बोधक बनन विकंत्रनार्गं / COAL MINING PROJECTS हजारीबाग / Hazaribag

₫	Monitoring Location :- VILLAGE KUSUMBHA ( AMI	USUMBHA	( AMBIENT ZONE)	ONE)	100	Mo	nitoring Loca	tion :- VILLAG	Monitoring Location :- VILLAGE BLOCK OFFICE AREA BARKAGAON ( AMBIENT ZONE)	CE AREA BA	RIKAGAON (	<b>AMBIENT 2</b>	ONE)
ă c	Description noise level db(A)	Result	ult	Stanc (CPCB/FA	Standards (CPCB/FACTORIES ACT)	SI. No.	Date	Monitoring Code	Description noise level db(A)	Result	ılt	Stan (CPCB/FJ	Standards (CPCB/FACTORIES ACT)
		Day	Night	Day	Night					Day	Night	Day	Night
4	Average	49.4	37.4	00000	20000000				Average	47.8	37	1	
2	faximum	52.6	41.9	22	AE		15 10 2023		Maximum	50.1	38.8	***	-
~	Ainimum	46.2	32.8	6	ç	4	13.10.2022	61.7MG	Minimum	45.5	35.1	8	40
3	Leg db(A)	50.7	39.6						Leq db(A)	48.6	36.4		
~	Average	51.4	38.1						Average	49	37.9		
-	Maximum	56.4	40.2	3.5	***	,	20.40.2023		Maximum	52.2	41.6		
2	finimum	46.3	35.9	00	40	7	30.10.000	DIAL-14	Minimum	45.7	34.2	8	42
-	Leg db(A)	49.5	38.3					247	Leg db(A)	50.3	39.1		

नवीन कुमार / NAVIN KUMAR एव महाउक्तक (पर्वारण प्रकंतन) / DGM (ENVT. MGMT.) हम्प्रीपीती (तिनिदेश NTPC Limited कोवता शतन परिश्रोतकारी/ COAL MINING PROJECTS हजारीबाग / Hazaribag

[See rules 115 (2)]

### Pollution Under Control Certificate

Authorised By:

Government of Jharkhand

Date : 02/01/2023

Time : 14:09:26 PM

Validity upto : 01/07/2023



Certificate SL. No. : JH00400080016673

 Registration No.
 : JH02BF1593

 Date of Registration
 : 30/Sep/2015

 Month & Year of Manufacturing
 : May-2015

Valid Mobile Number : \*\*\*\*\*5555

Emission Norms : BHARAT STAGE III

Fuel : DIESEL PUC Code : JH0040008

GSTIN

Fees : Rs.300.00

(GST to be paid extra as applicable)

MIL observation : N

## Vehicle Photo with Registration plate 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idlian Emissions	Carbon Monoxide (CO)	percentage (%)		
Idling Emissions	Hydrocarbon, (THC/HC)	ppm		
	со	percentage (%)		
High idling emissions	RPM	RPM	2500 ± 200	
	Lambda		1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	2.45	2.25

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note: 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to https://puc.parivahan.gov.in

Authorised Signature with stamp of PUC operator 60mm x 20 mm

नवीन कुमार / NAVIN KUMAR वर पात्रकाक (पर्याचन प्रवेश) / DGM (ENVT. MONT.) (प्याचीनी सिन्धिट) NTPC Limited क्षेत्रत स्वर वीष्णामनी COAL MANG PROJECTS (प्रवाधिका / Hazanbag

[See rules 115 (2)]

### Pollution Under Control Certificate

Authorised By:

Government of Jharkhand

Date : 05/01/2023

Time : 15:59:22 PM

Validity upto : 04/07/2023



Certificate SL. No. : JH00400080016924

 Registration No.
 : JH01DH1641

 Date of Registration
 : 29/Sep/2014

 Month & Year of Manufacturing
 : August-2014

Month & Year of Manufacturing : August-20 Valid Mobile Number : \*\*\*\*\*5555

Emission Norms : BHARAT STAGE III

Fuel : DIESEL
PUC Code : JH0040008

GSTIN

Fees : Rs:300.00

(GST to be paid extra as applicable)

MIL observation :

Vehicle Photo with Registration plate 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idlian Emissions	Carbon Monoxide (CO)	percentage (%)		
Idling Emissions	Hydrocarbon, (THC/HC)	ppm		
	со	percentage (%)		
High idling emissions	RPM	RPM	2500 ± 200	
	Lambda		1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	2.45	2.28

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note: 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to https://puc.parivahan.gov.in

Authorised Signature with stamp of PUC operator 60mm x 20 mm

नवीन कुमार / NAVIN KUMAR वर महासंग्रह (पर्याचन प्रस्था) (DGM (ENVT. MGMT) (म्ब्हेनीकी शिक्टेश NTPC Limited कोचल काम पीर्कामणी (COAL MINING PROJECTS हमारीवाम / Hazaribag

[See rules 115 (2)]

### Pollution Under Control Certificate

Authorised By :

Government of Jharkhand

Date : 05/01/2023

Time : 15:47:35 PM

Validity upto : 04/07/2023



Certificate SL. No. : 3H00400080016917

Registration No. : JH01DH0880

Date of Registration : 29/Sep/2014

Month & Year of Manufacturing : August-2014

Valid Mobile Number : \*\*\*\*\*5555

Emission Norms : BHARAT STAGE III

Fuel : DIESEL PUC Code : JH0040008

GSTIN

Fees Rs.300.00

(GST to be paid extra as applicable)

MIL observation : N

Vehicle Photo with Registration plate 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Idlian Emissions	Carbon Monoxide (CO)	percentage (%)		
Idling Emissions	Hydrocarbon, (THC/HC)	ppm		14 (10)
	со	percentage (%)		
High idling emissions	RPM	RPM	2500 ± 200	12
	Lambda	5.70	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	2.45	2.38

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note: 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to https://puc.parivahan.gov.in

Authorised Signature with stamp of PUC operator 60mm x 20 mm

नवीन कुमार / NAVIN KUMAR का माजवाक (पर्याचना प्रवेश) / DGN (ENVT. MGMT.) हम्प्रीवीकी किन्दिर्श NTPC Limited कोवास क्षम परिवासकी/ COAL MANNG PROJECTS हमारीका / Hazaribag

[See rules 115 (2)]

### Pollution Under Control Certificate

Authorised By:

Government of Jharkhand

22/12/2022 Date

Time 13:48:39 PM

Validity upto 21/06/2023



Certificate SL. No. JH00400080016184

Registration No. JH01AX0799 Date of Registration 04/Jan/2013 Month & Year of Manufacturing November-2012 Valid Mobile Number

\*\*\*\*\*5555

**Emission Norms** BHARAT STAGE III

Fuel DIESEL **PUC Code** JH0040008

**GSTIN** 

Fees Rs.120.00

(GST to be paid extra as applicable)

MIL observation

# Vehicle Photo with Registration plate 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	3	4	5
Tallian Emissions	Carbon Monoxide (CO)	percentage (%)		
Idling Emissions	Hydrocarbon, (THC/HC)	ppm		
	со	percentage (%)		
High idling emissions	RPM	RPM	2500 ± 200	
	Lambda	*	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	2.45	2.35

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note: 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to https://vahan.parivahan.gov.in

Authorised Signature with stamp of PUC operator 60mm x 20 mm

नवीन कुमीर / NAVIN KUMAR OR HICEROS (DESIGN DESIGN) / DOM (ENVY MONT) PACTER STORY NTPC Limited BOOK ATTA WITH MET COAL MINING PROJECTS हनारीबाग् / Hazanbag

[See rules 115 (2)]

### Pollution Under Control Certificate

Authorised By

Government of Jharkhand

Date : 22/12/2022 Time : 13:46:04 PM

Validity upto : 21/06/2023



Certificate SL. No. : 3H00400080016183

 Registration No.
 : OR05AQ3299

 Date of Registration
 : 05/Apr/2011

 Month & Year of Manufacturing
 : January-2011

 Valid Mobile Number
 : \*\*\*\*\*\*9995

Emission Norms : BHARAT STAGE III

Fuel : DIESEL
PUC Code : JH0040008

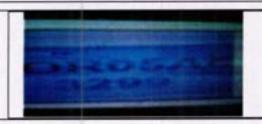
GSTIN :

Fees : Rs.120.00

(GST to be paid extra as applicable)

MIL observation : N

Vehicle Photo with Registration plate 60 mm x 30 mm



Sr. No.	Pollutant (as applicable)	Units (as applicable)	Emission limits	Measured Value (upto 2 decimal places)
1	2	. 3	4	5
	Carbon Monoxide (CO)	percentage (%)		
Idling Emissions	Hydrocarbon, (THC/HC)	ppm		
	со	percentage (%)		
High idling emissions	RPM	RPM	2500 ± 200	
	Lambda	-	1 ± 0.03	
Smoke Density	Light absorption coefficient	1/metre	2.45	2.37

This PUC certificate is system generated through the national register of motor vehicles and does not require any signature.

Note: 1. Vehicle owners to link their mobile numbers to registered vehicle by logging to https://vahan.parivahan.gov.in

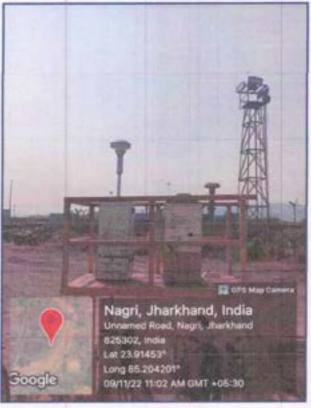
Authorised Signature with stamp of PUC operator 60mm x 20 mm नवीन कुमार / NAVIN KUMAR वर वाजवाक (पार्टकार कंडान) / DGM (ENVT. MGMT) श्वरीतीओ तिमिट्टेंग NTPC Limited कोवल संपन प्रतिकारकों COAL MANAG PROJECTS हर्जानेका / Hazaribag

# PAKRI BARWADIH COAL MINING PROJECT, NTPC LTD.

### ENVIRONMENTAL MONITORING EQUIPEMENTS

SI. No.	Name of Equipment	No. of Equipments
1.	Respirable dust sampler	5
2.	Fine Dust Sampler	5
3.	High Volume Sampler	1
4.	Continuous AAQ Monitoring Station	1
5.	Continuous AAQM PM <sub>10</sub> Analyzer	1
6.	Noise Level Meter	1
7.	Telemetry Piezometer	2
8.	Telemetry Ground Water Level Meter	4
9.	Meteorological Station	1
10.	pH, TDS, EC Handy Meter	1





Ambient Air Quality Monitoring

नवीन कुमार / NAVIN KUMAR का माजवाक (पार्टका कार्या) / DGM (ENVT MGMT)

्राम्प्रीचीना विशिष्टेश NTPC Limited कोवात सन्त्र पीर्वाजनी COAL MINING PROJECTS हजारीबाग / Hazaribag

# Continue Ambient Air Quality Monitoring Station.

CAAQMS Online Monitoring System installed at Site Office, the monitoring system is monitoring the parameter like  $PM_{10}$ ,  $PM_{2.5}$ ,  $SO_2$  &  $NO_x$ . The real time data is generating continuously and transferring to JSPCB server.



Continuous Ambient Air Quality Monitoring Station



नवीन कुमार / NAVIN KUMAR क प्रत्यका प्रवेश / DGM (ENVT MGMT) (म्प्रीवीली क्रिकेट NTPC Limited क्रोवा वस्त्र पीया कर्ता (COAL MINING PROJECTS हजारीबाग / Hazaribag



Two (02) nos. Piezometers inside the mine premises with continuous automatic data recorder





नवीन कुमार / NAVIN KUMAR क पारकक (पर्वारम प्रवेश) (DGM (EVVT MGMT) (म्बरीवी कियोड) NTPC Limited बोच्स वस प्रीयोजनी (COAL MANG PROJECTS हजारीवान / Hazaribag The project has installed Four (4) nos. water flow recorder in & around the project area with continuous automatic data recorder for monitoring of the ground water consumption.



# Meteorological Station at Langatu Site Office



नवीन कुमार / NAVIN KUMAR का माजवाक (पर्याचन प्रदेश) / DGM (ENVIT MGMT) (म्न्योजीत कार्याच्या NTPC Limited कोवास वान्य परियोजनी/ COAL MANNS PROJECTS हजारीबान / Hazaribag pH, TDS & EC Meter



नवीन कुमार / NAVIN KUMAR क मारकाक (पर्वाटन प्रकान) / DGM (ENVT NGMT) हम्परीति अस्तित / NTPC Limited बोचल काम प्रीकारमां / COAL MINNING PROJECTS हजारीबाम / Hazaribag Occupational health related compliances Format to be included in Monthly Reports For the month of March -2023

# A: Status of IME/PME:

S. No.	Medical Exam	No. of Persons required to undergo medical examination (Mar2023)	Medical Examination Conducted upto last month (Jan'23 to Mar'23)	Medical Examination conducted in the month (March-2023)	Balance Medical Examination to be conducted in the year
1	IME	25	91	52	0
7	PME	809	421	275	388
	Radiological Tests	61	0	0	19
4	Eye Refraction Test	458	0	0	458

B: Stool Tests and sputum for AFB and chest radiography conducted for canteen workers.

Next due Date/Remarks	24.12.2023
Details of tests conducted during current year	0
No. of Persons employed in canteen	87
S. No.	1

# C: Details of portability test for drinking water : -

Details of Last test conducted	
Sample location	PBCMP, Langatu
Date of Sampling	16. 01.2023
Testing Date	18.01.2023
Report results	Portable
Next Due results	15.04.2023

नवीन कुमार / NAVIN KUMAR क मारकाड (पर्याक प्रवान) / DGM (EVVT MGMT) (न्नदीशील किविटेड/ MTPC Limited क्षेत्रक वन्न पीक्षेत्रनी / COAL MANG PROJECTS हजारीवान / Hazaribag

Format to be included in Monthly Reports Occupational health related compliances For the month of February-2023

A: Status of IME/PME:

S. No.	Medical Exam	No. of Persons required to undergo medical examination (Feb-2023)	Medical Examination Conducted upto last month (Jan'23 to Feb'23)	Medical Examination conducted in the month (Feb-2023)	Balance Medical Examination to be conducted in the year
,	IME	26	39	26	0
7	PME	122	146	80	81
3	Radiological Tests	61	0	0	19
4	Eye Refraction Test	458	0	0	458

B: Stool Tests and sputum for AFB and chest radiography conducted for canteen workers.

narks	
Next due Date/Rer	24.12.2023
Details of tests conducted during current year	0
No. of Persons employed in canteen	87
S. No.	-

C: Details of portability test for drinking water : -

	Details of Last test conducted	
	Sample location	PBCMP, Langatu
,	<ul> <li>Date of Sampling</li> </ul>	16.01.2023
	Testing Date	18.01.2023
	Report results	Portable
	Next Due results	15.04.2023

नवीन कुमार / NAVIN KUMAR वर प्राप्तक (प्रांटल प्रधान) / DGM (ENVT. MGMT.) (प्रतीनीकी विविदेश NTPC Limited क्रांचन सन्त्र प्रितेशकों COAL MAING PROJECTS हजारीबान / Hazaribag

Occupational health related compliances Format to be included in Monthly Reports For the month of January-2023

# A: Status of IME/PME:

S. No.	Medical Exam	No. of Persons required to undergo medical examination (Jan2023)	Medical Examination Conducted upto last month (Jan'23 to Jan'23)	Medical Examination conducted in the month (Jan-2023)	Balance Medical Examination to be conducted in the year
1	IME	13	13	13	0
2	PME	. 227	96	96	131
m	Radiological Tests	61	0	0	19
4	Eye Refraction Test	458	0	0	458

B: Stool Tests and sputum for AFB and chest radiography conducted for canteen workers.

Next due Date/ Remarks	24.12.2023
Details of tests conducted during current year	0
No. of Persons employed in canteen	87
S. No.	-

C: Details of portability test for drinking water : -

	Details of Last test conducted	
	Sample location	PBCMP, Langatu
	Date of Sampling	16.01.2023
	Testing Date	18.01.2023
	Report results	Portable
7.	Next Due results	15.04.2023

नवीन कुमार / NAVIN KUMAR का सारकाक (पारंत्राच प्रवाद) / DCM (ENVT MONT) अन्दर्भीती शिविटेड / NTPC Limited कोवात क्षत्रव परिवेजना / COAL MINIO PROJECTS हजारीवान / Hazaribag Occupational health related compliances Format to be included in Monthly Reports For the month of December -2022

A: Status of IME/PME:

S. No.	Medical Exam	No. of Persons required to undergo medical examination (Dec2022)	Medical Examination Conducted upto last month (Jan'22 to Dec'22)	Medical Examination conducted in the month (Dec-2022)	Balance Medical Examination to be conducted in the year
1	IME	11	133	11	0
2	PME	120	243	0	722
3	Radiological Tests	61	0	0	61
4	Eye Refraction Test	382	432	382	458

8: Stool Tests and sputum for AFB and chest radiography conducted for canteen workers.

Next due Date/ Remarks	24.12.2023
Details of tests conducted during current year	87
No. of Persons employed in canteen	87
S. No.	1

C: Details of portability test for drinking water: -

	Details of Last test conducted	ALEGARISM ST
	Sample location	PBCMP, Langatu
	Date of Sampling	16. 10.2022
	Testing Date	18.10.2022
	Report results	Portable
10	Next Due results	20.01.2023

नवीन कुमार / NAVIN KUMAR का शाउरका (पर्वटल वरान): DGM (ENVT. MGMT) (भारतीयोग क्षितिका NTPC Limited बोक्ट वरन परिवारणी: COAL MARKO PROJECTS हजारीबाग / Hazaribag

Format to be included in Monthly Reports Occupational health related compliances For the month of November -2022

# A: Status of IME/PME:

S. No.	Medical Exam	No. of Persons required to undergo medical examination (Nov2022)	Medical Examination Conducted upto last month (Jan'22 to Nov'22)	Medical Examination conducted in the month (Nov -2022)	Balance Medical Examination to be conducted in the year
1	IME	13	122	13	0
2	PME	120	243	23	727
m	Radiological Tests	61	0	0	61
4	Eye Refraction Test	0	90	0	840

B: Stool Tests and sputum for AFB and chest radiography conducted for canteen workers.

Next due Date/Remarks	24.12.2022
Details of tests conducted during current year	61
No. of Persons employed in canteen	61
S. No.	1

C: Details of portability test for drinking water : -

Sample location     Date of Sampling     Testing Date     Report results     Next Due results     Sample location     Date of Sampling     16. 10.2022     18.10.2022     Report results     Next Due results	3	etalls of tast test conducted	100000000000000000000000000000000000000
16 esting Date   18 export results   19 Px	•	Sample location	PBCMP, Langatu
esting Date leport results Oue results	•	Date of Sampling	16. 10.2022
eport results	•	Testing Date	18.10.2022
Oue results	•	Report results	Portable
	Z	ext Due results	20.01.2023

नवीन कुमार / NAVIN KUMAR वर महत्रकाक (पर्ववान प्रवेदन) / DGM (ENVT MGMT) हम्प्रीमीत निर्मिदेश NTPC Limited क्षेत्रमा सन्त्र परिकारणी/ COAL MINING PROJECTS हमारीबान / Hazaribag

Occupational health related compliances Format to be included in Monthly Reports For the month of October -2022

A: Status of IME/PME:

S. No.	Medical Exam	No. of Persons required to undergo medical examination (Oct-2022)	Medical Examination Conducted upto last month (Jan'22 to Oct'22)	Medical Examination conducted in the month (Oct-2022)	Balance Medical Examination to be conducted in the year
1	IME	80	109	80	0
2	PIME	120	220	47	240
	Radiological Tests	61	0	0	61
4	Eye Refraction Test	0	90	0	840

B: Stool Tests and sputum for AFB and chest radiography conducted for canteen workers.

Next due Date/Remarks	24.12.2022
Details of tests conducted during current year	61
No. of Persons employed in canteen	19
S. No.	1

C: Details of portability test for drinking water : -

Sample location     Date of Sample     Testing Date     Report results		
Date of Samp     Testing Date     Report result:	cation	PBCMP, Langatu
Testing Date     Report result:	ampling	16. 10.2022
Report results	ate	18.10.2022
Contract of the contract of th	sults	Portable
2. Next Due results	22	20.01.2023

नवीन कुमार / NAVIN KUMAR स्थानकाक (वर्षस्य वर्षान्) / DGM (EWY. MGMT) (न्यानीसी शिवेटेड / NTPC Limited कोवत सन्य पीकेन्यों / COAL MINNG PROJECTS हजारीसाम / Hazaribag



# NTPC Limited Pakri Barwadih Coal Mining Project

Ref. No: 1040/PBCMP/Min/2017/114

Date: 20.04.2017

### OFFICE ORDER No 23A / 2017

Further to the office order regarding the reconstitution of Environment Management Cell for Pakribarwadih Coal Mining Project, the following enclosed structure shall function for the Environment Management with immediate effect for the Pakribarwadih Coal Mining Project.

The cell is responsible for

- Compliance of statutory conditions given in the Environment , Forest Clearance groundwater clearance etc.
- Organize the visit of various officials and implementing the suggestions for betterment of the environment.
- 3. Submit the statutory compliance reports.
- 4. Organize Environment awareness programs.
- 5. Implement the innovative measures for the environment protection
- 6. Documentation etc.

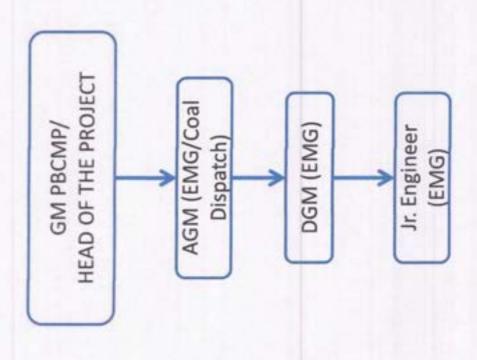
This issues with the approval of the competent authority.

T.Gopalakrishna Group General Manager,

CC:

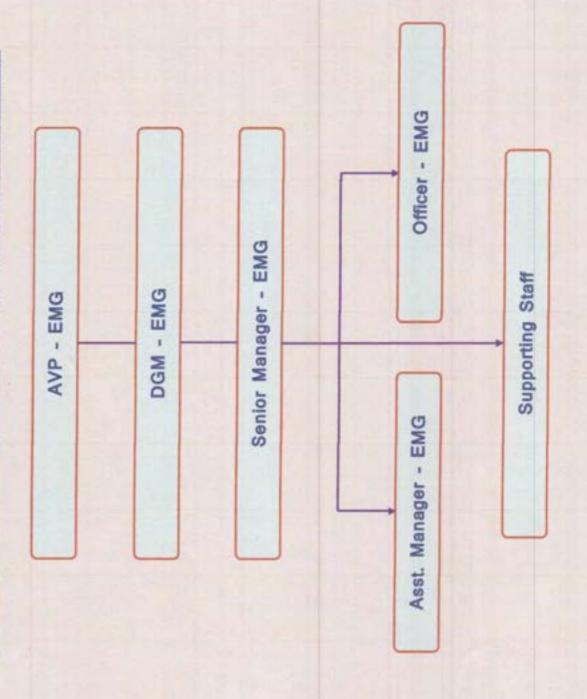
All HODs – For Kind information please. Concerned executives.

# ENVIRONMENT MANAGEMENT CELL AT NTPC - PBCMP



नवीन कुमार / NAVIN KUMAR क पारतक पर्वाल प्रवान । DGN (ENVT MGNT) (अध्योश क्रिकेट्ट) NTPC Limited बाब्त क्षत्र पीर्टकर्गा COAL MINING PROJECTS इन्होंचेगा / Hazaribag

# PAKRI BARWADIH COAL MINING PROJECT ENVIRONMENT MANAGEMENT CELL THRIVENI SAINIK MINING PVT. LTD.



नवीन कुमार / NAVIN KUMAR एव पहरवका (पर्यापन प्रवान) i DGM (ENVT. MGMT.) (म्ब्योपीली शिरिवेड/ NTPC Limited कोवल समय परियोजना ( COAL MINING PROJECTS इंट्यारीमा / Hazaribag

	Environmental Expenditure for the FY (October-22 to	March-2023)
SI NO	Purpose of Expense	Amount (in Rs.)
(A) Fo	dump slope stabilization	
1	Coir Mating, Gabion Box, Retaining Wall, Garland Drain, Settling Pit and its Maintainance	5687293.45
2	Dozer Operator Salary, HSD Cost and Maintainace charge	300/2/3.43
(B) For	dust suppression	
1	Permanent Sprinkler	41358982.83
2	Water tanker and its maintenance	41336762.63
(C) En	vironmental Monitoring	
1	Annual Maintenance Contract of Instruments	3365670.00
2	Environmental Monitoring (AAQ, Water, Noise etc.)	3303070.00
(D) Nu	rsery development and plantation	2441932.00
(E) Env	ironment Staff Salary	2742600.00
(F) Wa	ter treatment & ETP Maintainace	1069000.00
(G) Sci	lentific Study	0.00
Tability of the same of the sa	Total Amount	56665478.28

नवीन कुमार / NAVIN KUMAR का कारकार्क (पर्वटान प्रवान) / DGM (ENVI MGMT) (प्रतिनीती अस्तिकेश NTPC Limited कोवात स्थान परिवोज्ञकारी/ COAL MINING PROJECTS हजारीसाथ / Hazaribag

	PAKRI BARWADIH COAL MINING PROJECT (	OF NTPC
	Environmental Expenditure for the FY (April to Septe	mber-2022)
SI NO	Purpose of Expense	Amount (in Rs.)
(A) For	dump slope stabilization	
1	Coir Mating, Gabion Box, Retaining Wall, Garland Drain, Settling Pit and its Maintainance	8443390.00
2	Dozer Operator Salary, HSD Cost and Maintainace charge	0440070.00
(B) For	dust suppression	
1	Permanent Sprinkler	33734029.83
2	Water tanker and its maintenance	33/34027.83
(C) Env	vironmental Monitoring	
1	Annual Maintenance Contract of Instruments	3393215.00
2	Environmental Monitoring (AAQ, Water, Noise etc.)	3373213.00
(D) Nu	rsery development and plantation	2233075.00
(E) Env	ironment Staff Salary	3109200.00
(F) Wa	ter treatment & ETP Maintainace	399000.00
(G) Sci	ientific Study	687500.00
	Total Amount	51999409.83

नवीन कुमार / NAVIN KUMAR वर्ष पहारक्षक (पर्वक्त प्रकार) I DGM (ENVT. MGMT.) १९५१/वितो शिक्टिश NTPC Limited शोवल सनन परिकेत्या (COAL MHING PROJECTS इंग्डिकाम / Hazaribag



602/24 DLF Colony Rohtak, Haryana-124001 Email: capdc2010@gmail.com Ph. No 01262-254634

Mobile: +91-9215380381/82

### TO WHOM SO EVER IT MAY CONCERN

Based on our examination of the books of accounts and records, as produced before us for verification, of Thriveni Sainik Mining Private Limited ("the Company") having its registered office at 7th Floor, Corporate Tower, Ambience Mall, NH-8, Gurgaon, Haryana-122001, we hereby certify that the Company has incurred expenditure towards environmental expenditure for its project NTPC LTD-PAKRI BARWADIH COAL PROJECT, BARKAGON from April 2021 to March 2022 is Rs 926.43 Lakhs (Rupees Nine Hundered Twenty Six Lakhs and Forty Three Thousand only) as per details given in Annexure 1

This certificate has been provided at the request of the Company is not intended for general circulation or publication

The above figures are true and correct as per documents and information provided to us for our verification.

For PANKAJ DHINGRA & Co.

Charter Accountants

(CA. Nidhi Dhingra)

Partner

MN. No. 510815

UDIN: 22510815AQMITT4220

Place : Rohtak

Date: 25.07.2022

नवीन कुमार / NAVIN KUMAR वर प्राप्तकार (पर्वाचन प्रधान) / DOM (ENVT. MOMT) (न्योगीली निर्मिट्स / NTPC Limited कोचल स्वतन परियोजनार्ग / COAL MINING PROJECTS हजारीबार्ग / Hazaribag



602/24 DLF Colony Rohtak, Haryana-124001 Email: capdc2010@gmail.com Ph. No 01262-254634 Mobile: +91-9215380381/82

Annexure 1

	PAKRI BARWADIH COAL MINING PROJECT OF Environmental Expenditure for the FY (April-2021 to March-	
SINO	Purpose of Expense	Amount in INF
(A) For dur	np slope stabilization	
1	Coir Mating, Gabion Box, Retaining Wall, Garland Drain, Settling Pit and its Maintainance	
2	Dozer Operator Salary, HSD Cost and Maintainace charge	151.14
(B) For dus	t suppression	
1	Permanent Sprinkler	
2	Water tanker and its maintenance	564.12
(C) Environ	mental Monitoring	
1	Annual Maintenance Contract of Instruments	
2	Environmental Monitoring (AAQ, Water, Noise etc.)	70.32
(D) Nursery	development and plantation	21.77
(E) Environr	ment Staff Salary	30.69
(F) Water tr	eatment & ETP Maintainace	45.71
(G) Certifica	tion	0.85
H) Scientifi	c Study	4.63
I) Water Re	charge Measures	36.71
J) Miscellar	neous Expense	0.48
	Total Amount	926.43

नदीन कुमार / NAVIN KUMAR एव वहाउनक (पर्याराम प्रकेश) (DGM (ENVT. MGMT.) (म्ब्योरीजी जिलिटेड/ NTPC Limited कोवल वारत परियोजन (COAL MANIG PROJECTS इप्राचिताम / Hazaribag



# **GAURAV CHOPRA & ASSOCIATES**

Chartered Accountants

Ref. No.

Date: 02 07/2021

# TO WHOMSOEVER IT MAY CONCERN

I hereby certify that I have examined the related documents for environmental expenses incurred for TRIVENI SAINIK MINING PRIVATE LIMITED (PROJECT-NTPC LTD, PAKRI BARWADIH COAL PROJECT BARKAGON) from April 2020 to March 2021 which amounting to 9,74,54,170/-(Nine Crore Seventy Four Lacs Fifty Four Thousand and Seventy Rupees Only). These Expenses Consist of following Annexure-A which is attached herewith.

**FOR GAURAV CHOPRA & ASSOCIATES** 

**GAURAV CHOPRA** 

(M. NO- 418565)

UDIN: 21418565AAAABO8898

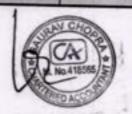
नवीन कुमार / NAVIN KUMAR

उद महत्त्ववाठ (पर्यावल प्रवेश) i DGM (ENVT MGMT) हम्मतिर्वाति जिल्हिंड/ NTPC Limited शोधात श्वत्य प्रतिकारण (i COAL MINNG PROJECTS हमार्थियण / Hazaribag

104, AKS Heights 9th & 10th Sardapura C Road, Jodhpur (Raj.)
Contact No. 0291-2641122, 94144-98356

Email: gauravchopraca@gmail.com

	PAKRI BARWADIH COAL MINING PROJECT	OF NTPC
SINO	Environmental Expenditure for the FY (April-2020 to	March-2021)
	Purpose of Expense	Amount (in Rs.)
(A) Fo	dump slope stabilization	
1	Coir Mating, Gabion Box, Retaining Wall, Garland Drain, Settling Pit and its Maintainance	
2	Dozer Operator Salary, HSD Cost and Maintainace charge	28,984,191.42
(B) For	dust suppression	
1	Permanent Sprinkler	
2	Water tanker and its maintenance	43,973,816.69
C) Env	Ironmental Monitoring	
1	Annual Maintenance Contract of Instruments	
2	Environmental Monitoring (AAQ, Water, Noise etc.)	7.817.473.30
	sery development and plantation	6,568,550,42
E) Envir	onment Staff Salary	7,384,800.00
F) Wate	er treatment & ETP Maintainace	2,118,350.00
G)Certi	fication	468,900.00
H) Misc	ellaneous Expense	138.088.00
	Total Amount	97,454,169.83



नवीन कुमार / NAVIN KUMAR एव महाज्ञंक (पर्वाराण प्रवेश) I DGM (ENVT. MGMT.) हमटीवीली जिल्लेड/ NTPC Limited कोमास समय परिवारणी/ COAL MINING PROJECTS हजारीवाग / Hazaribag



# GAURAV CHOPRA & ASSOCIATES

Chartered Accountants

Ref. No.

Date: 26/11 2020

# TO WHOMSOEVER IT MAY CONCERN

I hereby certify that I have examined the related documents for environmental expenses incurred for TRIVENI SAINIK MINING PRIVATE LIMITED (PROJECT-NTPC LTD, PAKRI BARWADIH COAL PROJECT BARKAGON) from April 2019 to March 2020 which amounting to 16,20,82,483/-(Sixteen Crore Twenty Lacs Eighty Two Thousand Four Hundred Eighty Three Only). These Expenses Consist of following Annexure-A which is attached herewith.

FOR GAURAV CHOPRA & ASSOCIATES

**GAURAV CHOPRA** 

(M. NO- 418565)

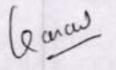
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नवीन कुमार / NAVIN KUMAR क बारकाक (वर्षकार प्रकार) i DGM (ENVT. MGMT.) (व्यक्तिकी निर्मित NTPC Limited क्षेत्रक क्षर क्षरेक्षकारी COAL MINING PROJECTS हजारीवार / Hazaribag

104, AKS Heights 9th & 10th Sardapura C Road, Jodhpur (Raj.)
Contact No. 0291-2641122, 94144-98356

Email: gauravchopraca@gmail.com

SINO	Environmental Expenditure for the FY (April 2019 to Mar Purpose of Expense	Amount (in Rs.)
(A) Fo	r dump slope stabilization	Antoon (iii ka.)
1	Coir Mating, Gabion Box, Retaining Wall, Garland Drain, Settling Pit and its Maintainance	
2	Dozer Operator Salary, HSD Cost and Maintainace charge	73,099,492,70
(B) For	dust suppression	
1	Permanent Sprinkler	
2	Water tanker and its maintenance	60,393,753,17
(C) En	vironmental Monitoring	
)	Annual Maintenance Contract of Instruments	
2	Environmental Monitoring (AAQ, Water, Noise etc.)	9,391,214.70
(D) Nu	rsery development and plantation	5,466,338,00
	ironment Staff Salary	7,741,440.00
(F) Wat	ter treatment & ETP Maintainace	3,662,742,00
(G)Surf	ace Runoff Recharge	3.100.000.00
(H)Cer	tification	1.950,799.88
(I) Misc	ellaneous Expense	376,702.20
No. of Concession, Name of Street, or other party of the Concession, Name of Street, or other party of the Concession, Name of	Total Amount	162,082,482.65





नवीन कुमार / NAVIN KUMAR वर प्राप्त्यक (पर्वारण प्रवेदन) / DGM (ENVT. MGMT.) (प्रतिनीति क्षिप्रेड/ NTPC Limited कोपाल व्यन पीर्वाजनी/ COAL MANNG PROJECTS हजारीबाप / Hazaribag



# **GAURAV CHOPRA & ASSOCIATES**

Chartered Accountants

Ref. No.

Date: 25/09/2019

# TO WHOMSOEVER IT MAY CONCERN

I hereby certify that I have examined the related documents for environmental expenses incurred for TRIVENI SAINIK MINING PRIVATE LIMITED (PROJECT-NTPC LTD, PAKRI BARWADIH COAL PROJECT BARKAGON) from April 2018 to March 2019 which amounting to 11,62,03,315/-(Eleven Crore Sixty Two Lacs Three Thousand Three Hundred Fifteen Only). These Expenses Consist of following Annexure-A which is attached herewith.

**FOR Gaurav Chopra & Associates** 

Saulas

**GAURAV CHOPRA** 

(M. NO-418565)

UDIN- 19418565AAAAAO4381

नवीन कुमार I NAVIN KUMAR स बहुदरक (वर्तवाल करान)। DGN (ENVT MGMT) इन्द्रियोगी निविदेश NTPC Limited बारत स्थान पविद्यागी। COAL MINING PROJECTS

हजारीबाग / Hazaribag

104, AKS Heights 9th & 10th Sardapura C Road, Jodhpur (Raj.)
Contact No. 0291-2641122, 94144-98356
Email: gauravchopraca@gmail.com

SINO	Purpose of Expense	Amount (in Rs.)
(A) Fo	or dump slope stabilization	
1	Coir Mating, Gabion Box, Retaining Wall, Garland Drain, Settling Plt and its Maintainance	4,73,78,336,60
2	Dozer Operator Salary, HSD Cost and Maintainace charge	4,70,70,000,00
(B) Fo	r dust suppression	SETTING
1	Permanent Sprinkler	107 10 0/5 15
2	Water tanker and its maintenance	4,87,49,865.45
(C) En	vironmental Monitoring	
1	Annual Maintenance Contract of Instruments	74,18,667,00
2	Environmental Monitoring (AAQ, Water, Noise etc.)	74,10,007,00
(D) No	ursery development and plantation	17.08,699.00
(E) En	vironment Staff Salary	66,12,000.00
(F) Wo	ater treatment & ETP Maintainace	34,47,729.00
(G)Ce	ertification	7,35,076.00
(H) M	iscellaneous Expense	1,52,941.72
	Total Amount	11,62,03,314.77



नदीन कुमार / NAVIN KUMAR वर महाज्यक (वर्षात्म प्रवेदन) IDGN (ENVT. MGMT) एन्ट्रीगीली जिन्नेटेड/ NTPC Limited कोवात सन्त्र प्रतिकेट्ड/ COAL MANING PROJECTS हराविदान / Hazaribag

# A C G C & Associates

Chartered Accountants

104, Aks Heights 9th & 10th Sardarpura, 'C' Road, JODHPUR (Raj.) Contact No.: 0291-2641122 ,9772591864, 9414498356

E-mail: acgcassociates@gmail.com Website: www.acgcassociates.icai.org



Ref. No.

Date 18/05/2018

# TO WHOMSOEVER IT MAY CONCERN

I hereby certify that I have examined the related documents for environmental expenses incurred for TRIVENI SAINIK MINING PRIVATE LIMITED(PROJECT-NTPC LTD,PAKRI BARWADIH COAL PROJECT BARKAGON) from April 2017 to March 2018 which amounting to 10,84,21,227/-(Ten Crore Eighty Four Lacs Twenty One Thousand Two Hundred Twenty Seven Only). These Expenses Consist of following Annexure-A which is attached herewith.

FOR ACGC & ASSOCIATES

RAMUN SIVAL LYDER &

GAURAV CHORE

(M. NO- 418565)

नवीन कुमार / NAVIN KUMAR यम पारत्यक (पर्वाला प्रवान) DEN (EVYT MEMT) शब्दीवीली जिल्हेंडें। NTPC Limited बोध्या स्थल पीरिकार्गी/COAL MANIE PROJECTS इस्क्टियान / Hazaribag

18 00	PAKRI BARWADIH COAL MINING PROJECT OF	NTPC
	Environmental Expenditure for the FY (April 2017 to Ma	
SINO	Purpose of Expense	Amount (in Rs.)
(A) Fo	or dump slope stabilization	
1	Coir Mating, Gabion Box, Retaining Wall, Garland Drain, Settling Pit and its Maintainance	
2	Dozer Operator Salary, HSD Cost and Maintainace charge	77,304,660.54
(B) Fo	r dust suppression	
1	Permanent Sprinkler	
2	Water tanker and its maintenance	22,704,829.36
(C) En	vironmental Monitoring	
1	Recalibration of Instruments / equipments	
2	Environmental Monitoring (AAQ, Water, Noise etc.)	4,133,096.00
(D) Nu	rsery development and plantation	1,033,287.00
(E) En	vironment Staff Salary	2,517,864.00
(F) Wo	ater treatment & ETP Maintainace	727,490.00
	Total Amount	108,421,226.90





नवीन कुमार / NAVIN KUMAR तः नारारकः विवेदना विवेदने / DOM (ENVT MONT) (न्यतीनी निर्मित / NTPC Limited रावत बनन चीनाजनी (COAL MINIS PROJECTS हजारीबान / Hazaribag

# A C G C & Associates

Chartered Accountants

104, Aks Heights 9th & 10th Sardarpura, 'C' Road, JODHPUR (Raj.) Contact No.: 0291-2641122 ,9772591864, 9414498356

E-mail: acgcassociates@gmail.com Website : www.acgcassociates.icai.org



Ref. No.

Date 23/03/2018

### TO WHOMSOEVER IT MAY CONCERN

I hereby certify that I have examined the related documents for environmental expenses incurred for TRIVENI SAINIK MINING PRIVATE LIMITED (PROJECT-NTPC LTD, PAKRI BARWADIH COAL PROJECT BARKAGON) from May 2016 to March 2017 which amounting to 3,47,65,165/-(Three Crore Forty Seven Lacs Sixty Five Thousand One Hundred Sixty Five Only). These Expenses Consist of following Annexure-A which is attached herewith.



(M. NO-418565)

नवीन कुमार / NAVIN KUMAR व्य व्यावस्था (वर्षाका प्रदेश) IDGM (ENVI. MGMT) श्रूमती क्षित्रेश NTPG Limited श्रीवात वरण वीष्णवाती COAL MANNG PROJECTS हजारीबात / Hazaribag

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नवीन कुमार / NAVIN KUMAR स्व कारकाक (पर्याचन प्रथम)/DGM (ENVT MGML) हम्मीपीली जीनिटेश NTPC Limited क्षेत्रक समय परिकासकी/ COAL MINING PROJECTS हजारीबान / Hazaribag

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नवीन कुमार / NAVIN KUMAR वर कारकाक (पर्यक्तन प्रकार) / DGM (ENVT MGMT)

्रवर्द्धनीति व्यक्तिंत NTPC Limited कोवल चनन परियोजनी COAL MINIS PROJECTS इटारियाम् / Hazaribəg

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पकरी-मात्राजीह कोल चाहनिय होनेका

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क्रम प्रेरक्टर - जीवन प्रेरक्टर



### OFFICE OF THE EXECUTIVE EN BUILDING CONSTRUCTION DEPARTMENT BUILDING DIVISION, GARBRIA

### SHORT TENDER NOTICE

SHORT TENDER NOTICE

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नवीन कुमोर I NAVIN KUMAR OR ALISERS (ASSAULT MESS) | DON (ENVI. NONL) preddist Rifles | NTPC Limited when tern white and court waters PROJECTS एजरियाप / Hazaribag

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