MINING PLAN AND MINE CLOSURE PLAN
For
KHADIA EXPANSION OCP

(Under Rule 22B of MCR 1960)

(Project Area -1697.906 Ha)

Coal Production Capacity - 20 Mtpa

(with 1000m^3/Day Overburden Processing Plant to generate Manufactured Sand in Project Area 1697.906 Ha)

Singrauli Coalfield, District- Singrauli,
Madhya Pradesh, India

FEBRUARY – 2024

Northern Coalfields Limited
PO- Singrauli, Dist- Singrauli, State –MP - 486889

Prepared by:

CMPDI, RI-VI, PO- Jayant Colliery, Dist -Singrauli, MP- 486890

MPPA Certificate No. NABET/APA-MPPA/IA/010

CHECK LIST

Details		(✓/x)
Chepter-1	Project Information	✓
Chepter-2	Exploration, Geology, Seam Sequence, Coal Quality and Reserve	✓
Chepter-3	Mining	✓
Chepter-4	Safety Management	✓
Chepter-5	Infrastructure Facilities proposed and their Location	✓
Chepter-6	Land Requirement	✓
Chepter-7	Environment Management	✓
Chepter-8	Progressive & Final Mine Closure Plan	✓
Annexure-I	Copy of allotment order/Vesting order	x
Annexure-II	Certificate of **Qualified person**/**Accredited Mining Plan preparing agency** (**MPPA**) if the project area is confined within the vested/allotted block boundary/existing mining lease and where the project area extends beyond the block boundary, a certificate of **Qualified person**/ **Accredited Mining Plan preparing agency** (**MPPA**) should be supported with a certificate of State Government mines and Geology department must be attached, which should specify (a) intent of the State Government for grant of lease beyond the vested geological boundary/**existing mining lease**, (b) non-existence of Coal/Lignite in the area beyond the vested geological boundary/**existing mining lease** to rule out the issue of encroachment and use of coal bearing area (beyond the vested/allotted block boundary/**existing mining lease**) in the mining plan	✓
Annexure-III	Approval of the Company Board	✓
Annexure-IV	Copy of earlier approval of Mining Plan	✓
Annexure-V	Plan/chart showing schedule of Implementation of Mine Closure activities (progressive and final closure) with duration of important activities	✓
Annexure-VI	Non-refundable Application Fee	x
Annexure-VII	Expert-Review Report carried out be an Accredited Mining Plan Preparing Agency (MPPA)	x
Annexure-VIII	Other document (if any)	✓
Plates- I	Location Plan	✓
Plates- II	Plan certified by **Qualified person/Accredited Mining Plan preparing agency (MPPA)** if the project area is confined within the vested/allotted block boundary/existing mining lease and where the project area extends beyond the block	✓

Details		(✓/x)
	boundary, a Plan certified by **Qualified person/Accredited Mining Plan preparing agency (MPPA)** should be supported with a plan with cardinal co-ordinates duly certified by the Mines and Geology Department of the concerned State Government. Plan in support of Annexure-II	
Plates- III	Printed copy of the KML file superimposed in the recent (not older than one year from the base date) dated satellite Image duly certified by accredited Agency should also be attached Note: The soft copy of the KML file shall also be part of the Soft Copy of the mining plan	✓
Plates- IV	Cadastral Plan showing approved block boundary vis-à-vis proposed/existing mining lease and Mine boundary super-imposed over it in distinct color, showing land use and infrastructure etc.	✓
Plates- V	Geological plan showing all the boreholes drilled and proposed to be drilled showing allotted block boundary and required lease area	✓
Plates- VI	Representative Graphic Litholog	✓
Plates- VII	Surface Plan showing drainage system, Contour, preferably at 5m interval, location of BH (borehole)	✓
Plates- VIII	Conceptual plan showing infrastructure facilities including colony, boundary of mining area, mine entries, roads including road diversion alignment etc.	✓
Plates- IX	Tentative land use plan showing land type (Govt., Forest and Tenancy land) with its data source	✓
Plates- X	Floor contour plan and seam folio, iso-grade plan	✓
Plates- XI	Cross-section showing coal/lignite seam (s)	✓
Plates- XII	Plan showing existing and proposed surface layout (s)	✓
Plates- XIII	Plan showing total coal thickness and overburden thickness and stripping ratio (in case of opencast (OC) Mines)	✓
Plates- XIV	Final state quarry plan showing haul road alignment (in case of opencast (OC) Mines)	x
Plates- XV	Plan showing mode and location of entries and surface layouts (in case of underground (UG) Mines)	x
Plates- XVI	Layout of the panel for each system (like Longwall, Continuous Miner, Bord & Pillar, road header etc.) should be given (in case of UG Mines)	x
Plates- XVII	Layout of pillar extraction (in case of UG Mines)	x
Plates- XVIII	Support system (in case of UG Mines)	x
Plates- XIX	Haulage and transport system (in case of UG Mines)	x
Plates- XX	Post Mining land use plan	✓
Plates- XXI	Progressive mine closure plan/stage plans	✓
Plates- XXII	Reclamation Plan and Cross Section	✓

MINING PLAN & MINE CLOSURE PLAN
KHADIA EXPANSION OCP (20 Mtpa)

Index for list of Chapters

MINING PLAN & MINE CLOSURE PLAN
KHADIA EXPANSION OCP (20 Mtpa)

Index for List of Annexure

MINING PLAN & MINE CLOSURE PLAN
KHADIA EXPANSION OCP (20 Mtpa)

Index of List of Plans/Drawings Attached / Enclosed As Plates

Sl. No.	Details	Plate No.
I	Location Plan	I
II	Plan certified by **Qualified person/ Accredited Mining Plan preparing agency MPPA** if the project area is confined within the vested/allotted block boundary/existing mining lease should be supported with a plan with cardinal co-ordinates (Plan in support of Annexure II)	II
III	Printed copy of the KML file superimposed in the recent (not older than one year from the base date dated satellite Image duly certified by accredited Agency should also be attached Note: The soft copy of the KML file shall also be part of the Soft Copy of the Mining Plan	III
IV	Cadastral Plan showing approved block boundary vis-à-vis proposed/existing mining lease and Mine boundary super-imposed over it in distinct color, showing land use and infrastructure etc.	IV
V	Geological plan showing all the boreholes drilled and proposed to be drilled showing allotted block boundary and required lease area	V
VI	Representative Graphic Litholog	VI
VII	Surface Plan showing drainage system, Contour, preferably at 3m interval, location of BH borehole	VII
VIII	Conceptual plan showing infrastructure facilities including colony, boundary of mining area, mine entries, roads including road diversion alignment etc.	VIII
IX	Tentative land use plan showing land type (Govt., Forest and Tenancy land) with its data source	IX

Sl. No.	Details	Plate No.
X	Floor contour plan and seam folio, iso-grade plan	X (a) & X (b) & X (c)
XI	Cross-section showing coal/lignite seams	XI
XII	Plan showing existing and proposed surface layouts	XII
XIII	Plan showing total coal thickness and overburden thickness and stripping ratio in case of opencast OC Mines)	XIII
XIV	Final stage quarry plan showing haul road alignment in case of opencast OC Mines.	XIV
XX	Post Mining land use plan	XX
XXI	Progressive mine closure plan/stage plans (Existing Mine Working Plan, Yr-1, Yr-3, Yr-5, & Final stage Plan)	XXI (a), XXI (b), XXI (c), XXI (d), XXI (e)
XXII	Reclamation Plan and Cross-section	XXII (a), XX (b)

LIST OF ABBREVIATIONS

MINING PLAN & MINE CLOSURE PLAN

KHADIA OCP (20.00 Mtpa)

List of Abbreviations Used

Abbreviation	Detail
MPPA	Mining Plan Preparing Agency
GSI	Geological Survey of India
DGMS	Directorate General of Mines Safety
MoEF&CC	Ministry of Environment, Forest and Climate Change
CMDPA	Coal Mine Development and Production Agreement
OC	Open Cast
UG	Under Ground
SR	Stripping Ratio
OB	Overburden
GR	Gross Geological Reserve
NGR	Net Geological Reserve
MR	Minable Reserve
ER	Extractable Reserve
GCV	Gross Calorific Value
PP	Project Proponent

Justification for Mining Plan and Mine Closure Plan for inclusion of Overburden Processing Plant to generate Manufactured Sand

Khadia OCP is operating since year 1981-82. Latest EC has been obtained from MoEF&CC vide letter No. J-11015/255/2006-IA.II (M), dated 27.07.2022 and revalidated on 07.02.2024 with a production capacity of 15 Mtpa in an area of 1640.00 ha.

As per directives of Ministry of Mines (Sand Mining Framework, 2016) and Ministry of Coal, new initiative for conservation of minerals and to reduce environmental impacts on river ecosystem, production of manufactured sand from the overburden materials at Khadia OCP has been proposed. This sand generated from overburden processing will be an initiative for converting waste to useful resources. For this an overburden processing plant for generation of manufactured sand with capacity of 1000 m^3/day is proposed to be installed within present project area of Khadia OCP.

For installation & commissioning of plant for sand segregation from excavated overburden material from project land at Khadia OCP along with regular coal mining operations of 20 Mtpa coal production in same project area of 1697.906 Ha, a proposal has been sent to District Collector of Sonbhadra, UP (Annexed as Annexure-VIII(d)). The location plan of m-sand plant as provided by the Project has been annexed as Annexure-VIII(e).

Accordingly, a Mining Plan and Mine Closure Plan of Khadia Expansion OCP (20 Mtpa) has been prepared with inclusion of overburden processing plant for generation of manufactured sand along with coal mining operations in the leasehold area of 1697.906 Ha to obtain Environmental Clearance from MoEF&CC.

Mass balance of Coal production, OB excavation & generation of Manufactured Sand (Peak excavation per year) year wise during the balance period of mine.

The Mass Balance study of Coal Production, OB Excavation & generation of Manufactured Sand (Peak excavation per year) year wise during the balance period of mine for Khadia Expansion OCP (20 Mtpa), is given below:

Consideration as per the EC / Mining Plan for mass balance/ material balance study:

- Coal mined out in a year (Peak during life of the mining activities, 20 Mtpa) = 12.65 Mm^3

- OB & Band removed in a year (Peak during life of the mining activities) = 77.10 Mm^3
- Total Mass in a year (Peak material handling during the life of mine) = 89.75 Mm^3

Based on Proposed EC scenario and proposed amendment in EC for generation of manufactured sand from overburden processing plant scenario, the mass balance study has been carried out (considering the balance life of 11 years from FY- 2024-25).

Year wise mass/ material balance

Year		Coal production as per proposed Mining Plan		Waste / By Product					Total Volume of generated (Coal + OB +Band) (Mm^3)
		(Mt)	(SG=1.58 te/m^3) (Mm^3)	OB Removal as per proposed Mining Plan (Mm^3)	Generation of Manufactured Sand from OB as per proposed Sand Plant (Mm^3)	Balance OB for Dumping (Mm^3)	Volume of Band (Mm^3)	Total Volume for Dumping (Mm^3)	
2023-24	Yr-1	15.00	9.49	66.55		66.55	0.85	67.40	76.89
2024-25	Yr-2	17.00	10.76	72.85	0.13	72.72	0.95	73.67	84.56
2025-26	Yr-3	18.00	11.39	76.10	0.20	75.90	1.00	76.90	88.49
2026-27	Yr-4	20.00	12.66	75.30	0.33	74.97	1.15	76.12	89.11
2027-28	Yr-5	20.00	12.66	65.65	0.33	65.32	1.30	66.62	79.61
2028-29	Yr-6	20.00	12.66	65.65	0.33	65.32	1.30	66.62	79.61
2029-30	Yr-7	17.50	11.08	56.65	0.33	56.32	1.10	57.42	68.83
2030-31	Yr-8	15.00	9.49	43.00	0.33	42.67	1.00	43.67	53.49
2031-32	Yr-9	13.50	8.54	38.15	0.33	37.82	0.85	38.67	47.54
2032-33	Yr-10	12.50	7.91	34.95	0.33	34.62	0.80	35.42	43.66
2033-34	Yr-11	8.50	5.38	20.65	0.33	20.32	0.55	20.87	26.58
2034-35	Yr-12	3.00	1.90	6.50	0.33	6.17	0.15	6.32	8.55
Total		**180.00**	**113.92**	**622.00**	**3.30**	**618.70**	**11.00**	**629.70**	**746.92**

From the above, it is clear that the total mass balance will remain the same with the proposed amendment so far as total material handling is concerned i.e. Coal + OB + Band Generation of Manufactured sand from overburden.

BRIEF ON OVERBURDEN PROCESSING FOR GENERATION OF MANUFACTURED SAND:

Sand is formed by natural erosion processes over thousands of years. Sand and gravel are mined out worldwide and account for the largest volume of solid materials extracted globally.

These are being extracted at a greater rate than their natural formation rate. Use of sand and gravel in colossal quantities in construction activities increases dependence on these materials. Ensuring their availability is vital for infrastructure development. Excessive removal of sand from river bed has adverse impacts on river, delta, coastal and marine ecosystem and may significantly distort the natural equilibrium of a stream. Major impacts are evident like loss of land through river/ coastal erosion, lowering of water table and decrease in the amount of sediment supply. Sand mining from rivers can also damage private and public properties as well as aquatic habitats. Thus extraction has to be regulated and required environmental safeguards during sand mining are to be ensured.

Use of manufactured sand, artificial sand and alternative technologies in construction materials and processes have to be encouraged for reducing the dependence on naturally occurring sand and gravel.

The excavated overburden material from Khadia OCP is dumped at earmarked sites in external and internal dump. The overburden materials generated from coal mine of this region consists mainly of alluvial soil, hard rocks viz. Sandstone, shale & their intercalations. Sandstone is the main constituent of overburden material. Sandstone is the rock formed by cementing of sands composed largely of quartz and silicate minerals. Preliminary investigation report suggests 70-80% sand (as per IS-383 (2016)) concentration in overburden material of Khadia OCP.

This sand if extracted from overburden materials can be alternative to river sand and be utilized as construction material grade sand and in other geotechnical applications. Use of this manufactured sand will help in reducing environmental impacts on the river ecosystem. This Manufactured sand can be made available in all seasons and cost will also be cheaper than river sand. Sand segregation from overburden material in open cast coal mines of NCL will be an important step in this direction. Segregation of sand from overburden material can be achieved along with regular coal mining operations in accordance with permission to be obtained from Regulatory Authorities.

Accordingly, it is proposed for generation of manufactured sand by processing of overburden material excavated from revenue land, which is abundantly available at Khadia OCP. It will help in conservation of minerals and reduce environmental impact on river ecosystem by minimizing the foot prints and dependency on river sand.

Mitigative measures for pollution control will be taken for both the coal mining operations and Sand segregation plant.

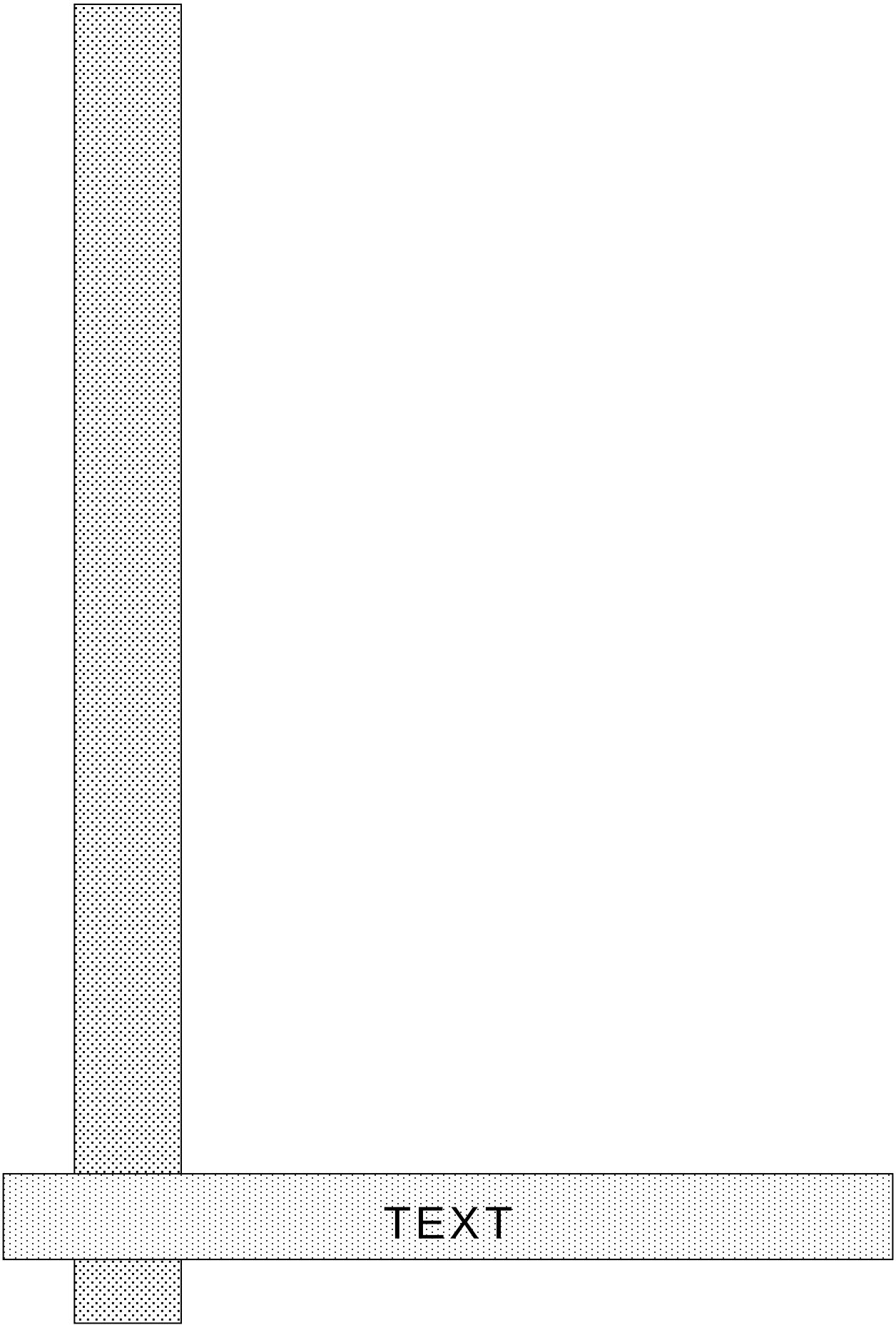
Sl. No.	Source of Air Pollution	Control Measures
1	Crushing	Fully covered crusher, chances for leakage will be almost negligible.
2	Vibrating Screen	Will be Covered externally to reduce the air borne dust.
3	Loading	Segregated sand after washing in the hydrocyclone will become wet.
4	Transportation	Wet segregated sand will be transported via tarpaulin covered trucks

Sl. No.	Source of Water Pollution	Control Measures
1	Hydrocyclone (washing of sand)	Treated water from ETP situated at Khadia OCP will be used in the hydrocyclone to separate clay and silt from the OB. The water with clay and silt will be transferred into the thickener which will separate 90% of the total input water for reuse, whereas the balance 10% water with clay will be discharged through pipeline in clay pond for settling. The Clay pond is left for drying. The water left out after evaporation in clay pond will be reused for various purposes in plant. Thus Zero water discharge will be there.

MERITS OF THE PROPOSAL:

The sand segregation plant is proposed to be commissioned within same project area of 1697.906 Ha as per Proposed EC along with regular coal mining operations with production capacity of 20 Mtpa. It will have following benefits:

(i) Degradation of land can be minimized.
(ii) Generation of indirect employment from operation of overburden processing plant.
(iii) Reduce the dependency and demand on naturally occurring sand for construction works to a great extent. It will help in conservation of river ecosystem.
(iv) Availability of sand in all seasons. Uninterrupted supply of sand without any seasonal affect throughout the year.
(v) Cost of sand will be substantially cheaper than river sand.
(vi) Conversion of waste (OB material) to useful resource.
(vii) Revenue generation through selling of sand segregated from overburden (Waste) materials as Business Diversification plan for the company.


TEXT

CHAPTER - I

PROJECT INFORMATION

1.1 INTRODUCTION

	Parameters	Details
1.1.1	Name of Coal Block / Lignite Block	Khadia and Ruhela Geological Block
1.1.2	Name of the Coalfield / Lignite Field	Moher Sub-Basin of Singrauli Coalfields
1.1.3	Base Date of Mining Plan / Mine Closure Plan	01.04.2023
1.1.4	Linked End Use Plant	Anpara Thermal Power Station (1630MW) of UPRVUNL, Lanco Anpara TPS (1200MW) & Basket Linkage. The sand segregated from the OB will be supplied to Govt. Agencies / Private construction organisations.
1.1.5	Distance of End use plant from the pit head of the project in “km”	Anpara TPS- about 17 Km There is a Private Railway siding to dispatch coal to outside consumer. Manufactured sand will be supplied as per requirement of consumers.
1.1.6	Mode of Coal Transport	By Railway and Road: Based on location of consumer. Coal dispatch of produced coal of 20 Mtpa by Khadia Expn. OCP (20 Mpta) will be handled by existing CHP of capacity 10.00 Mtpa and an upcoming 4 Mtpa CHP with RLS. Balance coal will be handled by existing Krishnashila CHP, wharfwall and proposed western stream of CHP. A part of the above mechanism coal may be

		dispatched by road as per the Govt. guidelines.

1.2 LOCATION, TOPOGRAPHY AND COMMUNICATION

1.2.1	Location of coal deposit (District and State)	Khadia OCP lies in Moher Sub-Basin of Singrauli Coalfields partly in Sonbhadra district, Uttar Pradesh and partly in Singrauli district, Madhya Pradesh. The propose Mining Lease area of Khadia OCP is covered under Topo-sheet No. 63L/12 of the Survey of India on 1:50000 scale. The State Boundary between Madhya Pradesh (Singrauli district) and Uttar Pradesh (Sonebhadra district) passes through the proposed leasehold area. Geographic co-ordinates are latitude 24º06'40.488" North to 24º09'16.616" North and longitude 82º39'54.322" East to 82º44'27.547" East. The sand segregation plant will be installed within the project boundary in an area of 4 Ha.
1.2.2	Communication: PWD Roads, Railway lines, Air	The Singrauli and Shaktinagar railway station on Singrauli-Obra and Shaktinagar-Karaila rail links of East-Central Railway are located at a distance of about 12 Km and 2 Km of Khadia OCP. The project is connected with all weathered metalled road to Shaktinagar and Renukut. The project is also approachable from the NCL headquarters at Singrauli by a fair-weather road. The nearest air-strip is at Myorpur, located at a distance of about 80 Km from Singrauli. A helipad exists at Shaktinagar which is about 12 Km from the project.

1.2.3	Availability of power supply, water etc.	The Project is receiving power at 33 kV from Bina Switching Station which in turn is being fed from 132/33 kV UPSEB substation located at Basi, Distt Sonebhadra (UP). From Bina Switching Station power is being fed to Khadia OCP, Kakri OCP, Bina OCP. The permanent water supply arrangement for existing Khadia OCP is linked with off take point of Integrated Water Supply Scheme (IWSS), for Singrauli. Separate central bulk storage reservoir for IWSS water for drinking and industrial water to collect water for further supply to the township and the mine. Additionally, the sand segregation plant will require 0.70 KVA of power which will be met through the existing power source. Industrial water demand of 0.82 MGD for 'OB to Sand' plant shall be fulfilled by mine water/ETP treated water.
1.2.4	Prominent physiographic features drainage pattern, natural water courses, rain fall data, highest flood level	The Khadia OCP is situated on the eastern fringe of Moher plateau. The plateau top is more or less flat with a gentle slope towards west and south and a steep escarpment in the south. The escarpment in the south roughly corresponds to incrop position of the top most workable coal horizon. The area on the top of plateau is gently undulating except one hill in the north east corner have an altitude of 490m.

		The surface RL of the opencast minefield varies in the range of 300m to 490m above mean sea level. The general elevation of the plateau varies from 425m to 450m. The coalfield is located in the drainage area of Son-Rihand river system. The prominent drainage channels of the area are the north flowing Bijul nala, a tributary of Son River and the south flowing Kachni nala, a tributary of Rihand River. Other water drainages are Ballia nala, Mehrauli nala,Turra nala, Pararwar and Bandha nalla. The climate of the area is tropical with three typical seasons i.e. winter, summer and rainy. The temperature in summer rises as high as 48^{o} C in May-June and minimum summer temperature is 21^{o} C. In winter (Nov.-Feb.), the minimum temperature is around 4^{o} C. The rainy season is generally from July to September with average annual rainfall around 1200mm. The maximum rainfall in 24 hours is recorded as 225mm on 20.08.1975 at Jhingurdah Rain gauge Station. The Jhingurdah rain gauge station is situated at a distance of 10 Km from the project.
1.2.5	Important surface features within the project area and major diversion or shifting involved	Additional Land for Khadia Exp. OCP (20 Mtpa) required is forest Land. So timely acquisition of forest land is necessary. No

		major diversion or shifting of natural infrastructure are involved. For inclusion of sand segregation plant there is no diversion or shifting involved.

1.3 Details of the Allotment Agreement

1.3.1	Name of the Allottee	Northern Coalfields Limited, A subsidiary of Coal India Limited.
1.3.2	Details of Allotment / vesting order	Blocks are CIL block.
1.3.3	Name and address of the applicant	Northern Coalfields Limited Singrauli, (M.P.) India, 486889 Telephone : 07805-266670
1.3.4	Name of the previous allottee of the Block	Not Applicable
1.3.5	Starting Date of the Mine as per CBDPA	Not Applicable
1.3.6	Capacity	20.00 Mtpa
1.3.7	Production Schedule as per opening permission (meeting provision of CBDPA if any)	It is an Expansion project of existing Khadia OCP. Presently MoEF&CC OCP has granted EC of 15 Mtpa for Khadia OCP. As the base date for Mining Plan for Khadia Expn. OCP is 01.04.2023, the proposed coal production for Yr-1 is 15 Mtpa and target of 20 Mtpa coal production will be achieved in Yr-4. Year wise detailed Calendar Plan of mining operation is provided in the Chapter 3 of this Mining Plan.
1.3.8	End Use of Coal / Lignite as per allotment order if any	The proposed Khadia Expn. OCP will have linkage with Anpara TPS. It will also serve as Basket Linkage mine to meet the overall

		demand of coal on NCL. Hence, produced coal will be mainly utilized by thermal power plant for electricity generation.
1.3.9	Cardinal Points co-ordinates of the Block boundary	Latitude and Longitude of the points under which the project is operating is enlisted below:

Point	WGS84	
	Longitude	Latitude
0	82° 39' 54.322" E	24° 7' 31.233" N
1	82° 40' 20.409" E	24° 7' 31.523" N
2	82° 40' 48.891" E	24° 7' 31.731" N
3	82° 41' 20.803" E	24° 7' 32.024" N
4	82° 41' 22.237" E	24° 7' 43.081" N
5	82° 41' 23.436" E	24° 7' 52.292" N
6	82° 41' 23.488" E	24° 8' 0.085" N
7	82° 41' 23.504" E	24° 8' 6.207" N
8	82° 41' 31.768" E	24° 8' 10.364" N
9	82° 41' 53.976" E	24° 8' 25.616" N
10	82° 42' 14.086" E	24° 8' 39.345" N
11	82° 42' 29.021" E	24° 8' 49.710" N
12	82° 42' 32.807" E	24° 8' 52.544" N
13	82° 42' 40.881" E	24° 8' 54.226" N
14	82° 42' 41.140" E	24° 8' 48.580" N
15	82° 42' 45.020" E	24° 8' 50.580" N
16	82° 42' 58.527" E	24° 9' 0.099" N
17	82° 43' 9.112" E	24° 9' 7.559" N
18	82° 43' 15.318" E	24° 9' 11.933" N
19	82° 43' 19.493" E	24° 9' 16.616" N
20	82° 43' 37.774" E	24° 9' 3.311" N
21	82° 43' 51.297" E	24° 8' 53.468" N
22	82° 43' 54.844" E	24° 8' 57.060" N
23	82° 43' 56.988" E	24° 8' 59.306" N
24	82° 44' 2.746" E	24° 8' 55.057" N
25	82° 44' 3.394" E	24° 8' 55.759" N
26	82° 44' 9.328" E	24° 8' 50.351" N
27	82° 44' 12.460" E	24° 8' 47.663" N
28	82° 44' 13.567" E	24° 8' 38.126" N
29	82° 44' 14.541" E	24° 8' 29.331" N
30	82° 44' 19.563" E	24° 8' 12.929" N
31	82° 44' 25.298" E	24° 7' 54.170" N
32	82° 44' 27.547" E	24° 7' 45.862" N
33	82° 44' 24.816" E	24° 7' 29.974" N
34	82° 44' 22.712" E	24° 7' 17.671" N
35	82° 44' 20.135" E	24° 7' 2.936" N
36	82° 44' 18.559" E	24° 7' 2.812" N
37	82° 44' 11.186" E	24° 6' 57.000" N
38	82° 44' 9.459" E	24° 6' 47.860" N
39	82° 44' 7.730" E	24° 6' 40.488" N
40	82° 43' 58.634" E	24° 6' 45.506" N
41	82° 43' 54.769" E	24° 6' 47.640" N
42	82° 43' 43.501" E	24° 6' 52.128" N
43	82° 43' 32.567" E	24° 6' 56.354" N

44	82° 43' 30.336" E	24° 6' 54.599" N
45	82° 43' 21.539" E	24° 6' 51.563" N
46	82° 43' 11.524" E	24° 6' 52.025" N
47	82° 43' 3.763" E	24° 6' 55.015" N
48	82° 42' 58.559" E	24° 6' 55.808" N
49	82° 42' 53.323" E	24° 7' 2.640" N
50	82° 42' 47.217" E	24° 7' 6.385" N
51	82° 42' 42.167" E	24° 7' 5.075" N
52	82° 42' 36.455" E	24° 7' 6.816" N
53	82° 42' 39.056" E	24° 7' 11.031" N
54	82° 42' 43.766" E	24° 7' 9.030" N
55	82° 42' 48.194" E	24° 7' 11.212" N
56	82° 42' 50.118" E	24° 7' 14.184" N
57	82° 42' 42.810" E	24° 7' 15.374" N
58	82° 42' 33.901" E	24° 7' 16.636" N
59	82° 42' 32.754" E	24° 7' 11.759" N
60	82° 42' 28.645" E	24° 7' 12.438" N
61	82° 42' 28.359" E	24° 7' 9.938" N
62	82° 42' 24.974" E	24° 7' 10.144" N
63	82° 42' 6.595" E	24° 7' 12.787" N
64	82° 41' 49.220" E	24° 7' 15.806" N
65	82° 41' 42.544" E	24° 7' 17.995" N
66	82° 41' 36.003" E	24° 7' 23.080" N
67	82° 41' 31.068" E	24° 7' 26.180" N
68	82° 41' 29.189" E	24° 7' 20.111" N
69	82° 41' 26.956" E	24° 7' 14.937" N
70	82° 41' 13.597" E	24° 7' 15.562" N
71	82° 41' 12.263" E	24° 7' 16.764" N
72	82° 41' 1.358" E	24° 7' 15.904" N
73	82° 40' 48.005" E	24° 7' 14.825" N
74	82° 40' 49.884" E	24° 7' 9.745" N
75	82° 40' 44.312" E	24° 7' 7.985" N
76	82° 40' 38.657" E	24° 7' 8.356" N
77	82° 40' 38.446" E	24° 7' 12.332" N
78	82° 40' 35.252" E	24° 7' 11.662" N
79	82° 40' 31.987" E	24° 7' 9.943" N
80	82° 40' 29.820" E	24° 7' 11.962" N
81	82° 40' 25.382" E	24° 7' 13.628" N
82	82° 40' 21.630" E	24° 7' 16.232" N
83	82° 40' 16.975" E	24° 7' 12.967" N
84	82° 40' 12.852" E	24° 7' 13.098" N
85	82° 40' 10.162" E	24° 7' 16.702" N
86	82° 40' 9.886" E	24° 7' 18.992" N
87	82° 40' 6.133" E	24° 7' 17.824" N
88	82° 40' 3.079" E	24° 7' 19.121" N
89	82° 40' 3.198" E	24° 7' 22.413" N
90	82° 40' 0.148" E	24° 7' 25.492" N
91	82° 39' 55.710" E	24° 7' 26.155" N

1.4 DETAILS OF THE PREVIOUS APPROVAL OF MINING PLAN

<table>
<tr><th></th><th>Parameters</th><th>Details</th></tr>
<tr><td>1.4.1</td><td>Date of Approval</td><td>30.05.2022</td></tr>
<tr><td>1.4.2</td><td>Conditions If any</td><td>No special condition specified</td></tr>
<tr><td>1.4.3</td><td>Schedule year of start of production</td><td>2022-23</td></tr>
<tr><td>1.4.4</td><td>Proposed year of achieving the targeted production (15Mtpa)</td><td>2022-23</td></tr>
<tr><td>1.4.5</td><td>Date of actual commencement of mining operation, if operation already started</td><td>The CTO for the production capacity of 15 Mtpa has been obtained on 28.12.2022. So the actual start date of Mining Plan of Khadia OCP (15 Mtpa) is 28.12.2022.</td></tr>
<tr><td>1.4.6</td><td>Likely date of mining operations, if operations not yet started & reasons for non–commencement of operations</td><td>Not Applicable</td></tr>
<tr><td>1.4.7</td><td>Planned production and actual levels achieved in last 3 years (Coal in Mt, OB in Mm^3, SR in m^3/t)</td><td>
<table>
<tr><th rowspan="2">Year</th><th colspan="3">Planned Production</th><th colspan="3">Actual Production</th></tr>
<tr><th>Coal (Mt)</th><th>OBR (Mm3)</th><th>SR (m3/t)</th><th>Coal (Mt)</th><th>OBR (Mm3)</th><th>SR (m3/t)</th></tr>
<tr><td>2020-21</td><td>14.00</td><td>50.00</td><td>3.57</td><td>14.00</td><td>49.28</td><td>3.52</td></tr>
<tr><td>2021-22</td><td>14.00</td><td>50.50</td><td>3.61</td><td>14.00</td><td>51.68</td><td>3.69</td></tr>
<tr><td>2022-23</td><td>15.00</td><td>70.89</td><td>4.73</td><td>15.00</td><td>54.85</td><td>3.66</td></tr>
</table>
</td></tr>
<tr><td>1.4.8</td><td>Statutory obligations vis-à-vis compliance status in a tabular form</td><td>Existing coal mining operations are being carried out as per the following:
1. Latest EC has been obtained from MoEF&CC vide letter No .No. J-11015/255/2006-IA.II(M) dated 27th July, 2022 with a production capacity of 15 Mtpa in an area of 1640 ha .All the work has been carried out as per strict statutory compliance enlisted in the EC</td></tr>
</table>

	Parameters	Details
		Letter and latest sanctioned Mining Plan and Mine Closure Plan of Khadia OCP. 2. FC and EC have to be obtained for Khadia Expn. OCP (20 Mtpa).
1.4.9	Reasons for difference between the planned and actual production levels	No difference in Planned coal production and Actual coal Production.

1.5 Parameters of Approved Mining Plan Vis-à-vis Proposed Mining

		Approved Mining Plan	Proposed Mining Plan
1.5.1	Block Area in “Ha” Total since inception	772.00	1030.00
1.5.2	Block Area Projectised “Ha” Total since inception Balance as on 1.04.2023	772.00	1030.00 590.00
1.5.3	Lease area “Ha”	1640.00	1697.906
1.5.4	Project Area “Ha”	1640.00	1697.906
1.5.5	Life of the Project “Yrs”	11	12
1.5.6	Minimum and Maximum Depth of working “m”	Min: 158 m Max: 280 m	Min- 190 Max- 280
1.5.7	Geological Block Area yet to be projectised “Ha“	0	0
1.5.8	Production Target “Mtpa”	Coal: 15 Mtpa	1. Coal: 20 Mtpa 2. Generation of m-Sand from OB Processing Plant – 1000 m^3/day
1.5.9	Seams Available “As per GR”	5 Nos. of Coal Seam • Khadia • Purewa Top • Purewa Bottom • Turra • Kota	5 Nos. of Coal Seam • Khadia • Purewa Top • Purewa Bottom • Turra • Kota

		Approved Mining Plan	Proposed Mining Plan
1.5.10	Seams not considered for Mining with reasons	Kota & Khadia coal Seams are not techno-economically feasible to extract due to thin seam and inconsistency in nature.	Kota & Khadia coal Seams are not techno-economically feasible to extract due to thin seam and inconsistency in nature.
1.5.11	Gross Geological Reserve "Mt" (Projectised)	369.55	313.10
1.5.12	Net Geological reserve "Mt" (Projectised)	335.95	281.80
1.5.13	Blocked Reserve "Mt"	-	92.32
1.5.14	Minable Reserve "Mt"	296.85	189.48
1.5.15	Extractable Reserve "Mt"	296.85	180.00
1.5.16	% of Extraction /Recovery	88.36%	63.88%
1.5.17	Reserve Depleted (till the base date 31.03.2022) Reserve "Mt"	152.32	Nil
1.5.18	Balance Extractable Reserve " Mt"	144.54	180.00
1.5.19	Average Grade	G8	G9
1.5.20	Balance OB in Mm^3 (including inseam dirt band)	666.40	633.00
1.5.21	SR (m^3/t) (including inseam dirt band and Rehandling)	4.61	3.52
1.5.22	Mining Technology	Opencast by deploying dragline and shovel-dumper combination for OB removal and for coal extraction shovel-	1. Opencast by deploying dragline and shovel-dumper combination for OB removal and for coal extraction shovel-dumper as

		Approved Mining Plan	Proposed Mining Plan
		dumper as well as Surface Miner	well as Surface Miner 2. Sand - Crusher, Vibrator, Hydro-cyclone
1.5.23	Coal Beneficiation envisaged	NA	NA
1.5.24	Handling of Rejects	NA	NA
1.5.25	Land use pattern “Ha”		
1	Excavation Area	1003.00	970.00 (In earlier approved Mining Plan, the mining operation was envisaged to excavate upto the common floor of Turra Coal seam between Dudhichua OCP and Khadia OCP. However, in this proposed Mining Plan, excavation of Khadia OCP has been restricted on the floor of Purewa Bottom Seam due to present condition of mining operation of both the mines. Thus, Excavation area is reduced from 1003 ha to 970 ha.)

		Approved Mining Plan	Proposed Mining Plan
2	Top Soil Dump	-	0.00 (Top Soil will be completely utilized in reclamation of OB dump)
3	External Dump	258.00	258.00
4	Safety Zone / Danger Zone	107.00	28.00
5	Undisturbed Area		38.00
6	Infrastructure Area	130.00	191.906
7	Residential Area	142.00	142.00
8	Green Belt		65.00
9	Other Use		5.00
	Total	**1640.00**	**1697.906**
1.5.26	Reasons for revision	The revised Mining Plan (including Mine Closure Plan) has been prepared for obtaining Environmental Clearance for 15.00 Mtpa for supply of coal to thermal power stations and other consumers to meet the increased energy demand in the country as per the new guidelines for granting Environmental Clearance (EC) under para 7(ii)(a) of EIA Notification,	Change in Land schedule and expansion of area (1697.906 ha) as well as enhancement of coal Production capacity (20 Mtpa). Proposal of m-sand segregation Plant (1000 m^3/day) within the lease area along with coal mining operations.

		Approved Mining Plan	Proposed Mining Plan
		2006, for expansion up to 50%, within the existing premises / mine lease area, without additional land acquisition – reg. Accordingly, Modified Mining Plan (Including Mine Closure Plan) has been prepared. With a production capacity of 15.00 Mtpa in same area of 1640 Ha.	

CHAPTER - II

EXPLORATION, GEOLOGY, SEAM SEQUENCE, COAL QUALITY AND RESERVE

	Parameters	Details
2.1	**Details of the Block**	
2.1.1	Particulars of adjacent coal blocks**:** North, South, East, West	**Northern:** Ruhela Block **Eastern:** Marrak Block **Southern:** Incrop Limit of Turra seam in Khadia Block **Western:** Dudhichua Block
2.1.2	Location of the Block District **/** State	District**-**Singrauli, State**-**Madhya Pradesh
2.1.3	Area of the Block **"**Ha**"** Total since inception	1030.00
2.1.4	Area of the geological block projectized **"**in Ha**"** (Area of the geological block considered for liquidation of coal reserve) Total since inception Balance as on 01.04.2023	 1030.00 590.00
2.1.5	Balance area yet to be projectized **"**Ha**"**	0
2.1.6	Likely reserve in the area yet to be projectized **"**in Ha**"**	0

	Parameters	Details
2.1.7	Cardinal Points Co-ordinates of the non-coal/lignite bearing area/ existing mine lease outside the allotted Geological Coal Lignite block (Duly certified in line with para 1.9 of the Guideline, if fresh mining lease required)	Not applicable
2.1.8	Certificate of Qualified person/ Accredited Mining Plan preparing agency (MPPA) if the project area is confined within the vested/allotted block boundary/ existing mining lease and where the project area extends beyond the block boundary, a certificate of Qualified person/Accredited Mining Plan preparing agency (MPPA)should be supported with a certificate of State Government mines and Geology department must be attached,	Project Area- 1697.906 Ha, Lease Area- 1697.906 Ha, Geological Block Area- 590.00 Ha. Proposed Project is confined within the existing Leasehold boundary of Khadia OCP and additional area required for expansion is within the coal bearing area of bounding coordinates of NCL coal blocks. A Certificate regarding this is annexed as Annexure-II.

	Parameters	Details
	which should specify **(**a**)** Intent of the state government for grant of lease beyond the vested geological boundary; (b) non**-**existence of Coal**/** Lignite in the area beyond the vested**/** allotted geological block boundary**/** existing mining lease to rule out the issue of encroachment and use of coal bearing area (beyond the vested**/**allotted block boundary**/** existing mining lease in the mining plan**.** The Project area, Lease area and geological block area in "Ha" shall also be envisaged**.**	
2.1.9	KML file of the Proposed lease area, Project Area and geological block**.**	KML file of the Proposed lease area, Project Area and Geological block is given as Plate No**.** III.
2.1.10	Whether the proposed project area is confined within the allotted block	Yes, Project is confined within the NCL Coal Block Boundary and Existing Lease.

	Parameters	Details
	boundary/ existing mining lease, if not, the reason for deviation from allotted block boundary, may be given.	
2.1.11	If the project area extends outside the allotted block boundary/existing mining lease, confirmation about non-occurrence of coal/lignite in the area under reference needs to be furnished	Not Applicable
2.1.12	Type of the Project (Operating / under Implementation) and year of Starting.	Opencast project and it is under operation and associated m-Sand Segregation Plant operation is likely to be started in 2024-25.
2.2	**Exploration, Geology and Assessment of Reserve**	
2.2.1	Regional geological set up of the area, local geology, structure, stratigraphic sequence, characteristics of the litho-logical units (coal seams /partings/overburden).	Moher sub-basin is the most promising area and at present, mining of coal is confined in this part of Singrauli Coalfield. Khadia OCP is located in the north eastern part of Moher sub-basin. The general stratigraphic sequence of Singrauli Coalfield is given following Table.

<table>
<tr><th></th><th>Parameters</th><th>Details</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Age</th><th>Group</th><th>Formation</th><th>Lithology</th><th>Thickness (m)</th></tr>
<tr><td>Cretaceous</td><td></td><td>Intrusive</td><td>Dolerite dykes and sills</td><td>Not estimated</td></tr>
<tr><td>Upper Triassic</td><td>Upper Gondwana</td><td>Mahadeva</td><td>Coarse grained, ferru-ginous sandstone with bands of shale, clay and conglomerate</td><td>Not estimated</td></tr>
<tr><td>Lower Triassic</td><td rowspan="6">Lower Gondwana</td><td>Panchet (?)</td><td>White, greenish white and pink micaceous, medium to coarse grained sand-stones with red beds, greenish brown silty shales and conglomerates</td><td>Not estimated</td></tr>
<tr><td>Upper Permian</td><td>Raniganj</td><td>Fine grained sandstones and shales with coal seams.</td><td>215-403</td></tr>
<tr><td>Middle Permian</td><td>Barren Measures</td><td>Very coarse grained ferru-ginous sandstones, green clay and shales</td><td>125-300</td></tr>
<tr><td>Lower Permain</td><td>Barakar</td><td>Medium to coarse grained sandstones, shales, clays and coal seams</td><td>325-600</td></tr>
<tr><td>Upper Carboniferous (?)</td><td>Talchir</td><td>Tillites, sandstones, silt-stones, needle shales</td><td>75-130</td></tr>
<tr><td colspan="5">---------- Unconformity----------</td></tr>
<tr><td>Precambrian</td><td colspan="4">Phyllites, quartzites, schists and gneisses.</td></tr>
</table>
The general strike of the bed is more or less east-west except in Block-B OCP in the west and Bina Extn. OCP & Kakri OCP in the east where the strike is nearly north-south. The bed has a corresponding centripetal dip. The amount of dip in general is about 2^{o} to 3^{o}. However, higher dips of about 8^{o} to 13^{o} have been observed in the eastern part and western part of the basin.
</td></tr>
<tr><td>2.2.2</td><td>Local geology, Structure, Stratigraphic sequence, Characteristics of the litho-logical units (coal seams / partings / overburden):</td><td>The coal blocks of the proposed project are Khadia, Ruhela and Marrak coal block. These coal blocks are in Moher subbasin of Singrauli coalfield. Entire block area is covered by the sediments of Barakar Formation with a thin cover of soil and alluvium at places. The stratigraphic</td></tr>
</table>

	Parameters	Details
		sequence of rocks within Barakar sequence, based on data of boreholes is given below:

Stratigraphic sequence of rocks and coal seams (Excluding mined out area)

Lithology	Stratigraphic Thickness (m)		
	Min.	Max.	Avg.
Soil/weathered mantle	1.50	30.00	
Sandstone & shale	10	180.00	
Purewa Top	4.85	10.35	8.28
Sandstone & shale	31.00	49.00	
Purewa Bottom	7.10	13.39	10.40
Sandstone & shale	40.00	55.00	
Turra	18.20	23.370	20.76

The Barakar sequence mainly consists of fine to coarse grained, light grey, felspathic sandstone, shale, clay and coal seams. Kaolinised feldspar is usually the cementing material. Two to three clay beds occur within the upper horizon of the Barakar sequence. The shale bands generally occur as inter banded with coal and constitutes most of the dirt bands within the seams. Presence of thin shale bands has also been observed within sandstone at places.

The major lithofacies of the Barakar formation, comprising the coal seams belong to the arenaceous facies of varying

	Parameters	Details

grain sizes, but predominantly of the coarse grained sandstone. Argillaceous facies is around 5% of the total column of the rocks in a vertical section. The sandstones are felspathic, at times kaolinised and rarely micaceous. The coal, shaly coal and carb shales constitute the coal horizon.

SEQUENCE OF COAL SEAMS

Seam	Area of development	Effective Thickness (Avg.) (m)	Grade Range (GCV, K.Cal/Kg)	Borehole Inter-section
Top OB		37.55-117.60		
Purewa Top	Whole area	3.75-10.35 (7.20)	4331	59
Parting		30.34-43.70		
Purewa Bottom	Whole area	5.60-13.39 (10.84)	4460	52
Parting		50.78-64.28		
Turra	Whole area	14.57-22.56 (18.74)	4776	45

Strike and Dip

Strike: The strike is NW-SE in the west which swings to ENE-WSW in the eastern part of the area. The strike is E-W in the central part of the area.

Dip: The dip generally varies from 2° to 3° (1 in 28 to 1 in 19) towards north.

Faults Description:

The areas devoid of any fault. However, two sets of prominent vertical joints (NE-SW and NW-SE) and one set less prominent (E-W) joints have been observed in the area.

<table>
<tr><th></th><th>Parameters</th><th>Details</th></tr>
<tr><td>2.2.3</td><td>Geological Block Area “Ha”</td><td>760.00</td></tr>
<tr><td>2.2.4</td><td>Status of Exploration of the block</td><td>The exploration activities in the Khadia OCP is done by CMPDI and Agency-wise total number of boreholes alongwith meterage drilled in the block (Including mined area and boreholes in adjoining area) are furnished below:
<table>
<tr><th rowspan="2">AGENCY</th><th rowspan="2">SERIES OF BHs.</th><th colspan="2">PERIOD OF OPERATION</th><th colspan="2">DRILLING WITHIN BLOCK</th><th rowspan="2">TYPE OF EXPLN.</th></tr>
<tr><th>FROM</th><th>TO</th><th>NO. OF BHs.</th><th>METE-RAGE</th></tr>
<tr><td rowspan="2">GSI</td><td>SN</td><td>1961</td><td>1962</td><td>2</td><td>516.86</td><td>REGIONAL</td></tr>
<tr><td>SNK</td><td>1976</td><td>1976</td><td>1</td><td>280.25</td><td>REGIONAL</td></tr>
<tr><td rowspan="2">IBM</td><td>UPB</td><td>1963</td><td>1964</td><td>8</td><td>1842.94</td><td>REGIONAL</td></tr>
<tr><td>SRK</td><td>1963</td><td>1964</td><td>4</td><td>959.02</td><td>REGIONAL</td></tr>
<tr><td rowspan="3">CMPDI</td><td>CMSK</td><td>1976</td><td>1978</td><td>34</td><td>5475.25</td><td>DETAILED</td></tr>
<tr><td>CMRK</td><td>1995</td><td>1998</td><td>15</td><td>2452.80</td><td>DETAILED</td></tr>
<tr><td>CMRH</td><td>1998</td><td>2000</td><td>15</td><td>3309.00</td><td>DETAILED</td></tr>
<tr><td>Total</td><td></td><td></td><td></td><td>79</td><td>14836.12</td><td></td></tr>
</table></td></tr>
<tr><td>2.2.5</td><td>Area covered by ‘detailed’ exploration within the block (sq. km)</td><td>10.30</td></tr>
<tr><td>2.2.6</td><td>Whether entire lease area has been covered by ‘detailed’ exploration.</td><td>Yes</td></tr>
<tr><td>2.2.7</td><td>No. of boreholes drilled within the block</td><td>79</td></tr>
<tr><td>2.2.8</td><td>Whether any further exploration/ study is</td><td>No</td></tr>
</table>

<table>
<tr><th></th><th>Parameters</th><th>Details</th></tr>
<tr><td></td><td>required or suggested and time frame in which it is to be completed</td><td></td></tr>
<tr><td>2.2.9</td><td>Year wise future programme of exploration</td><td>NA</td></tr>
<tr><td>2.2.10</td><td>Overall borehole density within the block (no./ sq. km)</td><td>7.76</td></tr>
<tr><td>2.2.11</td><td>No of Seams available as per GR (Geological Report)</td><td>5 No. of Coal Seam as per GR
1. Khadia
2. Purewa Top
3. Purewa Bottom coal seam
4. Turra
5. Kota</td></tr>
<tr><td>2.2.12</td><td>Seams not considered for Mining with Reasons</td><td>Kota & Khadia Seam is not techno-economically feasible to extract due to thin seam and in consistency in nature.</td></tr>
<tr><td>2.2.13</td><td>Dip of the Seam</td><td>2^o to 3^o N</td></tr>
<tr><td>2.2.14</td><td colspan="2">Seam wise thickness, depth and reserve
Geological sequence of Khadia Expn. OCP (20 Mtpa)
<table>
<tr><th>Lithology</th><th>Thickness (m)</th><th>Normal thickness in (m)</th></tr>
<tr><td>Soil & sub-soil</td><td>0 to 8.15</td><td>0 to 1.00</td></tr>
<tr><td>Sandstone & shale</td><td>Upto 74.65</td><td></td></tr>
<tr><td>Khadia Seam</td><td>0.25-1.25</td><td>0.50-0.60</td></tr>
<tr><td>Sandstone & shale</td><td>20.66-26.67</td><td>23 - 26</td></tr>
<tr><td>Purewa Top Seam</td><td>4.85-10.35</td><td>8 - 10</td></tr>
<tr><td>Sand stone & shale</td><td>30.34-43.70</td><td>32 - 40</td></tr>
<tr><td>Purewa Bottom Seam</td><td>7.10-13.39</td><td>9 - 12.5</td></tr>
<tr><td>Sandstone & shale</td><td>50.78 -64.28</td><td>54 - 61</td></tr>
<tr><td>Turra Seam</td><td>18.20-23.37</td><td>19.5 - 21.5</td></tr>
<tr><td>Sandstone & shale</td><td>50.73-79.69</td><td>62-70</td></tr>
<tr><td>Kota seam</td><td>0.40-2.13</td><td>1- 2</td></tr>
</table></td></tr>
</table>

	Parameters	Details
2.2.15	Methodology of reserves estimation **(**also mention if any software package has been used**).**	For furnishing account of reserves, Geological and Mineable Reserves in delineated Opencast Pit Boundary have been estimated as follows**:** **Gross Geological Reserve (GR):** Gross Geological Reserve is reserve excluding inseam dirt band of thickness of 1m and above within vertical Geological Block boundary having minimum thickness of 1m. GR**=** Seam Area X Effective Thickness X tonnage factor **Net Geological Reserve (NGR):** Net Geological Reserve is reserve excluding inseam dirt band of thickness of 1m and above within vertical Geological Block boundary having minimum thickness of 1m with considering geological uncertainty factor**.** NGR**=** Seam Area X Effective Thickness X tonnage factor x 0**.**9 A factor of 0**.**9 is adopted to account for unforeseen geological factor**.** **Mineable Reserve** (**MR**): Mineable reserve is NGR within the delineated quarry boundary up to mineable coal seams having minimum thickness of 1m and excluding inseam dirt band of thickness of 1m and above**.** MR**=** Seam Area X Effective Thickness X tonnage factor x 0**.**9**.**

	Parameters	Details
		A factor of 0.9 is adopted to account for unforeseen geological factor. **Extractable Reserve (ER):** A part of Mineable reserve is lost during process of exploitation of coal seam. Therefore, the part of MR that can be exploited techno-economically is termed as Extractable Reserve. Extractable Reserve (ER) = Extraction Factor X MR The Operational losses for proposed Khadia Expansion OCP has been considered as 5%. Accordingly, an extraction factor of 0.95 is adopted to account of mining losses. **MINEX software** is being used for reserve estimation. Grade-wise, Seam-wise and Depth-wise Tonnage of coal is calculated using the Detailed Resource Reporting method of MINEX software. AUTOCAD is used for representation of the plan.
2.2.16	Wt. Average GCV "KCal/kg"	The grade based on GCV for Turra seam varies from G-8 to G-10, Purewa Bottom seam from G-8 to G-12 & Purewa Top seam from G-9 to G-12 .The overall grade varies from G-8 to G-12 and average product mix grade of all the three seams is G-9.
2.2.17	Gross Geological Reserve of the block "Mt" as on 1.04.2023 (Projectised)	313.10

	Parameters	Details
2.2.18	Net Geological reserve “Mt” as on 1.04.2023 (Projectised)	281.80
2.2.19	Minable Reserve of the block **“**Mt**”**	189.48
2.2.20	Blocked Reserve **“**Mt**”**	92.32
2.2.21	Corresponding extractable reserve of the block **“**Mt**”**	180.00
2.2.22	Percentage of Extraction	63.88%
2.2.23	Reserve already depleted (Base date of Mining Plan 1.04.2023)	0
2.2.24	Balance Reserve (as on Base Date 1.04.2023)	180.00

CHAPTER - III

MINING

	Parameters	Details
3.1	**Mining Method**	
3.1.1	Existing method of mining if the mine is under operation	Khadia OCP is existing working mine which has been worked by opencast mining method with deployment of dragline and shovel-dumper combination.
3.1.2	Proposed method of mining with justification on suitability of method of mining	**CHOICE OF TECHNOLOGY** The Khadia OCP has been working in two sections viz. Eastern and Westrern Sections and Khadia Expn. OCP (20 Mtpa) has also been envisaged to be worked in two sections viz Eastern and Westrern Sections with the deployment of 2 Nos. of 20m^3/88mR Draglines in tandem operation in western section 1 No. of 33m^3/72mR Dragline in eastern Section. The OB from the upper benches will be removed by 20m^3 shovel and 190 T Dumper. Coal from Turra seam will be extracted by 10-12m^3 Diesel Hyd. Shovel/back-hoe working in conjunction with 100T Rear dumpers and transported through main Central haul road on the floor of Turra Seam to receiving pits of existing Phase-I and Phase-II CHP. Part of coal from Purewa Bottom seam in both the sections will be partly extracted by 10-12m^3 Diesel Hyd. Shovel/back-hoe working in conjunction with 100T Rear dumpers and transported by Rear dumpers along flank road to receiving pits. Total coal from Purewa Top seam and part of Coal from Purewa Bottom seam in both the sections will be extracted by departmental Surface Miner (4000mm) by windrowing method and loading & transportation by FE Loader and

	Parameters	Details
		Tippers combination by outsourcing. Surface miner coal from Purewa Bottom seam and Purewa Top seams from East and west sections will be transported by Tippers of outsourcing agency along the flank roads to the proposed receiving hopper. The final stage quarry plan has been shown vide Plate No. XIV. **MINE BOUNDARIES** **Northern Boundary**: The northern boundary of Khadia Expansion OCP has been fixed considering leaving a distance of 7.5m from common proposed mine leasehold boundary with adjoining Bina Extn. OCP (10.5 Mtpa) on the surface and accordingly Turra seam floor has been delineated. **Southern Boundary**: The southern boundary of the existing working faces of present Khadia OCP as on 01.04.2023. **Eastern Boundary** :The eastern boundary has been fixed considering leaving a distance of 7.5m from common mine leasehold boundary with adjoining Sanctioned Krishnashila OCP(4Mtpa) on the surface and accordingly Turra seam floor has been delineated. **Western Boundary**: Khadia OCP (10 Mtpa) shares common floor boundary with Dudhichua OCP (20 Mtpa) on the west side along Turra seam floor as per sanctioned PR of Khadia OCP (10 Mtpa).

	Parameters	Details

Mineable & Extractable Reserve, OBR, Band & Avg. Stripping Ratio:

Seam-wise Coal, OBR, Inseam dirt band and SR within Opencast quarry boundary as on 01.04.2023 is enlisted below:

SEAM	MR (Mt)	ER (Mt)	OB (Mm^3)	SR (m^3/t)	Band (Mm^3)	Total OB (Mm^3)	SR (m^3/t)
Purewa top	33.95	32.25	262.00	8.12	3.07	265.07	8.22
Purewa bottom	54.21	51.50	127.00	2.47	1.50	128.50	2.50
Turra	101.32	96.25	233.00	2.42	6.43	239.43	2.49
Total	**189.48**	**180.00**	**622.00**	**3.46**	**11.00**	**633.00**	**3.52**

MINING STRATEGY

Mine Parameters

Sl. No.	Particulars	Unit	West section	East Section	Total
1	Avg. Working Length of quarry along Surface	m	2100	1400	3500
2	Avg. Working Length of quarry along Turra floor	m	1700	1200	2900
3	Avg. Dip-Rise Width of quarry along Surface	m	1900	1500	
4	Avg. Dip-Rise Width of quarry on Turra floor	m	1500	1400	
5	Maximum depth of the Quarry from surface	m	280		
6	Quarry Surface Area				
	At Surface	Sq.Km	5.30		
	At Floor	Sq.Km	3.75		

	Parameters	Details
		A. GENERAL SCHEME OF OPERATIONS The slope angle of the working benches is adopted as 80^o for coal and 70^o for OB, while slope angle of bench for OB dump is adopted as 37^o (natural angle of repose of OB material). **OB Excavation** The height of main OB bench over Turra seam proposed to be sidecast by Dragline in the previous decoaled cut, would vary from 26m to 35m as per production schedule provided in Calendar Plan of 20 Mtpa. The Dragline cut width adopted is 70m in west section and 60m east section with two-way traffic along the bench. The width of the cut of the OB shovel benches has been adopted as 20m. The height of the OB shovel benches varies from 15-18m. With two-way traffic along the bench, the width of the OB working benches varies from 55-61m (20m cut width, 10m throw, 21m haul road, 6m for power supply arrangement on alternate benches and 4m safety berm), whereas the width of non-working OB benches has been adopted as 35m. **Coal Winning** Coal from Turra coal seam will be extracted by $10m^3$-$12m^3$ Diesel Hyd. Shovel/backhoe and 100T dumper combination. The width of cut for coal benches has been adopted as 8-12m. The width of working bench in coal seam has been considered as 35-40m while width of non-working benches has been kept at 25m. The slope of each coal bench is proposed as 80^o. Coal from Purewa seam will be extracted by deployment of departmental Shovel dumper as well as Surface Miner

	Parameters	Details
		(900-1000 HP, 50T Class) and loading & transportation of surface miner coal by outsourcing. **Mine Opening & Sequence of Operation** **Drilling and Blasting** The elements of drilling for OB would be decided during the actual course of mining operations. However, based on the available data from the existing practices, the burden and spacing would be 10mx10.5m for the shovel OB benches with a height of 10m - 18m. For dragline benches, the burden and spacing would be 11m x 11.10m. The elements of drilling in coal would be modified and firmed up during the actual course of mining. However, based on available data from the mine, a drilling pattern of 6.67mx6.67m for all the coal seams has been envisaged in the PR. **B. Waste Disposal Techniques** Main OB bench overlying Turra seam is to be excavated by dragline system and proposed to be sidecast in the decoaled area of previous cut. The OB from upper benches will be handled by Shovel-dumper system and is proposed to be stacked over the dragline sidecast spoil within the pit. The volume of OB to be handled as per proposed Mining Plan as on 01.04.2023 is 633.00 Mm^3 including in-seam dirt band, out of which 124.68 Mm^3 OB will be directly sidecast by draglines including throw blast of 10.92 Mm^3 in the de-coaled cut and balance 508.32 Mm^3 is

	Parameters	Details
		proposed to be removed and dumped by shovel-dumper system in the internal dumps in both the sections. The mine is being worked since 1981-82 and 644.00 Mm3 of OB has already been dumped in external/internal dumps since inception till 31.03.2023. The final stage dump plan (Plate No. XXI(e)) shows that apart from existing dump volume of 644.00 Mm3, further 633.00 Mm3 will be accommodated in the internal dumps in both the sections. Shovel-dumper spoil dumps will be formed in benches of 30m in height. For the formation of dumps and levelling of dumps, dozers have been provided.
3.1.3	Coal production capacity proposed “Mtpa	20.00
3.1.4	Justification for optimization of Coal production capacity	The effective strike length for quarry is approximately 3.50 km at surface and 2.90 Km at the floor of Turra coal seam as per suitable dragline cut orientation. The depth of working mine varies from 190-280m. Considering the above facts and safety aspects, the capacity has been optimised to 20.00 Mtpa.
3.1.5	Calendar year from which the production will start	Yr-1 (2023-24)

	Parameters	Details
3.1.6	Year of achieving rated production	Yr-4 (2026-27)

3.1.7 **Tentative Coal Production Plan "MT"**

Year		Coal Production Schedule (Mt)			OB (Mm^3)	Band (Mm^3)	OBR (Mm^3) (including inseam dirt band + Rehandling)	SR (m^3/t)
Calendar Year	Year of Operation	UG	OC	TOTAL				
Up to Base Year			**167.33**	**167.33**	**633.74**	**10.25**	**643.99**	3.85
23-24	Yr-1	-	15.00	15.00	66.55	0.85	67.40	4.49
24-25	Yr-2		17.00	17.00	72.85	0.95	73.80	4.34
25-26	Yr-3		18.00	18.00	76.10	1.00	77.10	4.28
26-27	Yr-4		20.00	20.00	75.30	1.15	76.45	3.82
27-28	Yr-5		20.00	20.00	65.65	1.30	66.95	3.35
28-29	Yr-6		20.00	20.00	65.65	1.30	66.95	3.35
29-30	Yr-7		17.50	17.50	56.65	1.10	57.75	3.30
30-31	Yr-8		15.00	15.00	43.00	1.00	44.00	2.93
31-32	Yr-9		13.50	13.50	38.15	0.85	39.00	2.89
32-33	Yr-10		12.50	12.50	34.95	0.80	35.75	2.86
33-34	Yr-11		8.50	8.50	20.65	0.55	21.20	2.49
34-35	Yr-12		3.00	3.00	6.50	0.15	6.65	2.22
Total			**180.00**	**180.00**	**622.00**	**11.00**	**633.00**	**3.52**

3.1.8	Capacity "Mtpa"	
	- By OC	20.0
	- By UG	-
	- Overall	20.00
3.1.9	Life of the mine"Years"	
	- By OC	12 years
	- By UG	-
	- Overall	12 years

	Parameters	Details
3.1.10	Whether the proposed external OB dump site is coal bearing: If so, whether coal/ lignite below waste disposal area is extractable.	No
3.1.11	Whether negative proving for coal/ lignite in the proposed site for OB dump/ infrastructure has been done.	Yes

<table>
<tr><th></th><th>Parameters</th><th>Details</th></tr>
<tr><td>3.1.12</td><td>Results of any investigation carried out for scientific mining, conservation of minerals and protection of environment; future proposals.</td><td>Yes
Following Study are proposed:
1) Geo-technical Study for safety purpose may be studied at suitable interval
2) Adoptability of newer technology for improvement of Environment, Sustainability and governance in mining operation.</td></tr>
<tr><td>3.1.13</td><td>Type of Equipment/ HEMM proposed</td><td>List of HEMM
(Partial OB Outsourcing & Coal Departmental)
<table>
<tr><th></th><th>HEMM</th><th>SIZE/CAP</th><th>Existing as on 31.03.2023</th><th>Total Provision (20 Mtpa)</th></tr>
<tr><td>A</td><td>OBR</td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>Dragline</td><td>20m³/83mR</td><td>2</td><td>2</td></tr>
<tr><td>2</td><td>Dragline</td><td>33m³/72mR</td><td>1</td><td>1</td></tr>
<tr><td>3</td><td>Elect. Rope Shovel</td><td>20 m³</td><td>2</td><td>3</td></tr>
<tr><td>4</td><td>Elect. Rope Shovel</td><td>10 m³</td><td>5</td><td></td></tr>
<tr><td>5</td><td>Rear Dumper</td><td>120 T</td><td></td><td></td></tr>
<tr><td>6</td><td>Rear Dumper</td><td>190-210 T</td><td>7</td><td>21</td></tr>
<tr><td>7</td><td>Rear Dumper</td><td>100 T</td><td>20</td><td></td></tr>
<tr><td>8</td><td>Rear Dumper</td><td>85 T</td><td>1</td><td></td></tr>
<tr><td>9</td><td>RBH Drill</td><td>311 mm</td><td>1</td><td>3</td></tr>
<tr><td>10</td><td>RBH Drill</td><td>250 mm</td><td>5</td><td>5</td></tr>
<tr><td>11</td><td>Dozer</td><td>850 HP</td><td>6</td><td>5</td></tr>
<tr><td>12</td><td>Dozer with Ripper</td><td>850 HP</td><td></td><td>2</td></tr>
<tr><td>13</td><td>Dozer</td><td>410 HP</td><td>5</td><td></td></tr>
<tr><td>B</td><td>Coal Winning</td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>Elect. Rope Shovel</td><td>10 m³</td><td></td><td></td></tr>
<tr><td>2</td><td>Diesel Hyd Shovel</td><td>10-12 m³</td><td>2</td><td>4</td></tr>
<tr><td>3</td><td>Elect. Hyd Shovel</td><td>9.5 m3</td><td></td><td></td></tr>
<tr><td>4</td><td>Surface Miner</td><td>4000mm (50 T Class)</td><td></td><td>2</td></tr>
<tr><td>5</td><td>Rear Dumper</td><td>100 T</td><td>30</td><td>28</td></tr>
<tr><td>6</td><td>Drill</td><td>160 mm</td><td>7</td><td>6</td></tr>
<tr><td>7</td><td>Dozer</td><td>410 HP</td><td>3</td><td>4</td></tr>
</table></td></tr>
</table>

	Parameters	Details

C	Common			
1	Grader	550 HP		**1**
2	Grader	280 HP	**4**	**2**
3	Crane	120 T	**1**	**1**
4	Crane	60-90 T	**1**	**1**
5	Crane	40-50 T	**1**	**1**
6	Crane	18-20 T	**1**	**2**
7	Crane	9-11 T	**3**	**3**
8	Hyd. Shovel/ Back Hoe	3.2/3.8 m^3	**2**	**2**
9	FE Loader	10-12 m^3	**1**	**1**
10	FE Loader	5.74/6.4 m^3	**1**	**1**
11	Wagon Drill	100 mm		**1**
12	Dozer	410 HP		**2**
13	Wheel Dozer	280/320 HP		
14	Wheel Dozer	460 HP	**1**	**2**
15	Hyd. Shovel/ Back Hoe	1.2 m^3		**1**
D	**Reclamation**			
1	Hyd. Shovel/ Back Hoe	3.2/3.8 m^3	**1**	**1**
2	Dozer	410 HP	**2**	**2**
3	Grader	280 HP	**1**	**1**
4	Tipping Trucks	8 m3	**1**	**2**
5	Water Sprinklers	70 KL	**4**	**5**
6	Road Sweeping Machine			**2**
7	Mist Spray Gun			**2**

CHAPTER - IV

SAFETY MANAGEMENT

	Parameters	*Details*
4.1	**Safety Management**	
4.1.1	Important safety aspects: Major Risks and uncertainities to the project viz. Proximity to the river, adjacent working, geo-mining disturbances, slope stability and remedial measures suggested. It should also include proposed overall slope of the quarry and OB dump, dump height, strata control, fire and spontaneous heating, gas monitoring, disaster management, danger from in rush of water etc.	**Stability of Benches, Quarry Highwalls and Spoil Dumps** During actual mining operation, systematic observations of the condition of benches, high wall slopes and spoil dumps should be carried out and the dimensions to be modified if necessary to suit the local conditions and scientific study of slope stability along with hydro-geological study of the area needs to be under taken. i) The slope angle of the working benches is adopted as 80^{o} for coal and 70^{0} for OB. Shovel-Dumper spoil dumps will be formed in benches of 30m in height and slope of individual dump bench will be 37^{0}. ii) The total excavated 633.00 Mm^3 of waste material has been proposed to accommodate in internal dumps upto max. 540m RL. The stacked alluvium soil will be spread over reclaimed dump. The spoil dump height should not exceed 90m from average original surface level with an overall slope of around 28^{0}. iii) The slope of spoil bank shall be determined by natural angle of repose of the material being deposited, in any case, shall not increase 37^{0} from horizontal. Any spoil bank exceeding 30 metre in height shall be benched so that no bench

	Parameters	Details
		exceeds 30 metre in height and the overall slope shall not exceed 1 vertical to 1.5 horizontal. The width of berm between two adjacent OB benches will be 35m. Overall slope angle of dump will be around 28^{o}. iv) No working or construction should be allowed within the 100m toe of the OB dump. v) Before dumping the OB on the floor of seam, at least 10m length all along the strike length should be made horizontal at every 50 meter by floor dinting/blasting. vi) Dump should be created in such a way that there is no chance of accumulation of water in and around the base of dump. It must be ensured that there is no stagnant water at the toe of dump and the top of the dump. vii) The toe and face of the dump should not be eroded or cut at any point of time to avoid slope failure. A suitable toe wall should be created along the dump periphery. viii) Formation of dumping should be done in square or circular or any regular shape as far as possible. ix) Proper drainage system should be provided to bring down rain water. x) Sump and pumping capacity should be sufficient to accommodate peak surface run-off and seepage of water.

	Parameters	***Details***
		xi) Gabion wall and garland drain should be constructed and maintained to trap the surface run-off and sludge coming from dump. xii) Plantation and grassing should be done on top and slope of the dump respectively. xiii) Regular monitoring is required to monitor development of tension crack, gullies, movement of soil mass, stagnation of water and any other unusual occurrence. Rate of movement of dump should be monitored by continuous monitoring system. Special attention should be given at curve area/turning area of the dump. • General safety precautions are annexed as Annexure-VIII (c).
4.1.2	A commitment from the Company Board that entire mining operation will be carried out as per the Statutory provision given under Mines Act 1952, Coal Mine Regulation 2017	Safety of men and machine deployed in the mining area should be properly taken care of irrespective of whether the mining activities are performed by departmental or by outsourcing means. All the statutory provisions laid down in The Mines Act 1952, Coal Mine Regulation 2017 and specific permission from DGMS relating to mining in general and opencast mining in particular have to be adhered to and implemented in order to maintain day to day safety. A commitment from authorized official of the company is annexed as Annexure- VIII (b).

	Parameters	***Details***
		Note: *As per Regulation 106 of CMR2017 "Before starting a mechanised opencast working, the owner and agent of the mine shall ensure that the mine, including its method of working, ultimate pit slope, dump slope and monitoring of slope stability, has been planned, designed and worked as determined by a scientific study and a copy of the report of such study has been kept available in the office of the mine." In the light of the Scientific Study of Slope Stability of Pit Slope and Dump slope, the elements of mining system will be modified during the actual mining operations depending upon the physical and mechanical properties of the rock. Strict implementation of safety norms of CMR-2017 and DGMS circulars must be followed during operation and modify the operation as per requirement*.

CHAPTER – V

INFRASTRUCTURE FACILITIES

<table>
<tr><th></th><th>Parameters</th><th colspan="3">Details</th></tr>
<tr><td>5.1</td><td>Mine infrastructure required e.g. Equipment maintenance planning, Office buildings, Workshop, Power Supply arrangement, Water supply, etc.</td><td>
<table>
<tr><th>Sl. No.</th><th>Infrastructure to be retain to be public use</th><th>Infrastructure to be Dismantle / reclaimed</th></tr>
<tr><td>1</td><td>Following infrastructure may be retained to for use for other purposes:
1) Substation for power supply arrangement.
2) Railway siding along with RLS for coal dispatch.
3) Residential building complex.
4) Water Supply Arrangement
5) ETP and STP.
6) Statutory Buildings like magazine house, pit head bath, first aid center, rest</td><td>Following infrastructure may be dismantled / reclaimed:
1) Khadia OCP has existing upgraded CHP of 10 Mtpa capacity and is in operation.
Additional CHP of 4 Mtpa with RLS is under construction.
Balance coal will be handled by existing Krishnashila CHP, wharfwall and proposed western stream of CHP.</td></tr>
</table>
</td></tr>
</table>

	Parameters	Details		
			shelter, fire-fighting room, pit/time office, weigh bridge control room, training center etc. 7) Common facilities like time and security office, fire-fighting station, car / scooter parking stand, canteen cum rest shelter etc.	2) Workshop com- prises dumper and dozer repairing complex as well as E & M workshop. ii) Pumps and pipes which will not be required, will be dismantled. 3) The overburden processing plant for generation of manufactured sand additionally involves installation of machinery over an area of about 4 Ha.

	Parameters	Details
5.2	Power supply & illumination	The Project is receiving power at 33 kV from Bina Switching Station which in turn is being fed from 132/33 kV UPSEB substation located at Basi, Distt Sonebhadra (UP). From Bina Switching Station power is being fed to Khadia OCP, Kakri OCP, Bina OCP. For Khadia Expn. OCP (20 Mtpa), the existing OB substation is having installed capacity of 30 MVA. It is to be stated that all additional loads shall operate at 6.6 kV and to meet the demand of additional loads coming under expansion of project, it is proposed to construct a new OB Substation with capacity of 1X10 MVA,33/6.6 kV transformers near by the existing OB Sub-station. Additionally, Nitrogen Injection Fire Protection System (NIFPS) are to be installed with the proposed 10 MVA transformer. The existing Coal substation is having installed capacity of 20 MVA. The two power transformers, are of capacity 10 MVA transformer is having transformation ratio as 33/6.6 kV. It is to be stated that all additional loads shall operate at 6.6 kV and to meet the demand of additional loads coming under expansion project, it is proposed to enhance the capacity to 30 MVA by installing one more 10MVA,

	Parameters	Details
		33/6.6 kV transformer at the existing Coal Substation along with 6.6 kV VCB panel and Capacitor banks in the 6.6 kV side.
5.3	Drainage & Pumping: Assessment of volume of water for Pumping, Pumping Capacity	**Pumps, Pipes and Fittings:** The pumping system of Khadia Expn. OCP has been designed to dewater the in-flow of water due to precipitation falling within the active pit limit during the monsoon season to enable the mining activity to continue round the year. Pumping system has been designed for the volume of water accumulated in the mine at 8.33 % probability which corresponds to Project life of 12 years. Capacity of sump has been decided to accommodate rain water corresponding to maximum daily rainfall at 8.33% probability. Total make of water at 8.33 % probability is 335000 m^3. Above volume of water will be dewatered in 5 days at the rate of 20 hours pumping per day. Total pumping capacity per hour thus worked out: 3350 m^3 Sump capacity (Total make of water) : 335000 m^3.

	Parameters	Details
		Drainage of Water on Surface: The coalfield is located in the drainage area of Son-Rihand river system. The prominent drainage channels of the area are the north flowing Bijul nala, a tributary of Son River and the south flowing Kachni nala, a tributary of Rihand River. Other water drainages are Ballia nala, Mehrauli nala, Turra nala, Pararwar and Bandha nalla. Ballia nala is in rise side of the Khadia project which discharges into GBP Sagar.
5.4	Coal Handling Arrangement: Brief detail of CHP/ Mode of Dispatch, Coal quality and coal staking and handling arrangement	Khadia OCP has existing upgraded CHP of 10 Mtpa capacity and is in operation. Additional CHP of 4 Mtpa with RLS is under construction and another 4 Mtpa. Balance coal will be handled by existing Krishnashila CHP, wharfwall and proposed western stream of CHP. A part of the above mechanism coal may be dispatched by road as per the Govt. guidelines. Transportation of Sand : The segregated sand from OB will be despatched to the customers through tarpaulin covered trucks
5.5	Coal washing and the proposed handling/ disposal of rejects.	Not Applicable

CHAPTER - VI

LAND REQUIREMENT

<table>
<tr><th></th><th>Parameters</th><th>Details</th></tr>
<tr><td>6.1</td><td colspan="2">Land Requirement</td></tr>
<tr><td>6.1.1</td><td>Total Land requirement for the mine in “Ha”</td><td>Break up of pre-mining land type (indicative) and source of data as per Land schedule
<table>
<tr><th colspan="4">Land Requirement Detail</th></tr>
<tr><th>Type of Land</th><th>Total requirement (ha)</th><th>Acquired as on 31.03.2023 (ha)</th><th>Additional and required (ha)</th></tr>
<tr><td colspan="2">Forest Land</td><td rowspan="11">1640.000</td><td rowspan="11">57.906</td></tr>
<tr><td>UP Side</td><td>664.000</td></tr>
<tr><td>MP Side</td><td>240.765</td></tr>
<tr><td>Total</td><td>904.765</td></tr>
<tr><td colspan="2">Non-Forest Land</td></tr>
<tr><td>UP Side</td><td>668.000</td></tr>
<tr><td>MP Side</td><td>125.141</td></tr>
<tr><td>Total</td><td>793.141</td></tr>
<tr><td>Tenancy Land</td><td>449.000</td></tr>
<tr><td>Govt. Land</td><td>344.141</td></tr>
<tr><td>Total</td><td>793.141</td></tr>
<tr><td>Grand Total</td><td>1697.906</td><td>1640.000</td><td>57.906</td></tr>
</table>
Note: Out of 904.765 ha forest land , Forest Clearance has been obtained for 664 ha (UP State) vide FC No. 8-298/87 FC dated 30.07.1990, for 180 ha (MP State) vide FC No. 8-85/2005-FC dated 14.09.2010, for 7.623 ha (MP State) vide FC No. 8-58/2005-FC dated 13.08.2007, which is being transferred from Bina Extn. OCP to Khadia Expn. OCP and for 53.142 ha (M.P. State) Stage I FC proposal has been submitted vide FP/MP/MIN/149270/2021 on 15.02.2022.</td></tr>
</table>

	Parameters	Details
6.1.2	Land Use During Mining	

Type	Land use (Proposed)	Land Use (End of Life)	Land Use (Post Closure)						
			Agricul -tural land	Plantation	Water Body	Public/Co mpany Use	Forest Land (Returned)	Undistur bed	Total
Excavation Area	970.00								
Backfilled Area		830.00		830.00					**830.00**
Excavated Void / Mine batter		140.00		140.00					**140.00**
Without plantation									
Top Soil Dump									
External Dump	258.00	258.00		258.00					**258.00**
Safety Zone / Danger Zone	28.00	28.00		24.00				4.00	**28.00**
Haul Road between quarries									
Road diversion									
Diversion / below River/Nala/canal									
Settling pond	3.00	3.00			3.00				**3.00**
Road & Infrastructure area	191.906	191.906		60.00		131.906			**191.906**
Rationalization area									
Garland drains	2.00	2.00				2.00			**2.00**
Embankment									
Green Belt	65.00	65.00		65.00					**65.00**
Water Reservoir near pit									
UG entry									
Undisturbed / Mining right for UG	38.00	38.00		38.00					**38.00**
Resentment / Residential Colony	142.00	142.00				142.00			**142.00**
Pit head power plant									
Water harvesting									
Agricultural land									
Total	**1697.906**	**1697.906**		**1415.00**	**3.00**	**275.906**	**904.765**	**4.00**	**1697.906**

6.1.3	Surface features over the block area	Land of the expansion area is Forest Land of MP state Govt.
6.1.4	No. of villages/ Houses to be shifted	-
6.1.5	Population to be affected by the project	-
6.1.6	Proposed Rehabilitation programme	No additional R&R is required for Khadia Exp. OCP.

	Parameters	Details
6.2	**Details of Lease**	
6.2.1	Status of Lease	Land has been notified under CBA Act-1957 by Govt. of India on behalf of NCL.
6.2.2	Existing Lease Area " Ha"	1640.00
6.2.3	Period for which Mining Lease has been granted / is to be renewed / is to be applied for.	Land Acquisition has been done under CBA Act-1957
6.2.4	Date of expiry of earlier Mining Lease, if any	Land Acquisition has been done under CBA Act-1957
6.2.5	Whether the lease boundary / required boundary is same as mentioned in the allotment order	Lease Boundary and Project boundary is same for Khadia Expn. OCP (20 Mtpa)
6.2.6	Lease area (applied/required) as per the Mining Plan under consideration (Ha)	1697.906
6.2.7	Whether the applied lease area falls within the allotted block	-.
6.2.8	Area (Ha) of lease which falls outside the delineated Block / Boundary / Existing Mining Lease	-

	Parameters	Details
6.2.9	**Detail of Outside Area:**	
	▪ Whether forms part of any other coal block	-
	▪ Whether it contains any coal / lignite reserves	-
	▪ Purpose for which it is required, e.g. roads/ OB dumps/service buildings / colony /safety zone /other (specify)	-
6.2.10	**Whether some part (s) of the allotted block has not been applied for mining lease**	-
	- Total area in Ha of such part(s)	-
	- Total reserves in such part(s) (Mt)	-
	- Brief reasoning for leaving such part(s)	-

CHAPTER - VII

ENVIRONMENTAL MANAGEMENT

	Parameters	***Details***
7	**ENVIRONMENTAL MANANGEMENT**	
7.1	Commitment from the project proponent that the company will comply Environment and Forest Condition stipulated in the respective clearances	In order to carry out the proposed mining activity in an environmentally sustainable manner, suitable environmental protection measures shall be taken up at different stages of project operation and post closure. The Mine closure cost has been estimated on base date of January, 2024 (Provisional). A certificate of commitment from Project Proponent that the project will comply with the conditions stipulated in the Environmental Clearance and Mining Plan is annexed as Annexure- VIII (b).

CHAPTER - VIII

PROGRESSIVE & FINAL MINE CLOSURE PLAN

	Parameters	Details
8.1	**Land Degradation and restoration Schedule**	

8.1.1 Tentative Land Degradation and Technical Reclamation (Commutative Area "Ha")

Year/Stage	Land Degraded				Technically Reclaimed Area			
(Life of the mine plus post closure period)	Excav	Dump (Extn + Top Soil)	Infra/ others	Total	Backfill	Dump (Extn + Top Soil)	Others (Backfill)	Total
Up to Base year (01.04.23)	750.00	258.00	205.00	1213.00	415.00	258.00		673.00
Yr-1	758.00	258.00	215.00	1231.00	448.00	258.00		706.00
Yr-3	780.00	258.00	225.00	1263.00	528.00	258.00		786.00
Yr-5	850.00	258.00	225.00	1333.00	615.00	258.00		873.00
Yr-10	970.00	258.00	225.00	1453.00	800.00	258.00		1058.00
Yr-12	970.00	258.00	225.00	1453.00	830.00	258.00		1088.00
Post Closure								
Yr-15	970.00	258.00	225.00	1453.00	830.00	258.00	140.00	1228.00

*140 ha void may be back filled upto 280m RL from the adjacent mine in post closure.

8.1.2 Tentative Biological Reclamation (Cumulative in “Ha”)

Year/Stage	Biologically Reclaimed Area in Ha.					Forest land (Return) in Ha	UnDistur-bed / To be left for Public / company Use	Total
(Life of the mine plus post closure period)	Agricul -ture	Plant- ation	Water Body	Public / Company use	Total			
Up to Base year (01.04.23)		351.00	3.00		**354.00**			**354.00**
Yr-1		365.00	3.00		**368.00**			**368.00**
Yr-3		395.00	3.00		**398.00**			**398.00**
Yr-5		445.00	3.00		**448.00**			**448.00**
Yr-10		600.00	3.00		**603.00**			**603.00**
Yr-12		680.00	3.00		**683.00**			**683.00**
Post Closure								
Yr-15		**1415.00**	**3.00**		**1418.00**	**904.765**	**279.906**	**1697.906**

	Parameters	Details
8.2	**Post Closure Water Quality management:**	A garland drain of suitable dimension will be made all around the dump to catch all the runoff of the dump and will be taken to a sedimentation pond for settling of silt. Gabion walls and Retaining wall will be made at the toe of dumps to arrest any silt due to runoff. Regular monitoring of water quality of the nearby water bodies will be done as per norms and MoEF&CC conditions.
8.3	**Post Closure Air Quality management**	Air quality monitoring will be carried out throughout the life of mine and at post closure stage to assess the impact of proposed activity on the surroundings. Air quality monitoring should be done as per the MoEF&CC norms and prevailing local factors. Air pollution control measures like development of greenbelt and avenue plantation, mobile water sprinkling will be deployed to minimize the impact on surroundings.
8.4	**Waste Management** (Figures in Mm^3) (Tentative)	

Year / Stage	OB Removal			External Dump		Internal Backfilling		Embankment	
(Life of the mine plus post closure period)	(Cumulative)			(Cumulative)		(Cumulative)		(Cumulative)	
	Top Soil	OB	Total	Top Soil dump	OB	Top Soil dump	OB	Top Soil	OB
Up to Base year (01.04.23)	3.00	641.75	644.75		254.30		390.45		
Yr-1	3.05	709.10	712.15		254.30		457.85		
Yr-3	3.20	859.85	863.05		254.30		608.75		
Yr-5	3.35	1003.10	1006.45		254.30		752.15		
Yr-10	3.75	1246.15	1249.90		254.30		995.60		
Yr-12	3.75	1274.00	1277.75		254.30		1023.45		
Post Closure									
Yr-15	**3.75**	**1274.00**	**1277.75**		**254.30**		**1073.45**		

<table>
<tr><th></th><th>Parameters</th><th>Details</th></tr>
<tr><td></td><td colspan="2">*Total generated top soil will be stacked separately and utilized for concurrent biological reclamation of dumps. About 50 Mm^3 OB may be back filled in the void from the adjacent mine in post closure.</td></tr>
<tr><td>8.5</td><td colspan="2">Top Soil Management – (Including Action plan for Top Soil management) (Tentative)
(All Figures are Cumulative and in Mm^3)
<table>
<tr><td>Year/Stage
(Life of the mine plus post closure period)</td><td>Top Soil Removal Plan</td><td colspan="5">Top Soil Used</td></tr>
<tr><td></td><td></td><td>Spreading Over Embankment</td><td>Spreading Over Backfill area</td><td>Spreading Over External OB Dump area</td><td>Used in Green Belt area</td><td>Total Utilised</td></tr>
<tr><td>Up to Base year (01.04.23)</td><td>3.00</td><td></td><td>1.50</td><td>1.50</td><td></td><td>3.00</td></tr>
<tr><td>Yr-1</td><td>3.05</td><td></td><td>1.55</td><td>1.50</td><td></td><td>3.05</td></tr>
<tr><td>Yr-3</td><td>3.20</td><td></td><td>1.70</td><td>1.50</td><td></td><td>3.20</td></tr>
<tr><td>Yr-5</td><td>3.35</td><td></td><td>1.85</td><td>1.50</td><td></td><td>3.35</td></tr>
<tr><td>Yr-10</td><td>3.75</td><td></td><td>2.25</td><td>1.50</td><td></td><td>3.75</td></tr>
<tr><td>Yr-12</td><td>3.75</td><td></td><td>2.25</td><td>1.50</td><td></td><td>3.75</td></tr>
<tr><td colspan="7">Post Closure</td></tr>
<tr><td>Yr-15</td><td>3.75</td><td></td><td>2.25</td><td>1.50</td><td></td><td>3.75</td></tr>
</table>
Total generated top soil will be utilized for concurrent biological reclamation of dumps and green belt.</td></tr>
<tr><td>8.6</td><td>Management of Coal Rejects.</td><td>No washery has been proposed.</td></tr>
<tr><td>8.7</td><td>Restoration of Land used for Infrastructure</td><td>Some of the infrastructures (Railway Siding, ETP & STP and Electrical Sub-station etc.) may be gainfully fully utilised for other Projects.</td></tr>
<tr><td>8.8</td><td>Disposal of Mining Machinery</td><td>As the mine may continue with extension of the Khadia OCP, the decision regarding mining machinery and infrastructure will be taken in the revised mining plan for further extesion of Khadia OCP.</td></tr>
<tr><td>8.9</td><td>Safety & Security</td><td>Safety measures proposed during operation and post closure stage include concrete wall along mine boundary, toe wall/gabion wall along OB dumps, fencing around water bodies, garland drains etc. Detailed Scientific Study needs to be carried out for exploring</td></tr>
</table>

	Parameters	Details
		possibility of dumping of fly ash in backfilled are as per MOEF&CC guideline.

8.10 Abandonment Cost and Financial Assurance

8.10.1 Abandonment Cost

Proposed Cost break-up for carrying out progressive and final mine closure activities as per the yardstick of CMPDI formulated based on the revised mine closure guidelines is as given below:

Head	Activities	Unit	Quantity	Rate (Rs./Unit)	Amount (Rs. Lakh)
Progressive Closure (Balance as on 01.04.2023)	Water quality management	No.	2592	3300	85.54
	Air quality management	No.	5760	28000	1612.80
	Noise Quality Management	No.	2304	11000	253.44
	Waste Management	Mm3	633.00	2400000.00	15192.00
	Barbed wire fencing around dump	m	1935	800	15.48
	Barbed wire fencing around the pit	m	1080	800	8.64
	Filling of Void - Rehandling of Crown dump				
	Top Soil Management	Mm3	0.75	50000000.00	375.00
	Technical and Biological Reclamation of Mined out of land and OB Dump	Ha	274	550000	1507.00
	Plantation over virgin area including green belt	Ha	25	550000	137.50
	Manpower Cost and Supervision	Emp	19800	848	167.90
	Total wall around the dump	m	677	4200	28.43
	Garland drain	m	155	4500	6.98
	Garland drain around the dump	m	1935	4500	87.08
	Any other Activity (Grazing Facilities etc.)	LS			
	TOTAL				**19477.78**
Dismentaling of infrastrucure & Disposal/ rehabilitation of mining Machinery	Dismentaling of workshop	LS			50.00
	Rehabilitation of the dismentaled facilities				
	Dismentaling of pump and pipes/ other facilities.	LS			20.00
	Dismentaling of stowing bunker, provisioning of pumps for borewell pumping arrangement				
	Dismentaling of UG equipment				
	Rearranging water pipeline to dump top park/Agriculture land	LS			50.00
	Dismentaling of power lines.				
	Any other Activity				
	TOTAL				**120.00**
Safety and Security	Barbed wire fencing around dump				
	Barbed wire fencing around the pit				
	Barbed wire fencing with masonry piller				
	Concrete wall with masonry piller around the pit	m	4500	4200	189.00
	Securing air shaft and installation of borewall pump				
	Securing of incline				
	Concrete wall fencing around the water body				
	Boundary wall around the water body				
	Stabilisation (viz benching, pitching etc) of side walls of the water body				
	Toe wall around the dump				

Parameters		Details				
	Garland Drain					
	Garland Drain around the dump					
	Drainage channel from main Ob dump		m	500	4500	22.50
	Any other Activity					
	TOTAL					**211.50**
Technical and Biological Reclamation of mined out of land and OB Dump	Filling of Void					
	Top soil management					
	OB Rehandling for backfilling		Mm3	50	2400000.00	1200.00
	Terracing, blanketing with soil and vegetation of External OB Dump					
	Paripharel road, gates, view point, cemented steps on bank					
	Expenditure on development of Agriculture land		Ha			
	Landscaping and Plantation		LS			200.00
	Any other Activity					
	TOTAL					**1400.00**
Post Closure management and supervision	Power Cost		LS			150.00
	Post mining water quality management		LS			80.00
	Post mining air quality management		LS			150.00
	Subsidence monitoring for 5 years					
	Waste management		LS			100.00
	Manpower Cost and supervision		LS			50.00
	Any other Activity					
	TOTAL					**530.00**
Others	Enterprenuership development(vocational/skill development training for sustainable income of affected people)		LS			100.00
	Golden Handshake/Retrenchment benefits to 100 employees of OC					132.36
	Golden Handshake/Retrenchment benefits to 200 employees of UG					
	Onetime financial grant to societies/ institutions/ organisations which is dependent upon the project		LS			100.00
	Provide Jobs in other mines of company					
	Continuation of other services like running of school etc.		LS			100.00
	Any other Activity (Development of Solar Park, eco-friendly Parks, fish farming pond, picnic spot and sport compound)		LS			640.90
	TOTAL					**1073.26**
G TOTAL						**22812.54**
Note:	**Above G Total Amt. includes Closing Balance of Rs. 8749.96 Lakh as on 31.03.2023 and Amt. to be deposited Rs. 14062.58 Lakh in ESCROW Account.**					

	Parameters	Details
8.10.2	Financial Assurance: Amount to be deposited in Escrow account as a security against the mine activities to be carried out for the closure of the mine	

ESCROW ACCOUNT Khadia Expn. OCP (20 Mtpa)		
WPI as on	April,2019	121.10
WPI as on	Jan,2024	151.10 (Provisional)
Escrow Amt. per Ha. For OCP as on	April,2019	9.00 Lakh/Ha
Escrow Amt. per Ha. For OCP as on	Jan,2024	11.2296 Lakh/Ha
Project Area		1697.906 Ha
Current Value of Corpus as on	Jan,2024	19066.74 Lakh
Amt. deposited till date	Mar, 2023	8464.89 Lakh
Balance Corpus for which provision is to be made		10601.85 Lakh
Rate of Compounding of annual Closure Cost		5.00%
Balance Life of Mine		12.00 Year
Annnual Corpus		883.49 Lakh/Year
Amt. to be deposited into Escrow Account after compounding @ of 5%		14062.58 Lakh
Year		Amt. in Rs. Lakh
1		883.49
2		927.66
3		974.05
4		1022.75
5		1073.88
6		1127.58
7		1183.96
8		1243.16
9		1305.31
10		1370.58
11		1439.11
		1511.06
Total		**14062.58**

===000000000===

ANNEXURE

Annexure-II

CERTIFICATE

(As per Clause No. 1.8 of Guidelines for preparation, formulation, submission, processing, scrutiny, approval and revision of Mining Plan for Coal and Lignite Blocks issued by MoC, F. No. 34011/28/2019-CPAM dated 29.05.2020)

Regional Director of CMPDI RI6 as a MPPA for preparation, formulation, submission of Mining Plan for Khadia Expn. OCP (20 Mtpa), do hereby certify that the Project of the Mining Plan for Khadia OCP (20 Mtpa) is confined within the leasehold boundary of vested / allotted block boundary.

It is also certify that geological block area in the proposed Mining Plan does not encroach any other block.

क्षेत्रीय निदेशक
सी.एम.पी.डी.आई. के.सं.–6.
सिंगरौली

Atal Bihari
Regional Director
CMPDI, RI 6

Annexure-III

नॉर्दर्न कोलफील्ड्स लिमिटेड
(मिनिरत्न कंपनी)
(कोल इण्डिया लिमिटेड की अनुषंगी कंपनी)

Northern Coalfields Limited
(A Miniratna Company)
(A subsidiary of Coal India Limited)

एन सी एल
NCL

कार्पोरेट प्लानिंग विभाग/Corporate Planning Department
CIN- U10102MP1985GOI003160
An ISO: 9001, ISO: 14001 & OHSAS: 18001 Certified Company
पोस्ट- सिंगरौली कोलियरी,जिला- सिंगरौली, म.प्र., पिन 486889 Post- Singrauli Colliery, Distt- Singrauli, M.P. PIN-486889
Phone: 07805- 266674, (FAX) 266674 email: gmcp.ncl@coalindia.in website : www.nclcil.in

No: NCL/CP/CMPDIL/23/ 5155 **Date: 21.03.2023**

To
The Regional Director
CMPDIL, RI-VI
Jayant, Singrauli

Sub: Approved Annual Action Programme of CMPDIL for FY 2023-24 for NCL

Dear Sir
The Competent Authority has administratively approved the Annual Action Programme of CMPDIL for FY 2023-24 for NCL (vide e-office No: 1021618) for the capital work as indicated in A1 and revenue work as indicated in A2. A copy of the same is enclosed herewith for kind perusal.
This is submitted for kind information and necessary action.

Encl: As above

Yours faithfully

21/3/23

General Manager (CP)

CC: GM (BD) with request to inform concerned Deptt/Unit at CMPDIL HQ, Ranchi for the job to be done by them.
For kind perusal & follow up the activities:
GMs/In-charges of all Projects/Units of NCL
GM [Prod/S&R/Fin (I/C, C&B)/Excv/E&M/Env/Civil/Forest/IED/AFM], NCL HQ

Copy for kind information to:

CMD, NCL
CMD, CMPDIL
D (T/O), NCL
D (F), NCL
D (T/P&P), NCL

Annexure-III

ANNUAL ACTION PROGRAMME OF CMPDI FOR NCL FOR THE YEAR 2023-24

A1. CAPITAL

Sl. No.	Description of jobs	Schedule		EDs Required for 2023-24 (New Jobs)	FOR SPILL OVER JOB FROM 2022-23			Total EDs required for the job in FY 2023-24	Amount (in Rs.)		
		Draft	Final		Approved Eds for FY 2022-23	EDs consumed during 2022-23 (upto Jan'22)	Additional EDs required		Value (Rs.)	GST @ 18%	Total (Rs.)
I. CMPDI, RI-VI, SINGRAULI											
1.0	**Mine Planning Department Jobs**										
1.1	PR of Kakri North OCP	Oct'23	Jan'24	1500				1500	386,40,000.00	69,55,200.00	455,95,200.00
1.2	EPR of Jayant Expansion OCP (30 Mtpa)	Nov'23	March'24	2500				2500	644,00,000.00	115,92,000.00	759,92,000.00
1.3	PR of Kakri opencast including highwall Mining	June'23	Aug'23	1500				1500	386,40,000.00	69,55,200.00	455,95,200.00
1.4	PR of Inguri UG Block	Aug'23	Oct'23	1500				1500	386,40,000.00	69,55,200.00	455,95,200.00
1.5	Conceptual Note on Patpahria Block with Opencast potential	Dec'23	Feb'24	500				500	128,80,000.00	23,18,400.00	151,98,400.00
1.6	Conceptual Note on Dongrital Block with Opencast potential	Dec'23	Feb'24	500				500	128,80,000.00	23,18,400.00	151,98,400.00
1.7	Mining Plan of Nigahi OCP (25 Mtpa) including OB to Sand Plan	As & when required		250				250	64,40,000.00	11,59,200.00	75,99,200.00
1.8	Mining Plan of Khadia OCP (20 Mtpa) including OB to Sand Plan	As & when required		250				250	64,40,000.00	11,59,200.00	75,99,200.00
1.9	Mining Plan of Kakri OCP	As & when required		250				250	64,40,000.00	11,59,200.00	75,99,200.00
1.10	Pre Feasibility Report of Bina Expantion OCP (17.50 Mtpa)	April'23	April'23	60				60	15,45,600.00	2,78,208.00	18,23,808.00
1.11	Pre Feasibility Report of Block-B OCP (10 Mtpa)	April'23	April'23	60				60	15,45,600.00	2,78,208.00	18,23,808.00
1.12	Pre Feasibility Report of Khadia OCP (20 Mtpa)	April'23	May'23	60				60	15,45,600.00	2,78,208.00	18,23,808.00
1.13	Pre Feasibility Report of Nigahi OCP (25 Mtpa)	April'23	May'23	60				60	15,45,600.00	2,78,208.00	18,23,808.00
2.0	**Environment Department Jobs**										
2.1	Form V of Jhingurdah OCP (4 Mtpa)	April'23		150				150	38,64,000.00	6,95,520.00	45,59,520.00
2.2	Form III Form-I of Block B OCP(10Mtpa)	June'23		150				150	38,64,000.00	6,95,520.00	45,59,520.00
2.3	Form I of Bina OCP (17.5Mtpa)	May'23		150				150	38,64,000.00	6,95,520.00	45,59,520.00
2.4	Form I of Kakri North OCP (2 Mtpa)	Nov'23		150				150	38,64,000.00	6,95,520.00	45,59,520.00
2.5	Form III/Form I of Khadia OCP (20.0Mtpa)	May'23		150				150	38,64,000.00	6,95,520.00	45,59,520.00
2.6	Form III/Form I of Nigahi OCP (25.0Mtpa)	April '23		150				150	38,64,000.00	6,95,520.00	45,59,520.00
2.7	Addendum EMP of Jhingurdah OCP (4 Mtpa)	April'23		150				150	38,64,000.00	6,95,520.00	45,59,520.00
2.8	EMP of Block-B OCP (10.00 Mtpa)	Dec'23		550				550	141,68,000.00	25,50,240.00	167,18,240.00
2.9	EMP of Bina Expansion OCP (17.50 Mtpa)	Jan'24		550				550	141,68,000.00	25,50,240.00	167,18,240.00
2.10	EMP of Khadia OCP (20.00 Mtpa)	Feb'24	Ongoing Job		550	263.75	200	486.25	125,25,800.00	22,54,644.00	147,80,444.00
2.11	EMP of Nigahi OCP (25.00 Mtpa)	Jan'24	Ongoing Job		550	441.25	200	308.75	79,53,400.00	14,31,612.00	93,85,012.00
2.12	Cluster EC for NCL mines	Feb'24	March'24	800				800.00	206,08,000.00	37,09,440.00	243,17,440.00
3.0	**Exploration Department Jobs**										
3.1	CMPDI DRILLING- CIL Block (Makri Barka East & Inguri-A combined , Inguri-B, Tipajharia, Jhingurda deep, Dongrital, Patpaharia blocks). Geological Report (1 Nos.)			30000				30000	2617,50,000.00	471,15,000.00	3088,65,000.00
3.2	Geophysical Analysis GPL-10000 m										
3.3	Resistivity Profiling/VES/ Magnetic survey	As & when required									
3.4	2D/3D Seismic Survey	100 line km									
3.5	Coal core analysis for exploration blocks (for the core generated during drilling) Departmental/ Outsourced	As & when required									
3.6	Hydrological Studies for EMP for NCL Mines (Block-B, Bina-Kakri Amalgamation, Nigahi & Khadia)	Routine & as required									
3.7	Hydro-geological Study for Ground water clearance and other compliance studies of NCL Mines		June'23		500	60		440	113,34,400.00	20,40,192.00	133,74,592.00

CONFIDENTIAL
BOARD MATTER

Annexure-IV

नोटिंग शीट

नार्दर्न कोलफील्ड्स लिमिटेड

विभाग

संबंधित अधिकारी	संबंधित लिपिक

विषयः नार्दर्न कोलफील्ड्स लिमिटेड के निदेशक मण्डल की 276वीं बैठक जो दिनांक 30 मई, 2022 को वाराणसी में सम्पन्न हुई के मिनटस् के अंश।

नार्दर्न कोलफील्ड्स लिमिटेड के निदेशक मण्डल की 276वीं बैठक जो दिनांक 30 मई, 2022 को वाराणसी में सम्पन्न हुई के मिनटस् के प्रासंगिक अंश नीचे पुनः पेश है:-

---

Item No.276/C-2 **Approval of Mining Plan(including Mine Closure Plan) for Nigahi, Amlohri, Khadia & Krishnashila OCPs.**

i) The Board noted the information brought out in the Agenda Note.

ii) Shri V.K. Singh, GM(CP) and Shri Shivraj Singh, CM(CP) apprised the subject proposal before the Board and stated that:-

a) MoEF&CC has issued new guidelines for granting Environmental Clearance (EC) under para 7(ii)(a) of EIA Notification 2006 for expansion up to 50%, within the existing premises / mine lease area, without additional land acquisition, vide O.M. dated 11th April, 2022. Further vide OM dated 7th May 2022, MoEF&CC has provided special dispensation for consideration of EC for 50% expansion in coal mining projects. As per this O.M., those coal mining projects which have been granted expansion of EC upto 40% of original EC capacity, shall be granted expansion EC to increase their production capacity to 50% of original EC capacity, within the same mine lease area without requiring revised EIA/EMP report for additional capacity and public consultation. This dispensation has been provided as special case for a period of 6 months from date of issue of this O.M.

b) Nigahi, Amlohri, Khadia & Krishnashila mines of NCL are eligible for grant of EC under the said OM for expansion in production from 40% to 50% of the original EC as detailed below:-

Fig. in Mty

Sl. N0.	Mine	Original EC (with PH)	EC granted (40%)	EC required (50%)	
				Total	Incremental
1	Nigahi OC	15	21	22.50	1.50
2	Amlohri OC	10	14	15.00	1.00
3	Khadia OC	10	14	15.00	1.00
4	Krishnashila OC	5	7	7.50	0.50
	Total	40	56	60	**4**

1/2

c) FDs in its 703rd meeting held on 12.05.2022 had accorded in-principle approval for above Mining Plans for uploading application on Parivesh Portal for grant of EC and recommended ratification of the proposal for approval of Mining Plans by NCL Board in next meeting of the Board.

iii) The Board was also apprised on the details regarding Mineable Reserves & Stripping Ratio, Calendar Programme of Mining Operation, Land, Coal Handling Plant Arrangement, Railway Siding, additional capital requirement and updated Mine Closure Plan included in Mining Plans.

iv) Board of Directors, after detailed deliberation, unanimously approved the Mining Plans prepared by CMPDIL, for Nigahi OCP (22.5 Mtpa), Amlohri OCP (15 Mtpa), Khadia OCP (15 Mtpa) and Krishnashila OCP (7.5 Mtpa), as brought out in the Agenda Note.

कंपनी सचिव

एनसीएल/बोर्ड/7सी/276/233

दिनांक 05/07/2022

महाप्रबंधक(सी0पी0),एनसीएल

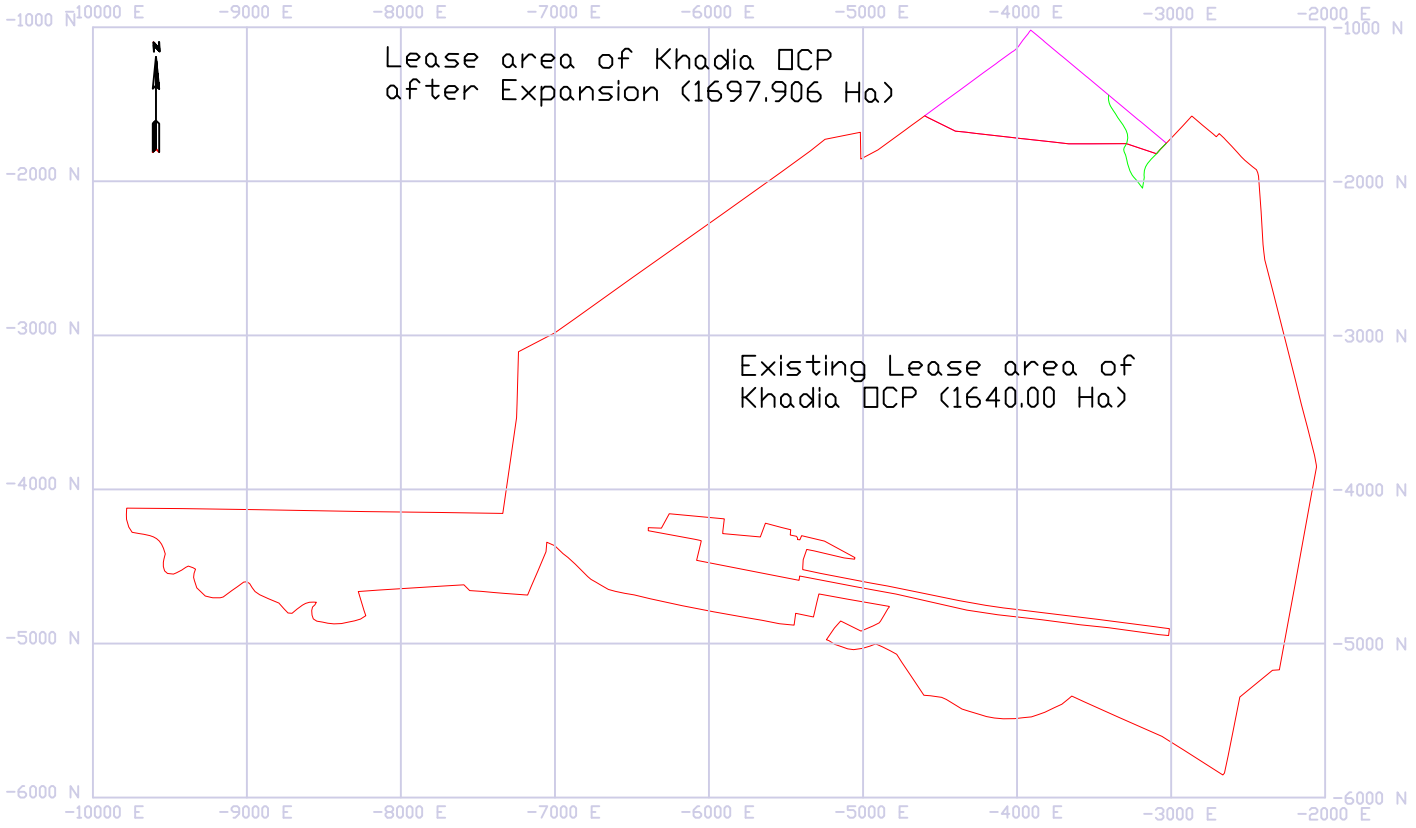
प्रतिलिपिः

निदेशक(तक/यो0परि0), एनसीएल।

Annexure-V

Schedule of Implimentation of Mine Closure Activities of Khadia Expn. OCP (20 Mtpa)

TYPE OF		TIME FRAME (YEARS)			
ACTIVITY		Yr-1	to	Yr-12	Yr-13 to Yr-15
Head	Activities				
Progressive Closure	Water quality management				
	Air quality management				
	Waste Management				
	Barbed wire fencing around dump				
	Barbed wire fencing around the pit				
	Top Soil Management				
	Technical And Biological Reclamation of Mined out of land and OB Dump				
	Plantation over virgin area including green belt				
	Manpower Cost and Supervision				
	Toe wall around the dump				
	Garland drain				
	Garland drain around the dump		9		
Dismentaling of infrastrucure & Disposal/ rehabilitation of mining Machinery	Dismentaling of workshop				
	Dismentaling of pump and pipes/ other facilities.				
	Rearranging water pipeline to dump top park/Agriculture land				
Safety and Security	Concrete wall with masonry piller around the pit				
	Drainage channel from main OB dump		9		
Technical and Biological Reclamation of mined out of land and OB	OB Rehandling for backfilling				
	Expenditure on development of Agriculture land				
	Landscaping and Plantation				
Post Closure management and supervision	Power Cost				
	Post mining water quality management				
	Post mining air quality management				
	Waste management				
	Manpower Cost and supervision				
Others	Enterprenuership development(vocational/skill development training for sustainable income of affected people)				
	One time financial grant to societies/ institutions/ organisations which is dependent upon the project		5		
	Continuation of other services like running of school etc.				



Khadia OCP

Type of Land	Lease area as per [illegible] (ha)	Acquired area as per [illegible] (ha)	Additional land required (ha)
Forest Land			
[illegible]	0.00		
[illegible]	[illegible]		
Total	[illegible]		
Non-forest			
[illegible]	[illegible]		
[illegible]	[illegible]	1640	[illegible]
[illegible]	[illegible]		
Revenue Land	[illegible]		
[illegible]	[illegible]		
Total	[illegible]		
Grand Total	1697.906	1640	57.906

[illegible]

नॉर्दर्न कोलफील्ड्स लिमिटेड
खड़िया परियोजना
(मिनिरत्न कंपनी)
(कोल इण्डिया लिमिटेड की अनुषंगी कंपनी)

Northern Coalfields Limited
Khadia Project
(A Miniratna Company)
(A subsidiary of Coal India Limited)

Office of General Manager

CIN- U10102MP1985GOI003160
An ISO: 9001, ISO: 14001 & OHSAS: 18001 Certified Company
थाना- शक्तिनगर, जनपद-सोनभद्र (उ. प्र.), पिन - 231222/ Thana-Shaktinagar, Dist. Sonebhadra (U.P.) Pin- 231222
Phone: 05446- 232274, (FAX) 05446- 232274 Email: cgm.khd@gmail.com, website : www.nclcil.in

Ref: NCL/KHD/GM/M/Env/23-24/4119 Date:- 15/01/2024

CERTIFICATE

This is to certify that Khadia Expansion Opencast Project during its operations will comply with the conditions stipulated in the Mining Plan and Environmental Clearance.

15/01/2024

Dy. Manager (Environment)
Khadia Area

15/1/24

Area Planning Officer
Khadia Area

15/1/24

Staff Officer (Mining)
Khadia Area

15.01.2024

Project Officer
Khadia Project

General Manager
Khadia Area

Annexure-VIII (c)

GENERAL SAFETY PRECAUTIONS

All the statutory provisions laid down in The Mines Act 1952, Coal Mine Regulation 2017 and specific permission from DGMS relating to mining in general and opencast mining in particular have to be adhered to and implemented in order to maintain day to day safety.

Safety of men and machine deployed in the mining area should be properly taken care of irrespective of whether the mining activities are performed by departmental or by outsourcing means.

1. **Safety aspects for of HEMM / Equipment**

Special precaution should be taken while deploying workers in the mine .Before employing any person to the mine proper vocation training should be imparted and recommendations of various Safety Conferences should be strictly followed .Some of the major aspects are as follows:

For person

i) No persons shall be deployed unless he is trained at VTC and holds VTC Certificates .A record of the same shall be maintained. Records in Form-B and Form-D shall be maintained.
ii) Records of driving license of operators shall be kept by competent authority and shall be made readily available for inspection by management.
iii) Adequate supervision shall be maintained by competent persons, including officials and technicians.

For Machineries

Provisions of Regulation 109, 110, 216 & 217 of CMR 2017 and DGMS Cir.(Tech.). 1 of 1999 should be strictly adhered to along with the following:

i) All machinery and plant used in connection with working of a mine shall be of good design, sound construction, and suitable material, adequate strength, free from patent defect and properly maintained.

ii) The owner, agent and manager shall provide adequate training facilities and ensure proper training of persons employed for operation and maintenance of machinery and plant.

iii) No person except an engineer or other competent person under his supervision shall undertake any work on machinery and plant in which technical knowledge or experience is required.

iv) iv (All the machineries to be deployed in mines shall be so designed as to afford the operator clear and uninterrupted vision all around.

v) v (Every heavy earth moving machineries, including trucks and tippers, used in mine shall be fitted with adequate safety features or devices as specified by DGMS .All equipment shall be provided with audio-visual alarms, proper light for use at night and fitted with suitable type of the fire extinguishers.

vi) Truck mounted drill machines designed for tube well drilling for sources of water shall not be used and only proper type of blast -hole drill machine, especially designed for mining purpose, shall be used in the mine.

vii) Every heavy earth moving machinery shall be under the charge of a competent person (Operator or Driver), authorized in writing by the Manager.

viii) All persons employed or to be employed to operate heavy earth moving machinery shall be trained and their competency shall be evaluated by a Board constituted by the management, who shall be persons who are not connected with imparting of training.

ix) A proper record of repair and maintenance along with inspection done by competent authority and defect pointed out shall be maintained and signed by authorized person.

x) Only such fitters or mechanics possessing driver's or operator's license, shall be allowed to carry out test-run of heavy earth moving machineries.

xi) No person other than the operator or the driver or any person so authorised in writing by the manager shall be allowed to ride on a heavy earth moving machinery.

Annexure-VIII (c)

2. Stability of Benches, Quarry Highwalls and Spoil Dumps

During quarry operations, it is necessary to adopt required mining parameters for the stability of benches, highwalls and spoil dumps .It is also mandatory to examine systematically the fencing of mine workings, landslides and cracks between benches .It is required to maintain well-graded and wide roads on benches keeping the width of working areas sufficient for spreading of blasted rock and movement of the mining and transport equipment.

During actual mining operation, systematic observations of the condition of benches, high wall slopes and spoil dumps should be carried out and the dimensions be modified if necessary to suit the local conditions .To ascertain the optimum slope angles for stability of quarry benches, highwalls and spoil dumps, scientific study of slope stability along with hydro-geological study of the area needs to under taken .

During actual mining operation, systematic observations of the condition of benches, high wall slopes and spoil dumps should be carried out and the dimensions be modified if necessary to suit the local conditions.

Provisions laid down in Reg .106 and 108 of the Coal Mines regulation 2017 shall be strictly adhered to for the safety of quarry and OB /spoil dumps .In addition to this, the following precaution should be considered:

i) In the event of encountering steep floor gradient, floor blasting should be done and the area properly levelled by dozer before spoil dumping.

ii) No working or construction should be allowed within the 100m toe of the OB dump.

iii) Before dumping the OB on the floor of seam, at least 10m length all along the strike length should be made horizontal at every 50 meter by floor dinting/blasting .

iv) Dump should be created in such a way that there is no chance of accumulation of water in and around the base of dump as it will adversely affect the shear strength of the base material of dump .It must be ensured that there is no stagnant water at the toe of dump and the top of the dump.

v) The toe and face of the dump should not be eroded or cut at any point of time to avoid slope failure. A suitable toe wall should be created along the dump periphery.

vi) Formation of dumping should be done in square or circular or any regular shape as far as possible.

vii) Proper drainage system should be provided to bring down rain water by construction of inclined drain on dump face and catch drain on all benches.

viii) During active period of dump, all rain water should be diverted away from mining site as far as possible.

ix) Sump and pumping capacity should be sufficient to accommodate peak surface run-off and seepage of water.

x) Gabion wall and garland drain should be constructed and maintained to trap the surface run-off and sludge coming from dump.

xi) Plantation and grassing should be done on top and slope of the dump respectively.

xii) Regular monitoring is required for development of tension crack, gullies, movement of soil mass, stagnation of water and any other unusual occurrence . In case of dump movement, rate of movement of dump should be monitored . Special attention should be given at curve area/turning area of the dump.

3 . **Precautions against Danger of Inundation from Surface Water**

i) Adequate protection against any danger of inrush of surface water into the mine or part shall be provided and maintained to the satisfaction of DGMS, whose decision shall be final.

ii) The entrance into the mine shall be so designed, constructed and maintained that its lowest point (which means the point at which a body of rising water on surface can enter the mine) shall be not less than 3.0 meters above the highest flood level at that point.

iii) Every year, during the rains constant watch shall be kept on the flood levels on the surface of the mine and if at any time the levels cross the highest levels

earlier recorded, such levels shall be marked by permanent posts along the edges of water and the new highest levels thus observed shall be recorded with the date as the highest flood level on the plans by an actual survey.

iv) If water dams or reservoirs are built across rivers and water courses on the upstream side of the mine, arrangements shall be made for communication between appropriate authorities for the purpose of ascertaining the quantity and timing of water released from the dams which is likely to endanger safety of the mine and arrangement for similar communication shall be made when water level rises on the upstream side which is likely to endanger the mine.

v) The highest flood levels and danger levels at least 1.2 meters below the highest flood level, shall be permanently marked at appropriate places on the surface and whenever water rises towards the danger level at any place, all persons shall be withdrawn from the mine sufficiently in advance and for this purpose adequate arrangements of quick communication to all parts of the mine by effective systems shall be provided and maintained.

vi) No working shall be made in the mine at any spot lying within a horizontal distance of 15 meters from either bank of a river or nala.

vii) A competent person shall, once at least in every fourteen days during the rainy season and once at least in every thirty days during other periods of the year, examine every protective measure provided under regulations 149, whether in use or not, for their stability, and a report of every such examination shall be recorded .The protective measures and workings shall also be inspected, once at least in every quarter by the Manager personally.

viii) A careful assessment is to be made against the danger from surface water before the onset of rainy season .The necessary precautions should be clearly laid down and implemented. A garland drain needs to be provided to drain away the surface rain water from coming into the mine.

ix) Standing order for withdrawal of working persons in case of apprehended danger .During heavy rain inspection of vulnerable points is essential .In case of any danger persons are to be withdrawn to safer places.

Annexure-VIII (c)

4. **Protection of Equipment deployed at Bottom Horizons from Flooding:**

During the heavy monsoon period, the mining operation in the lower-most bench may have to be stopped. Therefore, it is proposed to drown the lower-most bench, which would work as a sump. The water will be pumped out and discharged into the nearby nala /river after proper sedimentation.

For ensuring safety of the equipment while working out bottom horizons with no access to surface profile, the following measures should be taken:

i) Drivage of initial trenches if any and coal cutting on bottom benches should be done during the dry period of the year.
ii) Ramps should be made for quick shifting of equipment from bottom horizons, liable to be flooded during monsoon period, to the top horizons.

5. **PREVENTION OF ELECTRIC SHOCKS:**

During mining operations, all the statutory provisions of the Indian Electricity Rules 1956, and Indian Standards for installation and maintenance of electrical equipment etc. should be observed.

i) For protection from electric shocks to persons, all electrical equipment with voltage up to 1000V should be provided with Earth Leakage Relay, which will automatically disconnect electrical circuits.
ii) Closed mobile substations and switchgears should be mechanically interlocked which exclude the possibility of opening the door when oil switch and air circuit breakers are in operation.
iii) All metal parts of electrical equipment should be properly earthed to avoid failure of insulation.
iv) All H.T lines and cables located within the blasting zones should be disconnected during charging & blasting operations.

Annexure-VIII (c)

6. **Dust Suppression & Dilution of Exhaust Fumes**

For precaution against dust, Regulation 143, 144 and 145 of CMR 2017 should be observed. Beside this the following measures should be adopted for dust suppression at all quarry working places, dumps, haul roads, CHP and near other auxiliary mining operations.

i) Spraying with water on all working faces & haul roads, by special spraying machines or water-sprinkler.
ii) While drilling holes, it is necessary to use dust extraction devices.
iii) Installation of local dust suppression and air conditioning devices in cabins of excavators and drilling rigs may be considered.
iv) Leveling of spoil dump surface.
v) Separate dust suppression arrangement should be provided for CHP .

To prevent collection of harmful mixtures in the atmosphere, from the different sections of quarry workings, it is recommended:

To spread out the sources of dust formation and omission of harmful gases throughout the working area of the quarry, the following precautions should be taken:

i) Drilling & blasting operations should be timed for periods of maximum wind activity during the day.
ii) Dumpers may be provided with purifiers for exhaust gases.

7. **Measures to be taken for Fire Fighting and Fire Prevention**

In addition to statutory provisions as laid down in Reg 135, 139 and 140 of CMR 2017, the measures for firefighting and prevention of fires are as follows:

i) Organization of special cell for systematic observations to examine and prevent fire.
ii) Removal of spillage of coal on benches and cleaning of coal horizons to prevent cases of coal heating.
iii) Storage of lubricants and cotton waste in enclosed fireproof containers in working places.
iv) Provision of fire extinguishers.

Annexure-VIII (c)

8. **Measures to be taken while Drilling Blasting**:

Following measures should be taken during drilling and blasting operation in the quarry beside the statutory requirements:

i) Drilling and Blasting in quarry should be done in accordance with the provisions of Mines Act, rules and regulations and based on the Standing Orders for the safe use of explosives.

ii) Adequate safety measures have to be taken during blasting operation in the quarry so that men/machine are not affected.

9. **Conservation**

Suitable measures should be taken to minimize coal loss during mining operations .Selective mining of in-seam dirt bands has been proposed .It is proposed not to dump any spoil material over coal bearing area, amenable for mining, at present or even at a future date.

10. **Scientific Studies**

The slopes of the quarry and dumps have been proposed on the basis of experience in the adjoining areas .However, to ascertain optimum slope angles for stability of quarry batter and dumps a scientific study need be carried out. Similarly, hydro-geological study of the area is to under taken as none is available at present .Studies should also be carried out to ascertain the pattern of surface drainage, the manner of diversion of water courses to other water courses away from the mining area and the dimension of diversion dams, garland drains and other protective structures to be constructed.

नॉर्दर्न कोलफील्ड्स लिमिटेड
खड़िया परियोजना
(मिनिरत्न कंपनी)
(कोल इण्डिया लिमिटेड की अनुषंगी कंपनी)

एन सी एल
NCL

Northern Coalfields Limited
Khadia Project
(A Miniratna Company)
(A subsidiary of Coal India Limited)

Digital India
Power To Empower

Office of General Manager

CIN- U10102MP1985GOI003160
An ISO: 9001, ISO: 14001 & OHSAS: 18001 Certified Company
थाना–शक्तिनगर, जिला–सोनभद्र (उ0प्र0) पिन–231222/ Thana-Shaktinagar, Dist. Sonebhadra (U.P.) Pin- 231222
Phone: 05446- 232274, (FAX) 05446- 232274 Email: cgm.khd@gmail.com, website : www.nclcil.in

Ref: NCL/KHD/GM/Min/Env/OB to Sand/22-23/3814 Date: 25/03/23

To,
The District Magistrate,
Sonebhadra, Uttar Pradesh

Sub: Permission for installation & selling sand from silt deposited during rainwater runoff & processing of overburden materials generated.

Dear Sir,

Northern Coalfields Limited (NCL), a subsidiary of Coal India Limited is taking a new Sustainable Initiative towards producing M -Sand by processing the overburden removed during extraction of coal and utilizing the silt accumulated by runoff water during rains.

Under the Sustainable Development Cell (SDC), Ministry of Coal has a continuous thrust on ensuring alternative usage of overburden materials by all coal companies. As per DO letter vide ref. no SDC/50/2020-SDC dated 28/05/2021 received from Secretary (Coal), NCL has been asked to expedite its efforts regarding utilization of overburden materials.

Also, as per Terms of References issued by Ministry of Environment, Forest & Climate Change for expansion of Khadia Project to 20 MTPA coal production capacity, it has been directed that "PP shall explore the possibilities of utilization of OB material for different purposes (in construction of roads/ **manufacture of artificial sand**, aggregates/ use for farmers etc.) and accordingly Plan shall be included in EIA/EMP Report." Copy of the terms of reference is enclosed herewith.

The overburden materials generated from the mines consist mainly of Sandstones and Shales. Among these two, sandstones predominate. Sandstone is the rock formed by cementing of sands composed largely of quartz and silicate minerals. As per the analysis reports of samples taken from Amlohri Project, NCL, approximate yield of 65 -75% sand has been reported in the overburden materials through Wet Sieve Analysis method.

Scope at NCL

NCL produced 122 MT of Coal and removed 363 MCum of overburden with a stripping ratio of 3 (approx) in the FY 2021-22. Khadia Project itself has produced 14 Mn T coal and 51.68 Cum of overburden in FY 2022-23. Moreover in FY 2022-23, NCL is expected to produce more than 131 MT of coal with 15 MTY from Khadia Project itself. With-the-increase in coal production, the overburden removal will also increase. Hence, this alternative utilization of overburden into sand will not only pave the way for conservation of natural resources & compliance of directives from MoC & MoEF&CC, but will also help in generating additional space for dump accommodation and may address the issue of shortage of space for dumping.

Utilization

Apart from internal requirement of sand for NCL, this sand production in the form of M - Sand can be utilized through joint venutres with district administration in the form of Pradhan Mantri Awas Yojna (PMAY), Pradhan Mantri Gram Sadak Yojna (PMGSY) and other State Govt. schemes for construction of schools, buildings, roads in the district under NCL's CSR initiative.

In view of the above, permission is being sought for installation of sand plant and selling of M-Sand in the first phase of the initiative.

We solicit a positive response from your good office.

Enclosure: As above

Yours sincerely,

23/03/2023

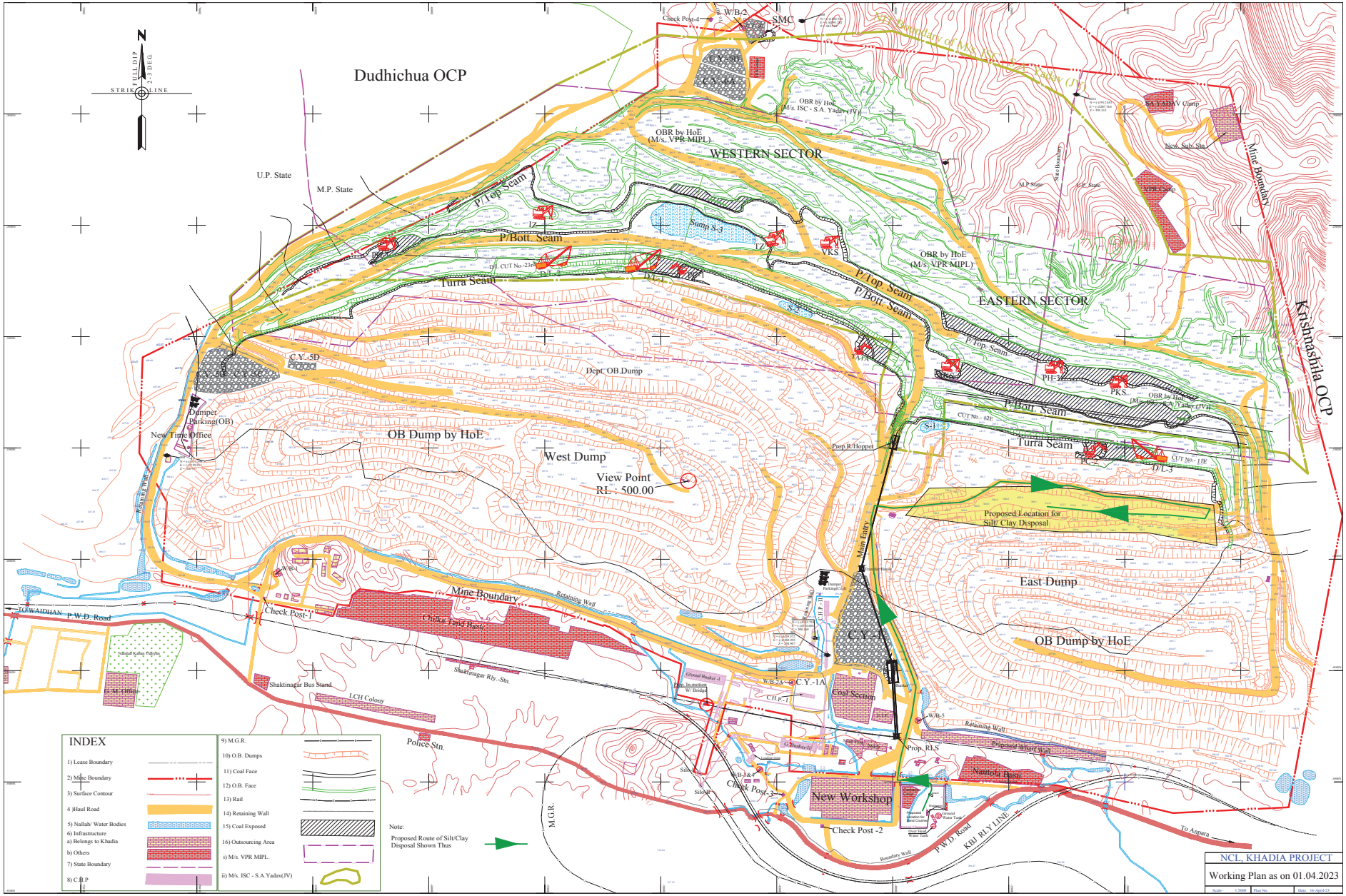
Rajiv Kumar
General Manager
NCL Khadia Area

Copy for kind information to:

1) Director (Tech./ Optn), NCL Singrauli
2) Director (Tech./Project & Planning), NCL Singrauli
3) District Mining Officer, Sonebhadra
4) General Manager (Production), NCL Singrauli
5) General Manager (R&D/NI), NCL Singrauli
6) General Manager (Environment), NCL Singrauli

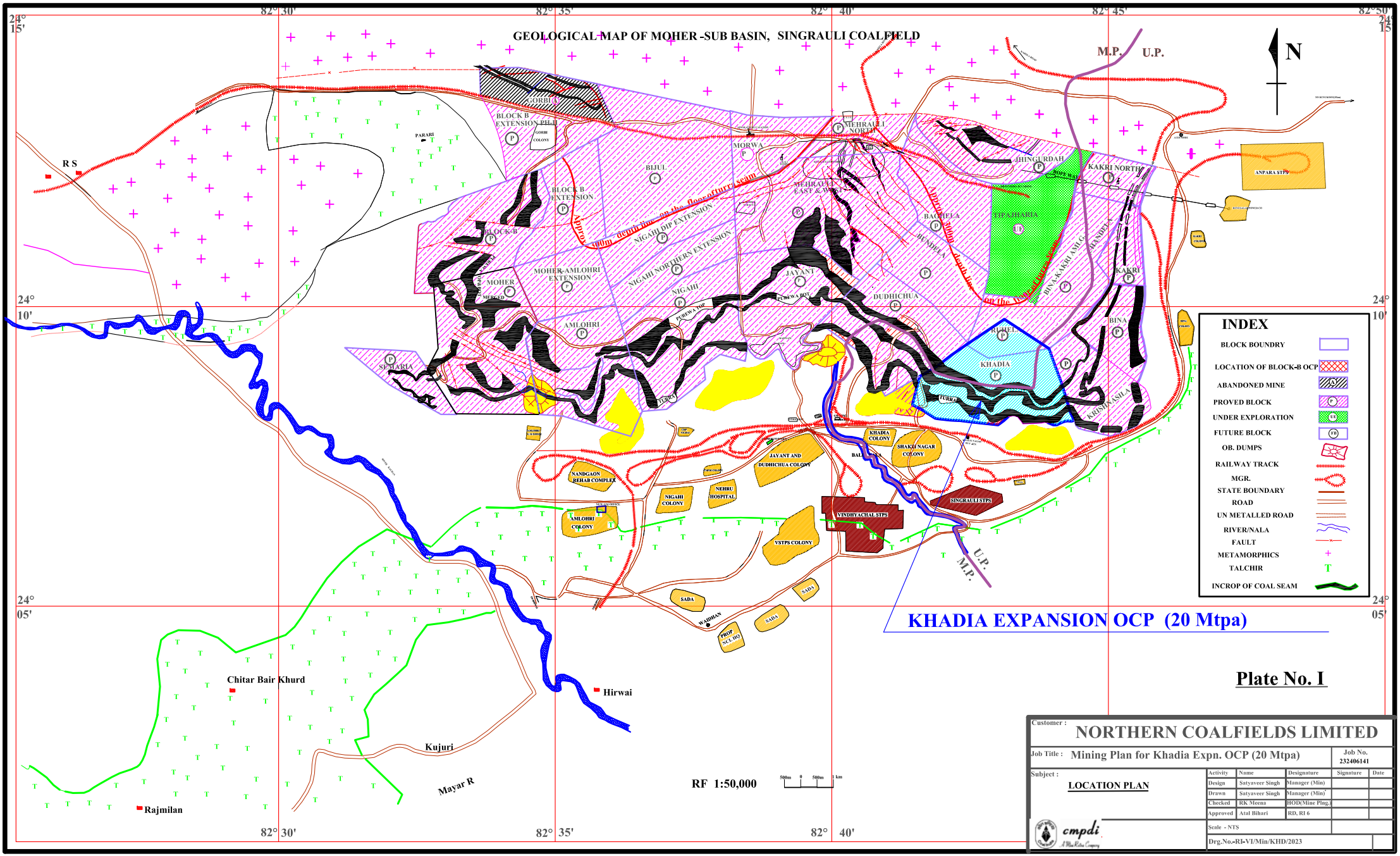
Annexure-VIII(e)

Location of the prooposed m-sand processing plant



PLATES

GEOLOGICAL MAP OF MOHER -SUB BASIN, SINGRAULI COALFIELD



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- UNDER EXPLORATION
- FUTURE BLOCK
- OB. DUMPS
- RAILWAY TRACK
- MGR.
- STATE BOUNDARY
- ROAD
- UN METALLED ROAD
- RIVER/NALA
- FAULT
- METAMORPHICS
- TALCHIR
- INCROP OF COAL SEAM

KHADIA EXPANSION OCP (20 Mtpa)

Plate No. I

Customer : NORTHERN COALFIELDS LIMITED

Job Title : Mining Plan for Khadia Expn. OCP (20 Mtpa) | Job No. 232406141

Subject : LOCATION PLAN

Activity	Name	Designature	Signature	Date
Design	Satyaveer Singh	Manager (Min)		
Drawn	Satyaveer Singh	Manager (Min)		
Checked	RK Meena	HOD(Mine Plng.)		
Approved	Atal Bihari	RD, RI 6		

cmpdi

Scale - NTS

Drg.No.-RI-VI/Min/KHD/2023

Point	WGS84 Longitude	Latitude
0	82° 39' 54.322" E	24° 7' 31.235" N
1	82° 40' 20.409" E	24° 7' 31.528" N
2	82° 40' 48.893" E	24° 7' 31.730" N
3	82° 41' 20.603" E	24° 7' 32.026" N
4	82° 41' 22.237" E	24° 7' 43.081" N
5	82° 41' 23.436" E	24° 7' 52.297" N
6	82° 41' 23.486" E	24° 8' 0.085" N
7	82° 41' 23.509" E	24° 8' 6.207" N
8	82° 41' 31.758" E	24° 8' 10.364" N
9	82° 41' 53.925" E	24° 8' 25.615" N
10	82° 42' 14.085" E	24° 8' 39.345" N
11	82° 42' 29.021" E	24° 8' 49.710" N
12	82° 42' 32.604" E	24° 8' 52.544" N
13	82° 42' 40.831" E	24° 8' 54.225" N
14	82° 42' 41.140" E	24° 8' 48.580" N
15	82° 42' 45.220" E	24° 8' 50.580" N
16	82° 42' 58.524" E	24° 9' 0.099" N
17	82° 43' 9.112" E	24° 9' 7.590" N
18	82° 43' 15.318" E	24° 9' 11.935" N
19	82° 43' 19.498" E	24° 9' 16.616" N
20	82° 43' 37.774" E	24° 9' 1.101" N
21	82° 43' 51.227" E	24° 8' 53.458" N
22	82° 43' 54.844" E	24° 8' 57.090" N
23	82° 43' 56.988" E	24° 8' 59.306" N
24	82° 44' 2.760" E	24° 8' 55.057" N
25	82° 44' 3.304" E	24° 8' 55.750" N
26	82° 44' 9.328" E	24° 8' 50.351" N
27	82° 44' 12.450" E	24° 8' 47.655" N
28	82° 44' 13.567" E	24° 8' 38.125" N
29	82° 44' 14.543" E	24° 8' 29.331" N
30	82° 44' 19.563" E	24° 8' 12.929" N
31	82° 44' 25.298" E	24° 7' 54.170" N
32	82° 44' 27.547" E	24° 7' 45.852" N
33	82° 44' 21.815" E	24° 7' 25.974" N
34	82° 44' 22.717" E	24° 7' 17.071" N
35	82° 44' 20.135" E	24° 7' 2.086" N
36	82° 44' 18.599" E	24° 7' 2.812" N
37	82° 44' 11.152" E	24° 6' 57.000" N
38	82° 44' 9.567" E	24° 6' 47.657" N
39	82° 44' 7.750" E	24° 6' 40.488" N
40	82° 43' 58.634" E	24° 6' 45.536" N
41	82° 43' 54.759" E	24° 6' 47.640" N
42	82° 43' 40.501" E	24° 6' 52.128" N
43	82° 43' 32.557" E	24° 6' 56.358" N
44	82° 43' 30.335" E	24° 6' 54.502" N
45	82° 43' 21.569" E	24° 6' 51.558" N
46	82° 43' 11.524" E	24° 6' 52.025" N
47	82° 43' 3.753" E	24° 6' 55.015" N
48	82° 42' 58.590" E	24° 6' 59.808" N
49	82° 42' 54.426" E	24° 7' 2.645" N
50	82° 42' 47.217" E	24° 7' 6.385" N
51	82° 42' 42.157" E	24° 7' 1.075" N
52	82° 42' 36.455" E	24° 7' 6.516" N
53	82° 42' 39.055" E	24° 7' 11.030" N
54	82° 42' 44.755" E	24° 7' 9.042" N
55	82° 42' 49.197" E	24° 7' 11.212" N
56	82° 42' 50.118" E	24° 7' 14.168" N
57	82° 42' 42.810" E	24° 7' 15.374" N
58	82° 42' 33.903" E	24° 7' 16.635" N
59	82° 42' 32.754" E	24° 7' 11.759" N
60	82° 42' 20.047" E	24° 7' 12.438" N
61	82° 42' 28.350" E	24° 7' 9.938" N
62	82° 42' 24.974" E	24° 7' 10.144" N
63	82° 42' 6.563" E	24° 7' 12.787" N
64	82° 41' 49.220" E	24° 7' 15.096" N
65	82° 41' 42.541" E	24° 7' 17.935" N
66	82° 41' 36.005" E	24° 7' 23.580" N
67	82° 41' 31.066" E	24° 7' 26.190" N
68	82° 41' 25.159" E	24° 7' 20.111" N
69	82° 41' 26.953" E	24° 7' 14.937" N
70	82° 41' 13.597" E	24° 7' 15.567" N
71	82° 41' 12.256" E	24° 7' 16.754" N
72	82° 41' 1.356" E	24° 7' 15.909" N
73	82° 40' 48.005" E	24° 7' 14.625" N
74	82° 40' 49.834" E	24° 7' 9.345" N
75	82° 40' 44.317" E	24° 7' 7.985" N
76	82° 40' 38.657" E	24° 7' 8.456" N
77	82° 40' 30.443" E	24° 7' 12.332" N
78	82° 40' 35.257" E	24° 7' 11.657" N
79	82° 40' 31.987" E	24° 7' 9.043" N
80	82° 40' 29.820" E	24° 7' 11.952" N
81	82° 40' 25.362" E	24° 7' 13.628" N
82	82° 40' 21.697" E	24° 7' 16.237" N
83	82° 40' 16.975" E	24° 7' 12.967" N
84	82° 40' 12.852" E	24° 7' 13.095" N
85	82° 40' 10.152" E	24° 7' 16.702" N
86	82° 40' 9.686" E	24° 7' 18.937" N
87	82° 40' 5.158" E	24° 7' 17.824" N
88	82° 40' 3.379" E	24° 7' 15.120" N
89	82° 40' 3.196" E	24° 7' 22.013" N
90	82° 40' 0.143" E	24° 7' 25.432" N
91	82° 39' 55.767" E	24° 7' 26.155" N

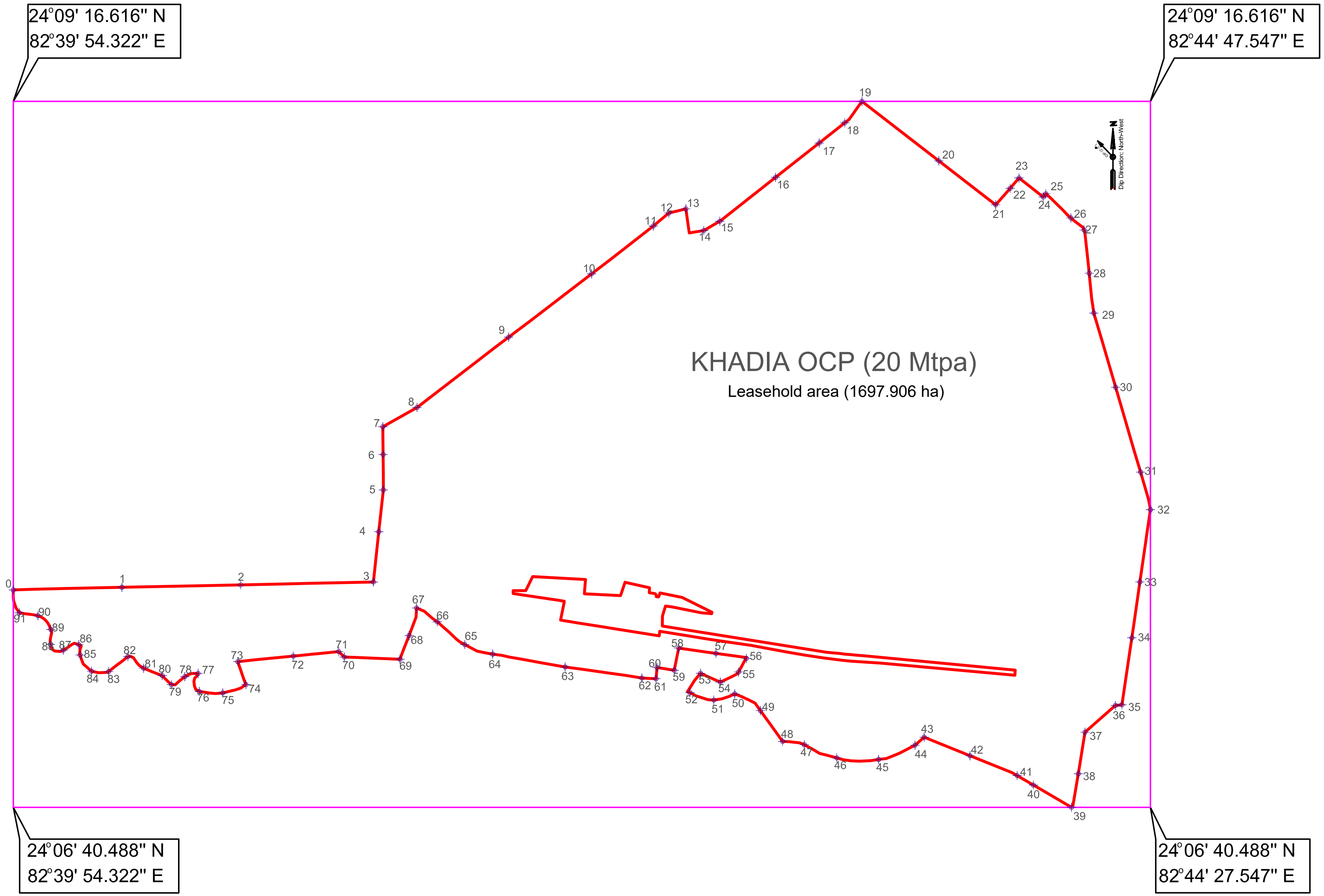


PLATE NO.- II

NORTHERN COALFIELDS LIMITED

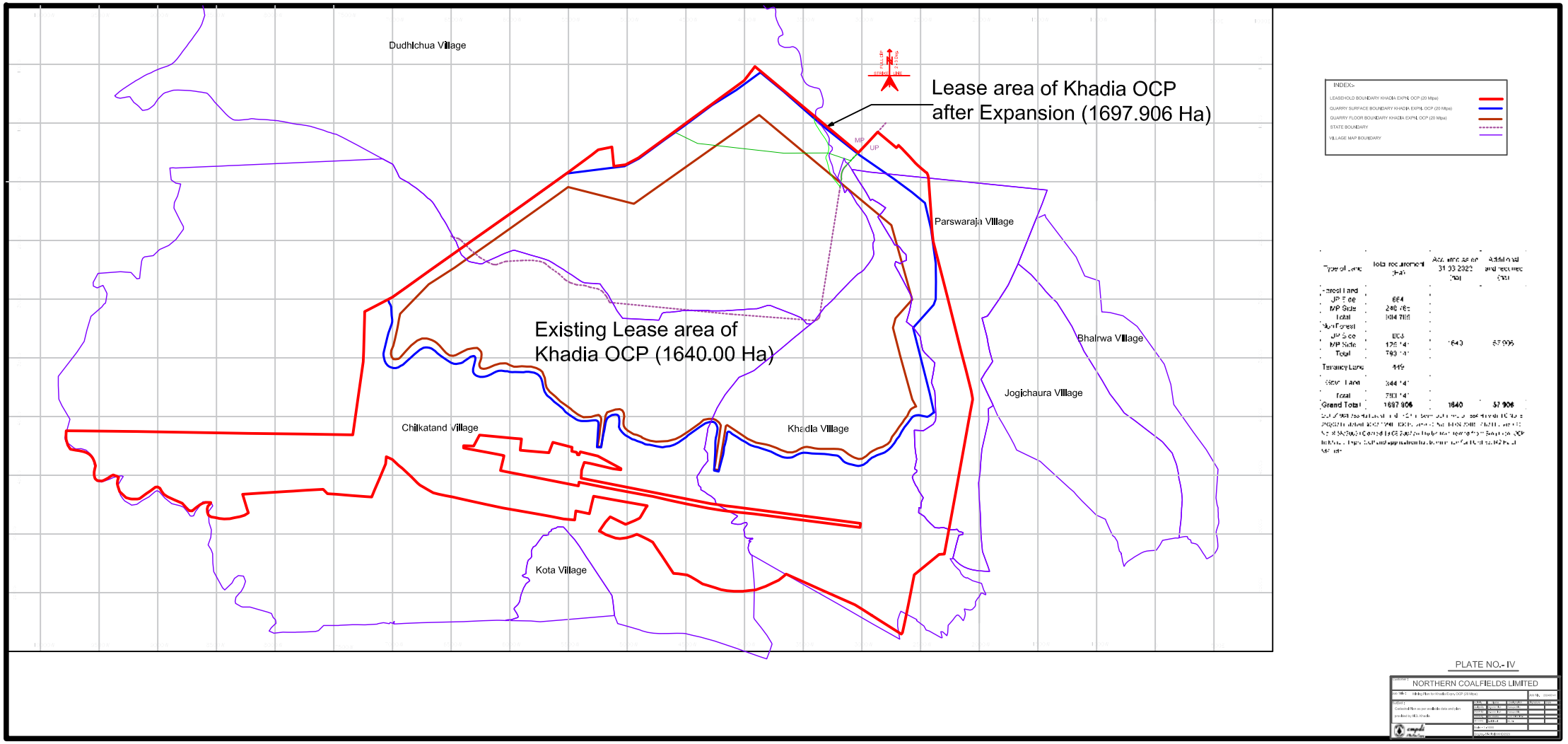
Mining Plan For Khadia Expn. OCP (20.00 Mtpa)

Conceptual Plan showing Geo-referenced co-ordinates of Geological Block Area, Lease Area and Project Area in UTM

cmpdi

PLATE NO.- III

Customer :	NORTHERN COALFIELDS LIMITED				
Job Title :	Mining Plan for Khadia Expn. OCP (20 Mtpa)			Job No.	232406141
Subject : KML Plan overlaid on google map of Khadia Expn. OCP (20 Mtpa)	Activity	Name	Designation	Signature	Date
	Design By	Satyaveer Singh	Manager(Min)		
	Drawn By	Satyaveer Singh	Manager(Min)		
	Checked By	RK Meena	HOD (Mine Plng.)		
	Approved By	Atal Bihari	RD, RI6		
cmpdi	Scale - NTS				
	Drg.No.-RI-VI/Min/KHD/2023				



Type of Land	Total requirement (Ha)	Acquired as on 31.03.2022 (Ha)	Additional land required (Ha)
Forest Land			
JP Side	664		
MP Side	240.7[illegible]		
Total	904.7[illegible]		
Non Forest			
JP Side	803		
MP Side	175.1[illegible]	1640	57.906
Total	793.1[illegible]		
Tenancy Land	449		
Govt. Land	344.1[illegible]		
Total	793.1[illegible]		
Grand Total	1697.906	1640	57.906

PLATE NO.- IV

NORTHERN COALFIELDS LIMITED

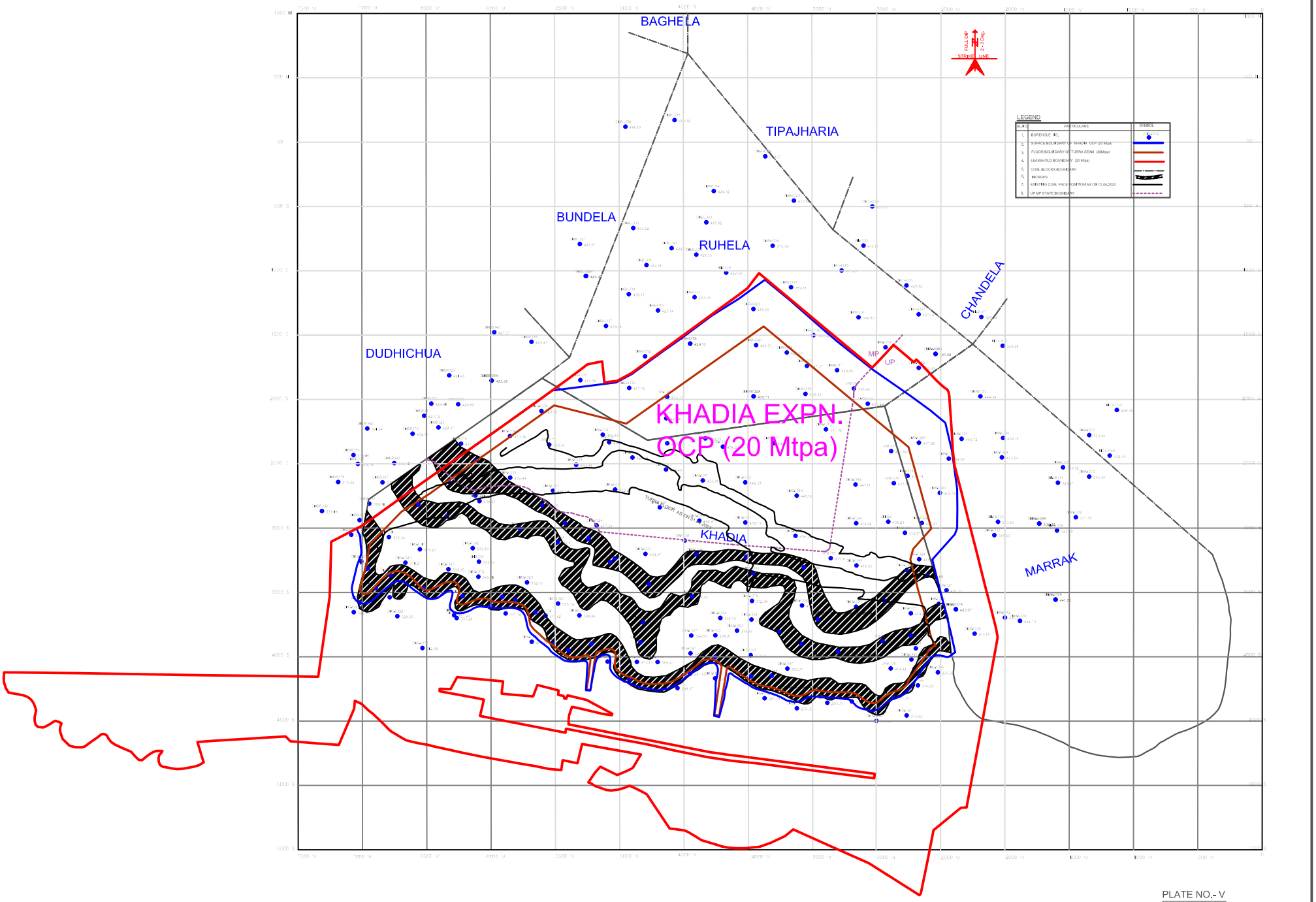


PLATE NO.- V

NORTHERN COALFIELDS LIMITED

GRAPHIC LITHOLOGS OF BOREHOLES

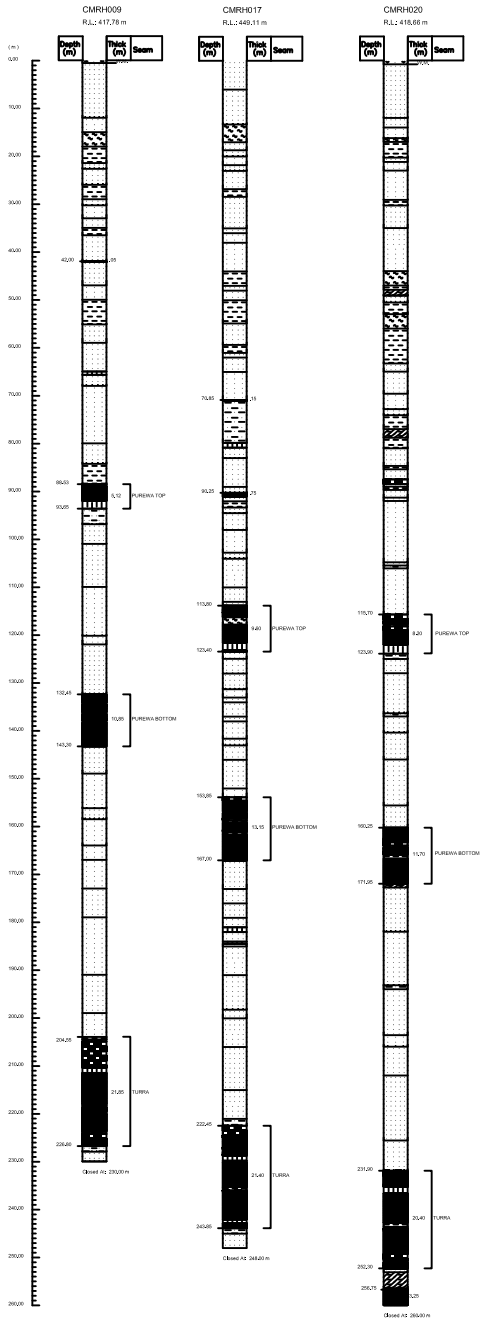
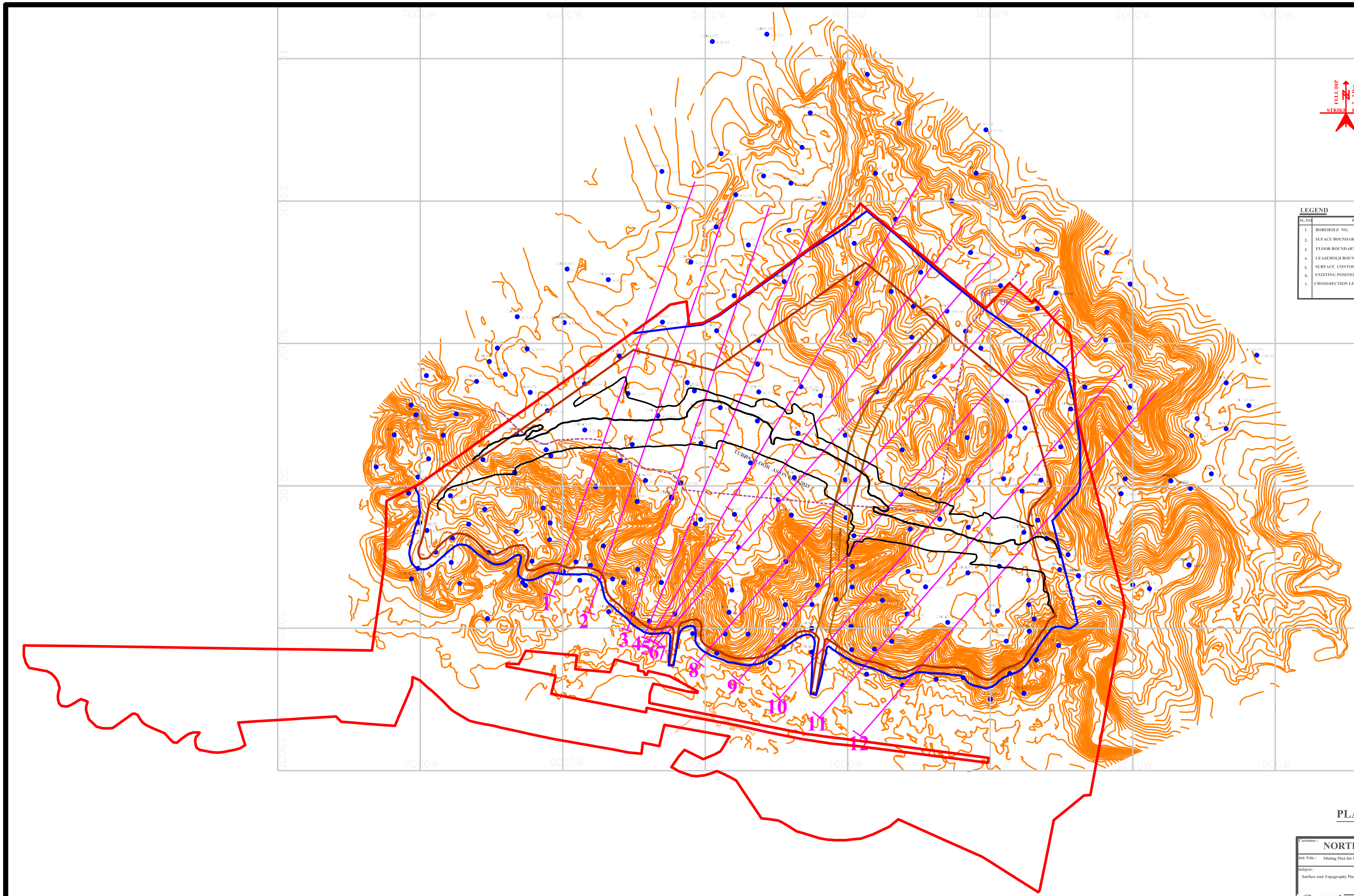


PLATE NO- VI

Customer: NORTHERN COALFIELDS LIMITED					
Job Title: MINING PLAN FOR KHADIA EXPANSION OCP (20 Mtpa)				Job No. 2324003/41	
Subject: GRAPHIC LITHOLOGS OF BOREHOLES (CMRH-9,17,20)	Activity	Name	Designation	Signature	Date
	Drawn				
	Checked				
CMPDI A Miniratna Company	Approved				
	RF 1: 500				
	Drg.No.	R6 EXP XC020 02 P006			March'2023



LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	BOREHOLE NO.	CMSK012 (blue dot)
2.	SUFACE BOUNDARY OF KHADIA OCP (20Mtpa)	(blue line)
3.	FLOOR BOUNDARY OF KHADIA OCP (20Mtpa)	(brown line)
4.	LEASEHOLD BOUNDARY (20Mtpa)	(red line)
5.	SURFACE CONTOURS OF KHADIA OCP (20Mtpa)	450 (orange line)
6.	EXISTING POSITIO AS ON 01.04.2023	(black line)
7.	CROSS-SECTION LINE	I' (magenta line)

PLATE NO.- VII

Customer : **NORTHERN COALFIELDS LIMITED**

Job Title : Mining Plan for Khadia Expn. OCP (20 Mtpa) — Job No. 232406141

Subject : Surface and Topography Plan

Activity	Name	Designation	Signature	Date
Design By	Satyaveer Singh	Manager(Min)		
Drawn By	Satyaveer Singh	Manager(Min)		
Checked By	RK Meena	HOD (Mine Plng.)		
Approved By	Atal Bihari	RD, RI6		

Scale - 1 : 10000

Drg.No.-RI-VI/Min/KHD/2023

cmpdi

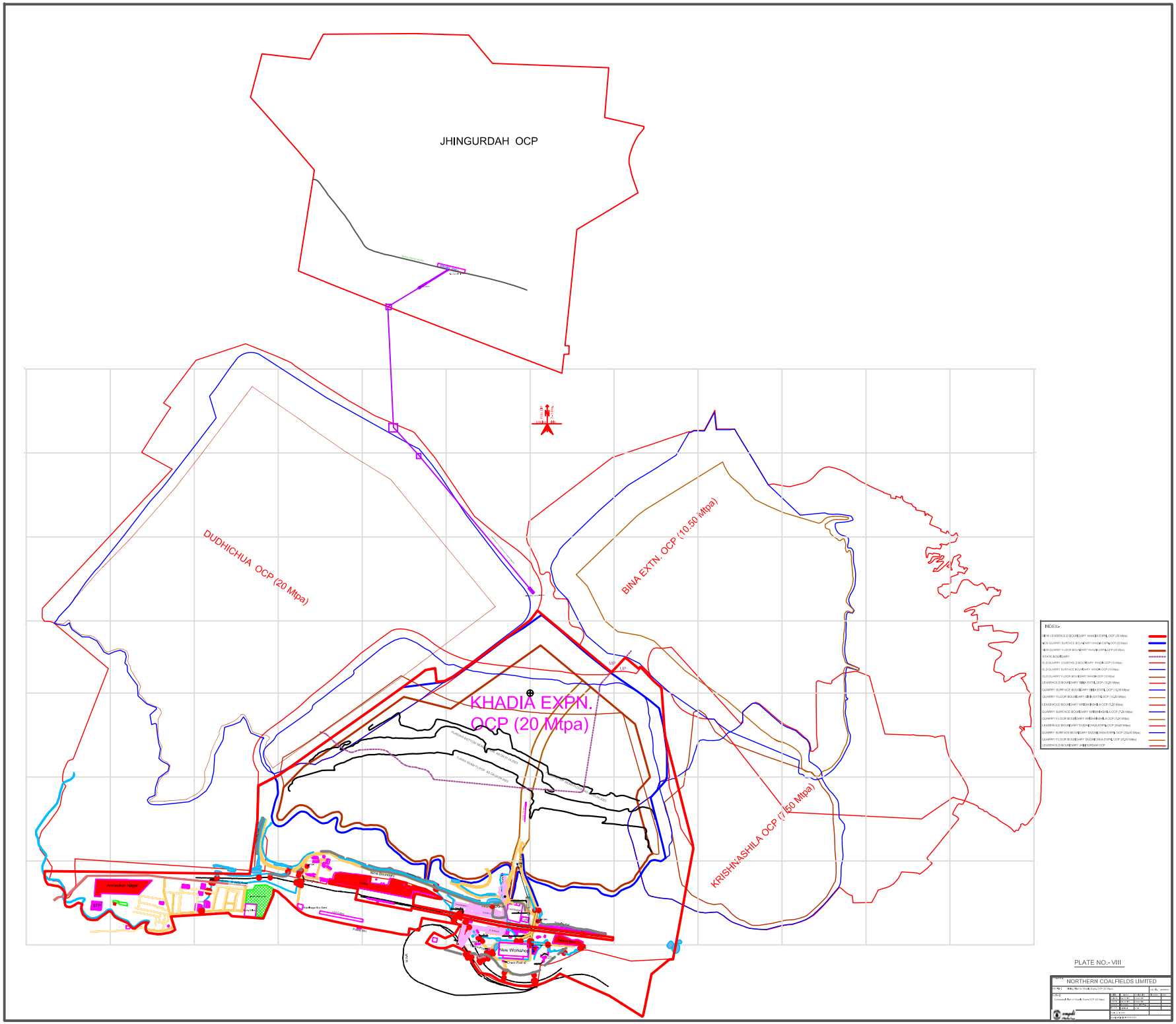


PLATE NO.- VIII

NORTHERN COALFIELDS LIMITED

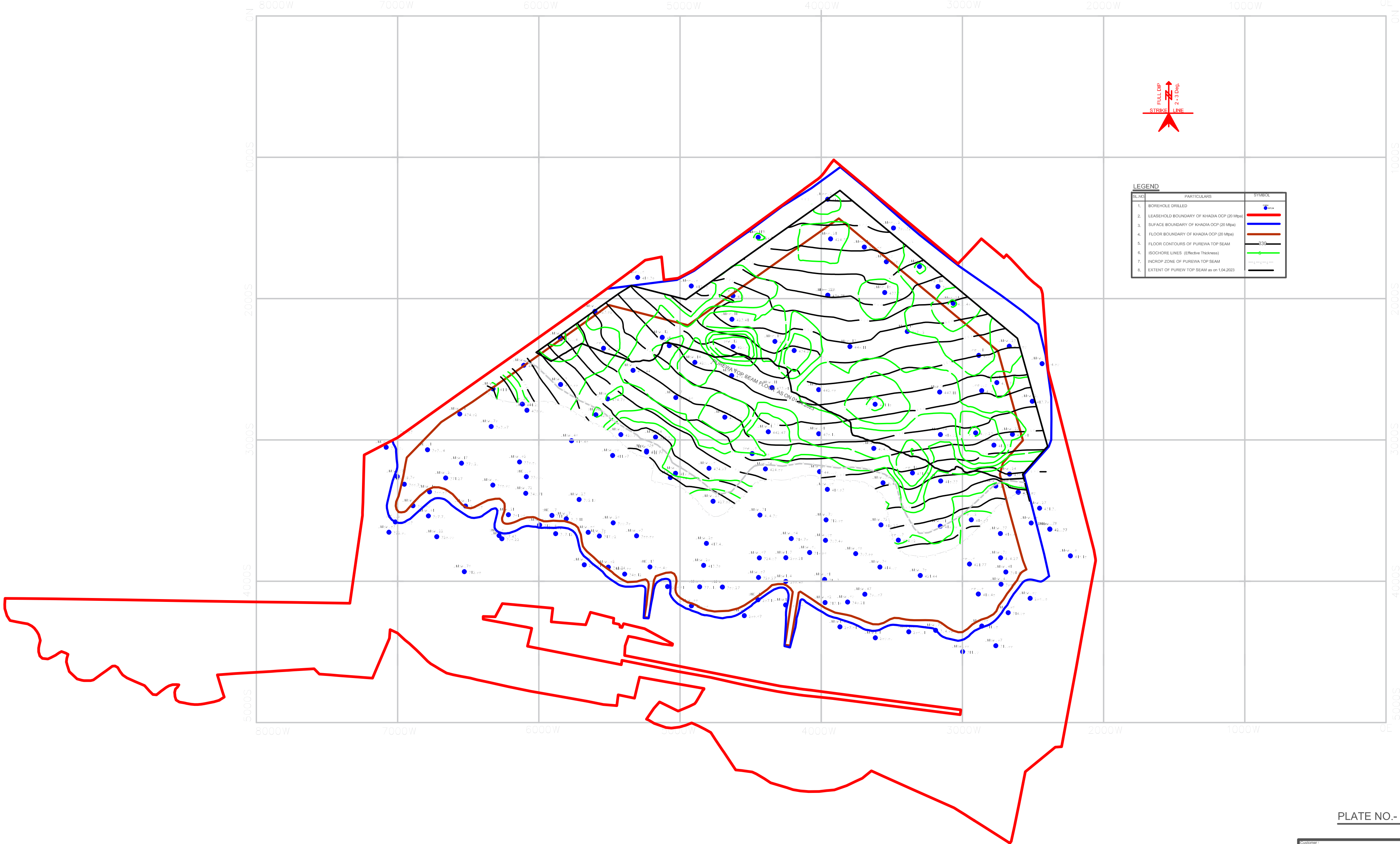
INDEX:-

- LEASEHOLD BOUNDARY KHADIA EXPN. OCP (20 Mtpa)
- QUARRY SURFACE BOUNDARY KHADIA EXPN. OCP (20 Mtpa)
- QUARRY FLOOR BOUNDARY KHADIA EXPN. OCP (20 Mtpa)
- STATE BOUNDARY

Type of Land	Total requirement (Ha)	Area as on 31.03.2023 (Ha)	Additional land required (Ha)
Forest Land			
JP Side	654		
MP Side	240.765		
Total	954.765		
Non Forest			
JP Side	688		
MP Side	125.141	1840	57.906
Total	793.141		
Tenancy Land	449		
Govt. Land	344.141		
Total	793.141		
Grand Total	1697.906	1840	57.906

PLATE NO.- IX

NORTHERN COALFIELDS LIMITED



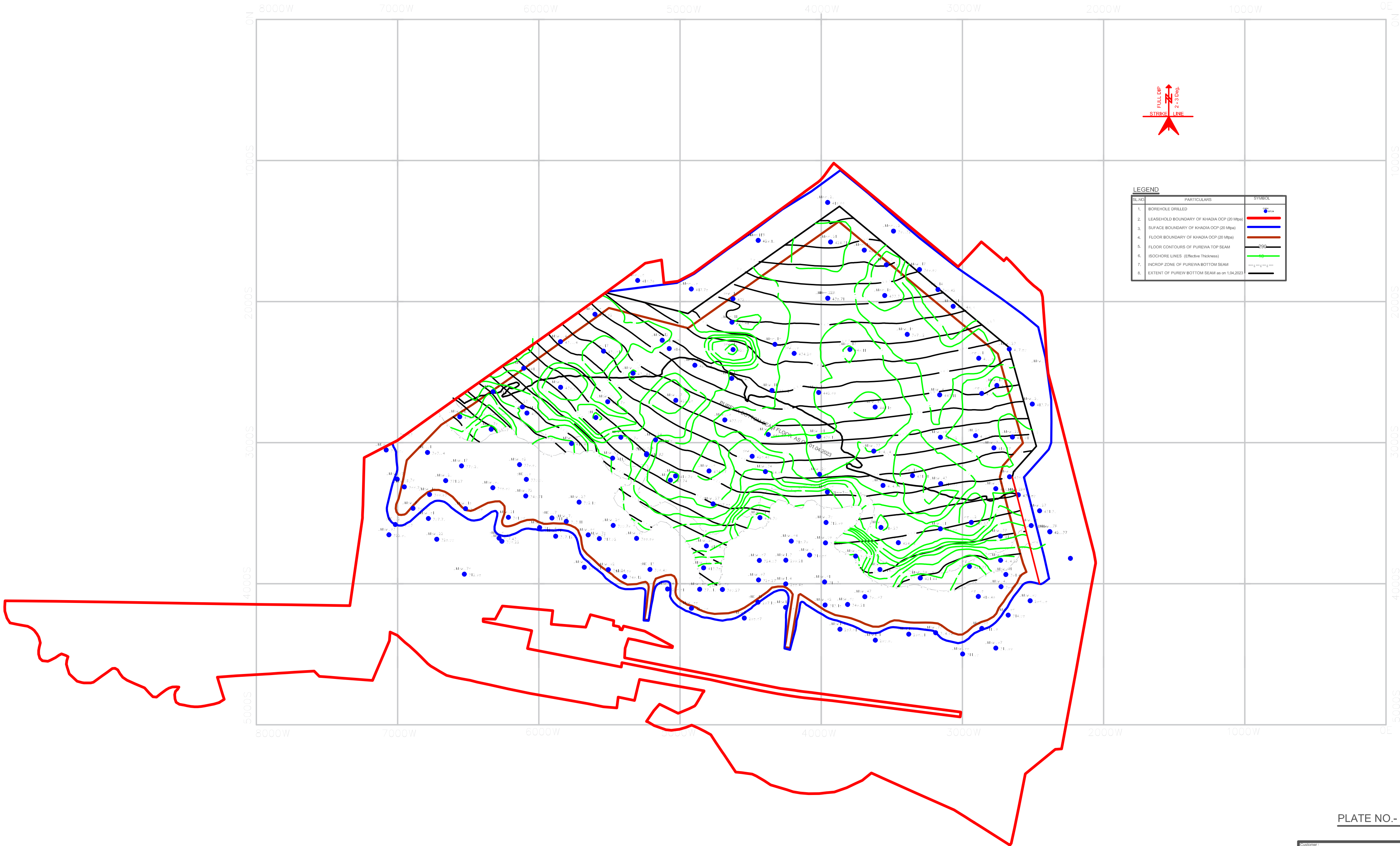
LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	BOREHOLE DRILLED	
2.	LEASEHOLD BOUNDARY OF KHADIA OCP (20 Mtpa)	
3.	SUFACE BOUNDARY OF KHADIA OCP (20 Mtpa)	
4.	FLOOR BOUNDARY OF KHADIA OCP (20 Mtpa)	
5.	FLOOR CONTOURS OF PUREWA TOP SEAM	330
6.	ISOCHORE LINES (Effective Thickness)	5
7.	INCROP ZONE OF PUREWA TOP SEAM	
8.	EXTENT OF PUREW TOP SEAM as on 1.04.2023	

PLATE NO.- X (a)

Customer : NORTHERN COALFIELDS LIMITED				
Job Title : Mining Plan for Khadia Expn. OCP (20 Mtpa)			Job No. 232406141	
Subject : Plan Showing Floor Contour, Iso-chore and Iso-grade Lines of Purewa Top Seam				
Activity	Name	Designation	Signature	Date
Design By	Satyaveer Singh	Manager(Min)		
Drawn By	Satyaveer Singh	Manager(Min)		
Checked By	RK Meena	HOD (Mine Plng.)		
Approved By	Atal Bihari	RD, RI6		
Scale - 1 : 10000				
Drg.No.-RI-VI/Min/KHD/2023				

cmpdi

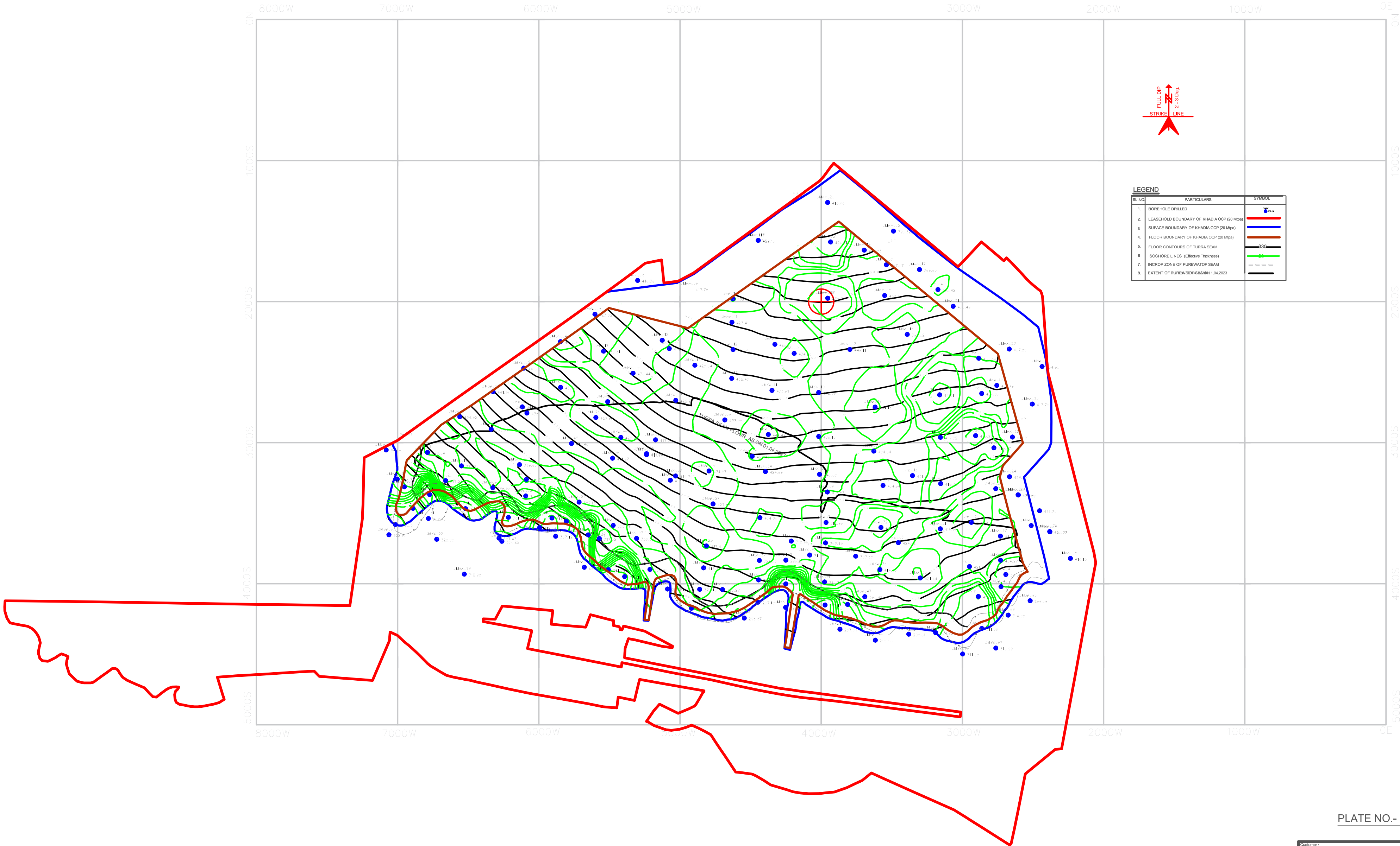


LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	BOREHOLE DRILLED	CMSK 307.04
2.	LEASEHOLD BOUNDARY OF KHADIA OCP (20 Mtpa)	
3.	SUFACE BOUNDARY OF KHADIA OCP (20 Mtpa)	
4.	FLOOR BOUNDARY OF KHADIA OCP (20 Mtpa)	
5.	FLOOR CONTOURS OF PUREWA TOP SEAM	290
6.	ISOCHORE LINES (Effective Thickness)	10
7.	INCROP ZONE OF PUREWA BOTTOM SEAM	
8.	EXTENT OF PUREW BOTTOM SEAM as on 1.04.2023	

PLATE NO.- X (b)

Customer : NORTHERN COALFIELDS LIMITED					
Job Title : Mining Plan for Khadia Expn. OCP (20 Mtpa)				Job No. 232406141	
Subject : Plan Showing Floor Contour, Iso-chore and Iso-grade Lines of Purewa Bottom Seam	Activity	Name	Designation	Signature	Date
	Design By	Satyaveer Singh	Manager(Min)		
	Drawn By	Satyaveer Singh	Manager(Min)		
	Checked By	RK Meena	HOD (Mine Plng.)		
	Approved By	Atal Bihari	RD, RI6		
cmpdi A Mini Ratna Company	Scale - 1 : 10000				
	Drg.No.-RI-VI/Min/KHD/2023				



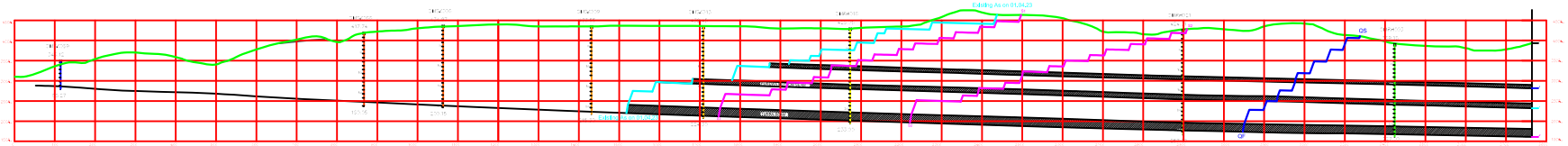
LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	BOREHOLE DRILLED	
2.	LEASEHOLD BOUNDARY OF KHADIA OCP (20 Mtpa)	
3.	SUFACE BOUNDARY OF KHADIA OCP (20 Mtpa)	
4.	FLOOR BOUNDARY OF KHADIA OCP (20 Mtpa)	
5.	FLOOR CONTOURS OF TURRA SEAM	330
6.	ISOCHORE LINES (Effective Thickness)	20
7.	INCROP ZONE OF PUREWATOP SEAM	
8.	EXTENT OF PUREWATOP SEAM ON 1.04.2023	

PLATE NO.- X (c)

Customer : NORTHERN COALFIELDS LIMITED					
Job Title : Mining Plan for Khadia Expn. OCP (20 Mtpa)				Job No. 232406141	
Subject : Plan Showing Floor Contour, Iso-chore and Iso-grade Lines of Turra Seam	Activity	Name	Designation	Signature	Date
	Design By	Satyaveer Singh	Manager(Min)		
	Drawn By	Satyaveer Singh	Manager(Min)		
	Checked By	RK Meena	HOD (Mine Plng.)		
	Approved By	Atal Bihari	RD, RI6		
cmpdi	Scale - 1 : 10000				
	Drg.No.-RI-VI/Min/KHD/2023				

SECTION - 5-5'



LEGEND

SL.NO.	PARTICULARS	SYMBOLS
1.	BOREHOLE NO.	SRK012
2.	PROPOSED MINING SYSTEM	
3.	COAL SEAM	
4.	SPOT LEVEL	+ 315
5.	SURFACE	
6.	QUARRY BOUNDARY	
7.	EXISTING AS ON 01.04.2023	

SECTION - 9-9'

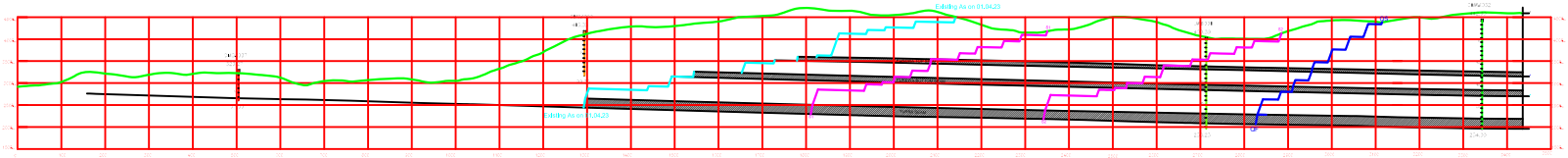


PLATE NO.- XI

Customer : NORTHERN COALFIELDS LIMITED

Job Title : Mining Plan for Khadia Expn. OCP (20 Mtpa) — Job No. 232406141

Subject : Plan Showing The Quarry Cross-Sections along 5-5' & 9-9'

Activity	Name	Designation	Signature	Date
Design By	Satyaveer Singh	Manager(Min)		
Drawn By	Satyaveer Singh	Manager(Min)		
Checked By	RK Meena	HOD (Mine Plng.)		
Approved By	Atal Bihari	RD, RI8		

cmpdi — A Miniratna Company

Scale - 1 : 10000

Drg.No.-RI-VI/Min/KHD/2023

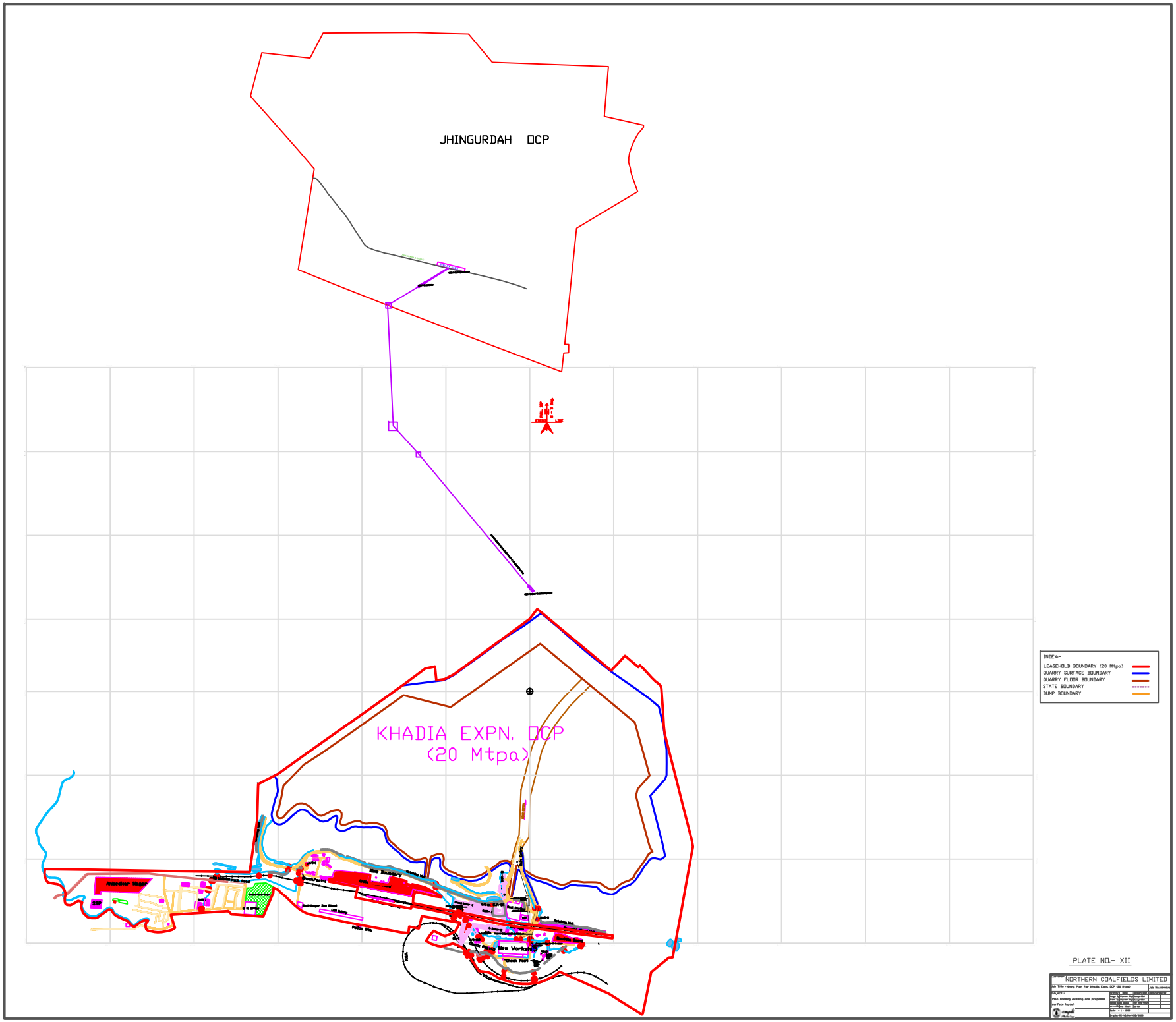


PLATE NO.- XII

NORTHERN COALFIELDS LIMITED

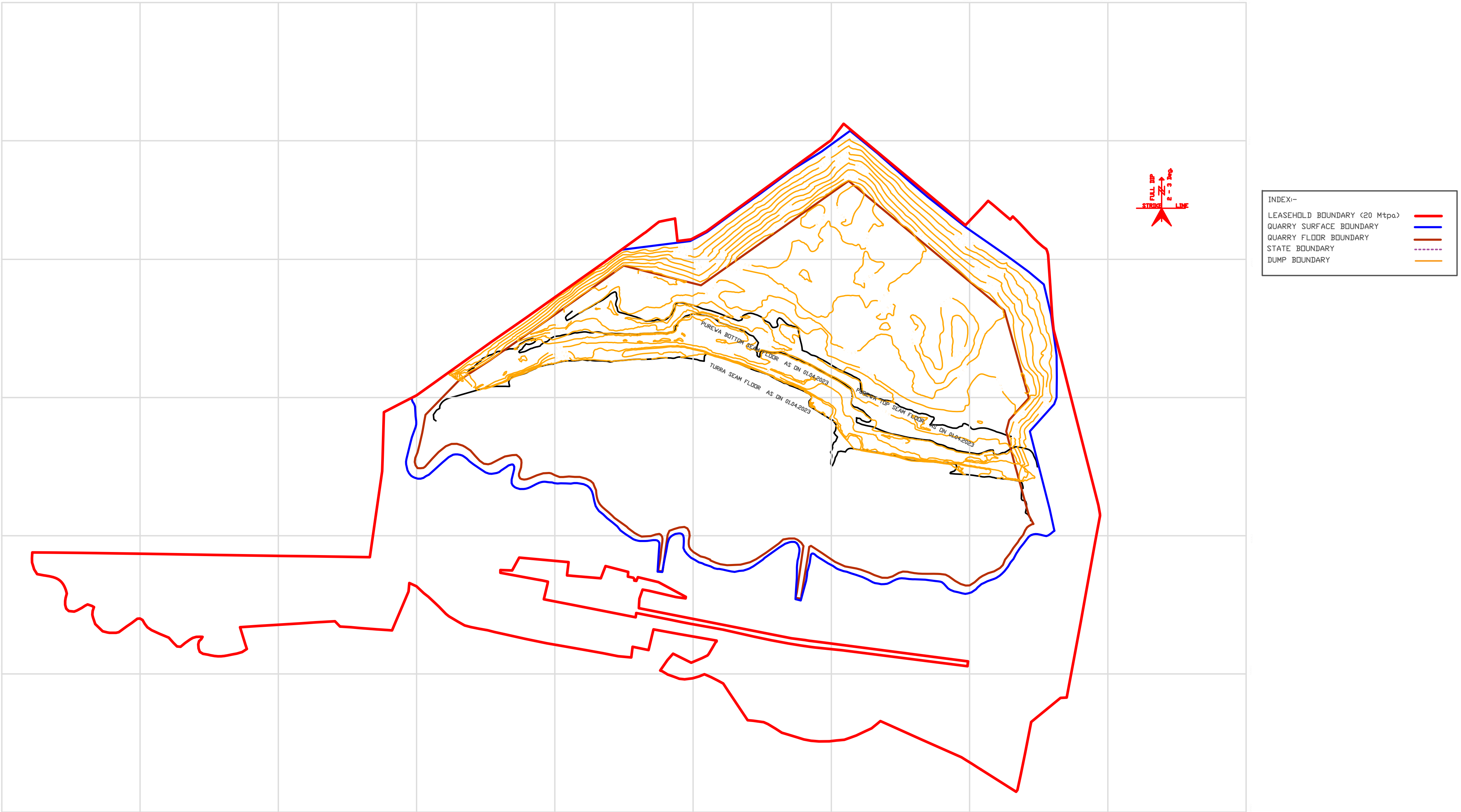


PLATE NO.- XIII

Customer : NORTHERN COALFIELDS LIMITED

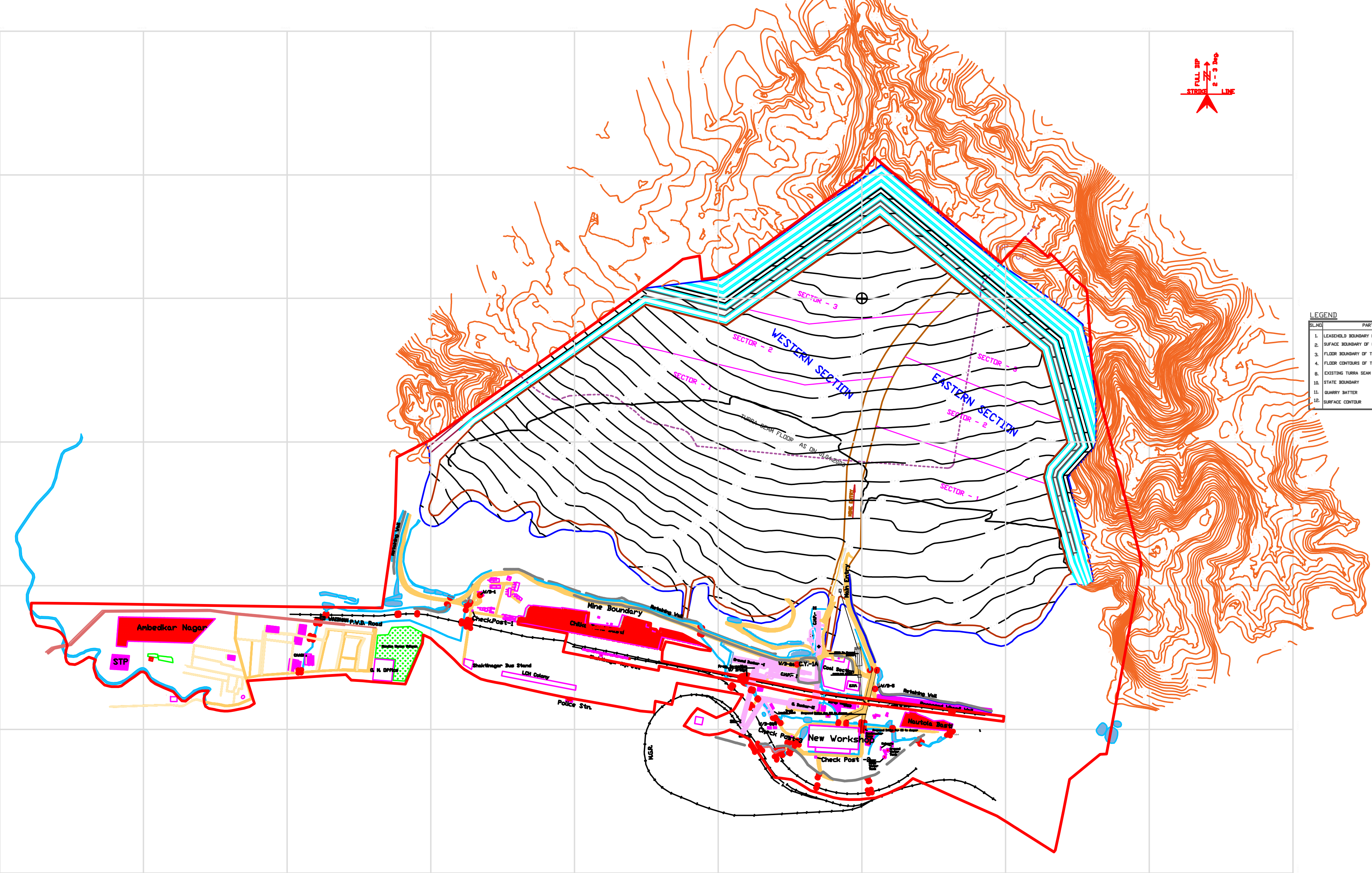
Job Title : Mining Plan for Khadia Expn. OCP (20Mtpa) — Job No.232406141

Subject : Plan Showing Total Coal, Total OB Vertical Stripping Ratio

Activity	Name	Designation	Signature	Date
Design By	Satyaveer Singh	Manager(Min)		
Drawn By	Satyaveer Singh	Manager(Min)		
Checked By	RK Meena	HOD (Mine Plng)		
Approved By	Atal Bihari	RD, RI6		

Scale - 1 : 10000

Drg.No.-RI-VI/Min/KHD/2023

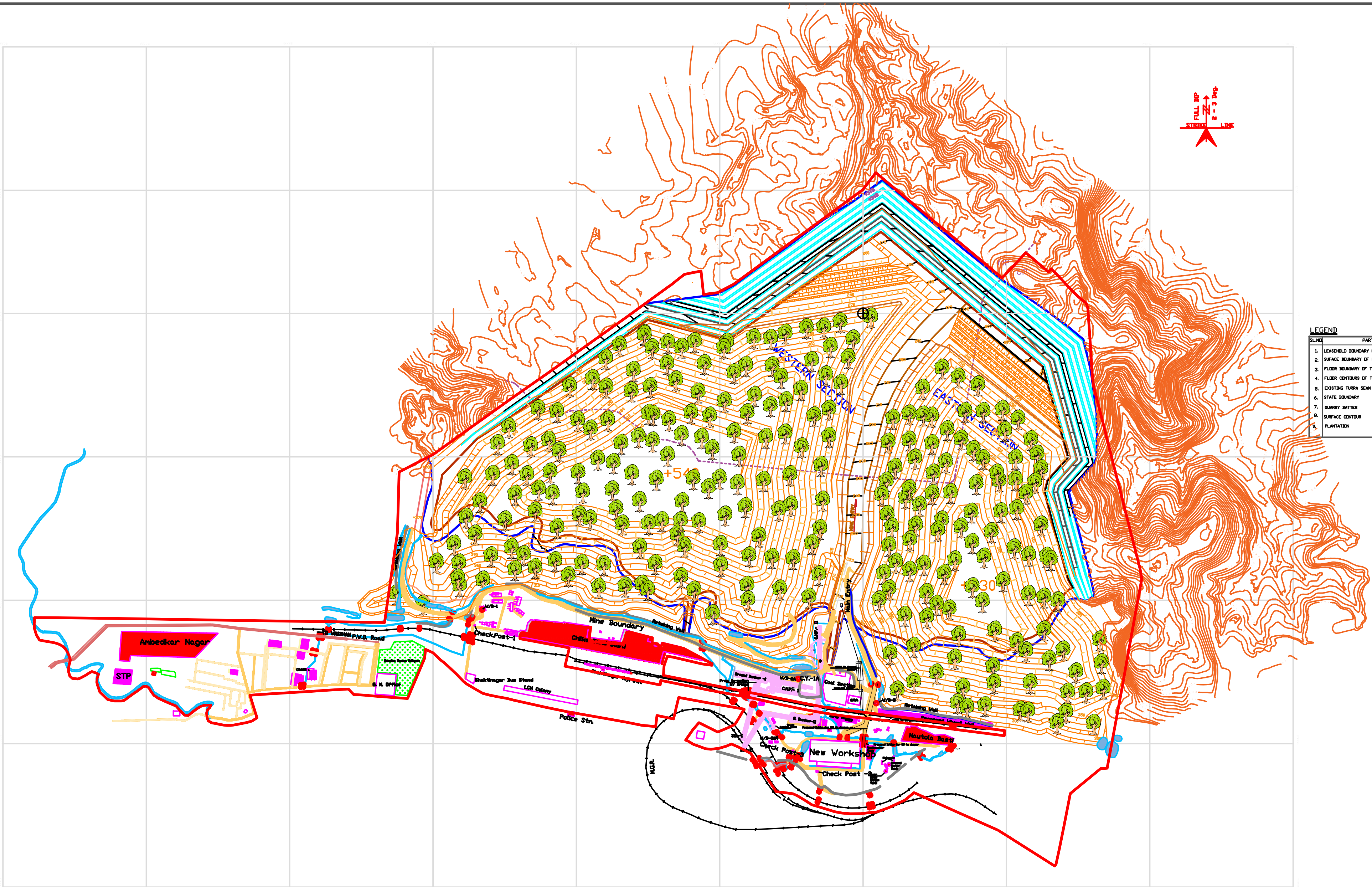


LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	LEASEHOLD BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
2.	SUFACE BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
3.	FLOOR BOUNDARY OF TURRA SEAM (16Mtpa)	
4.	FLOOR CONTOURS OF TURRA SEAM	220
8.	EXISTING TURRA SEAM POSITION AS ON 01.04.2023	
10.	STATE BOUNDARY	
11.	QUARRY BATTER	
12.	SURFACE CONTOUR	450

PLATE NO.- XIV

Customer : NORTHERN COALFIELDS LIMITED					
Job Title : Mining Plan for Khadia Expn. OCP (20Mtpa)				Job No.232406141	
Subject : Final Stage Quarry Plan	Activity	Name	Designation	Signature	Date
	Design By	Satyaveer Singh	Manager(Min)		
	Drawn By	Satyaveer Singh	Manager(Min)		
	Checked By	RK Meena	HOD (Mine Plng.)		
	Approved By	Atal Bihari	RD, RI6		
cmpdi	Scale - 1 : 10000				
	Drg.No.-RI-VI/Min/KHD/2023				



LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	LEASEHOLD BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
2.	SUFACE BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
3.	FLOOR BOUNDARY OF TURRA SEAM (16Mtpa)	
4.	FLOOR CONTOURS OF TURRA SEAM	
5.	EXISTING TURRA SEAM POSITION AS ON 01.04.2023	
6.	STATE BOUNDARY	
7.	QUARRY BATTER	
8.	SURFACE CONTOUR	450
9.	PLANTATION	

PLATE NO.- XX

Customer : NORTHERN COALFIELDS LIMITED					
Job Title : Mining Plan for Khadia OCP Expn. (20 Mtpa)				Job No.232406141	
Subject : Post Mining Land Use Plan	Activity	Name	Designation	Signature	Date
	Design By	Satyaveer Singh	Manager(Min)		
	Drawn By	Satyaveer Singh	Manager(Min)		
	Checked By	RK Meena	HOD (Mine Plng)		
	Approved By	Atal Bihari	RD, RI6		
cmpdi	Scale - 1 : 10000				
	Drg.No.-RI-VI/Min/KHD/2023				

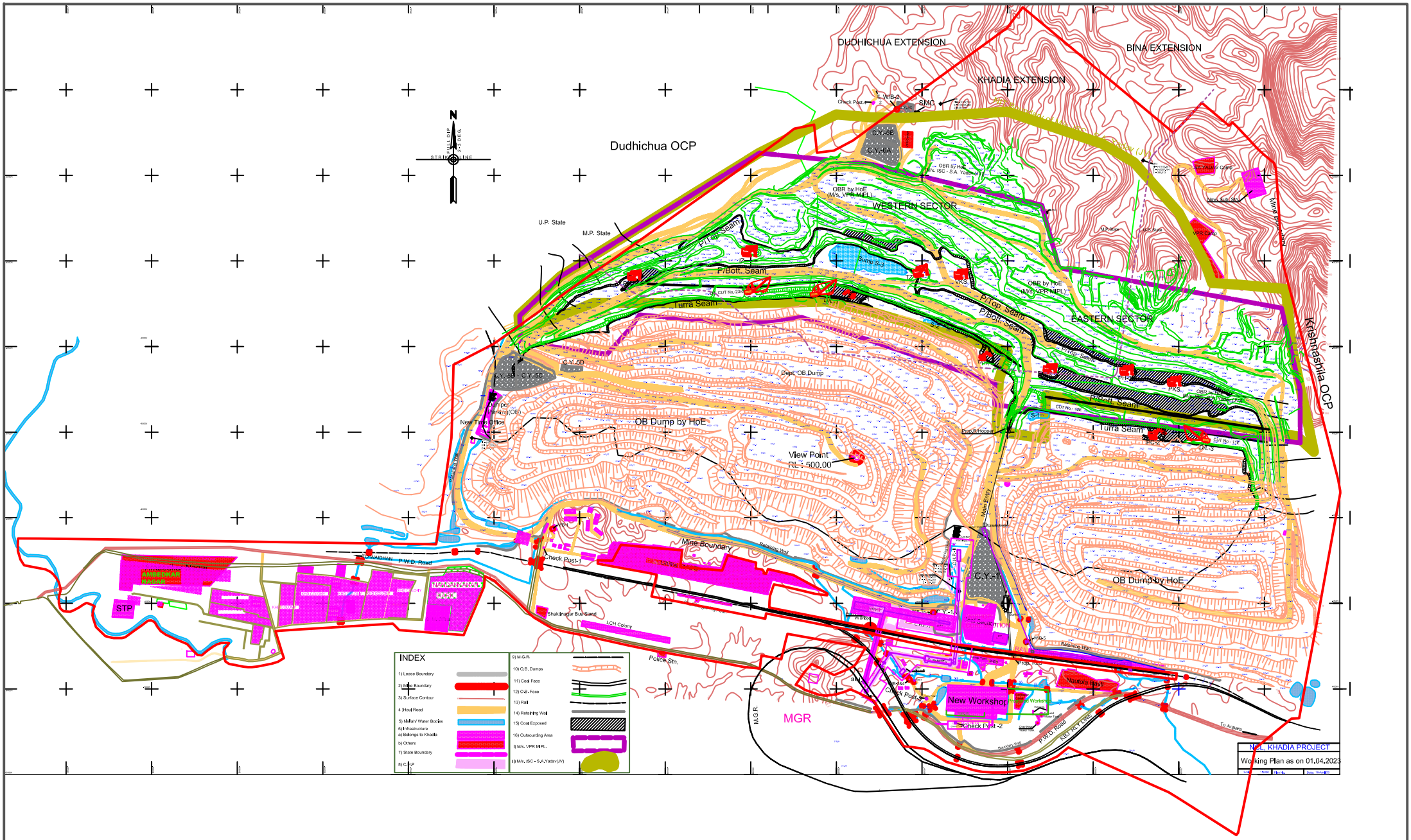
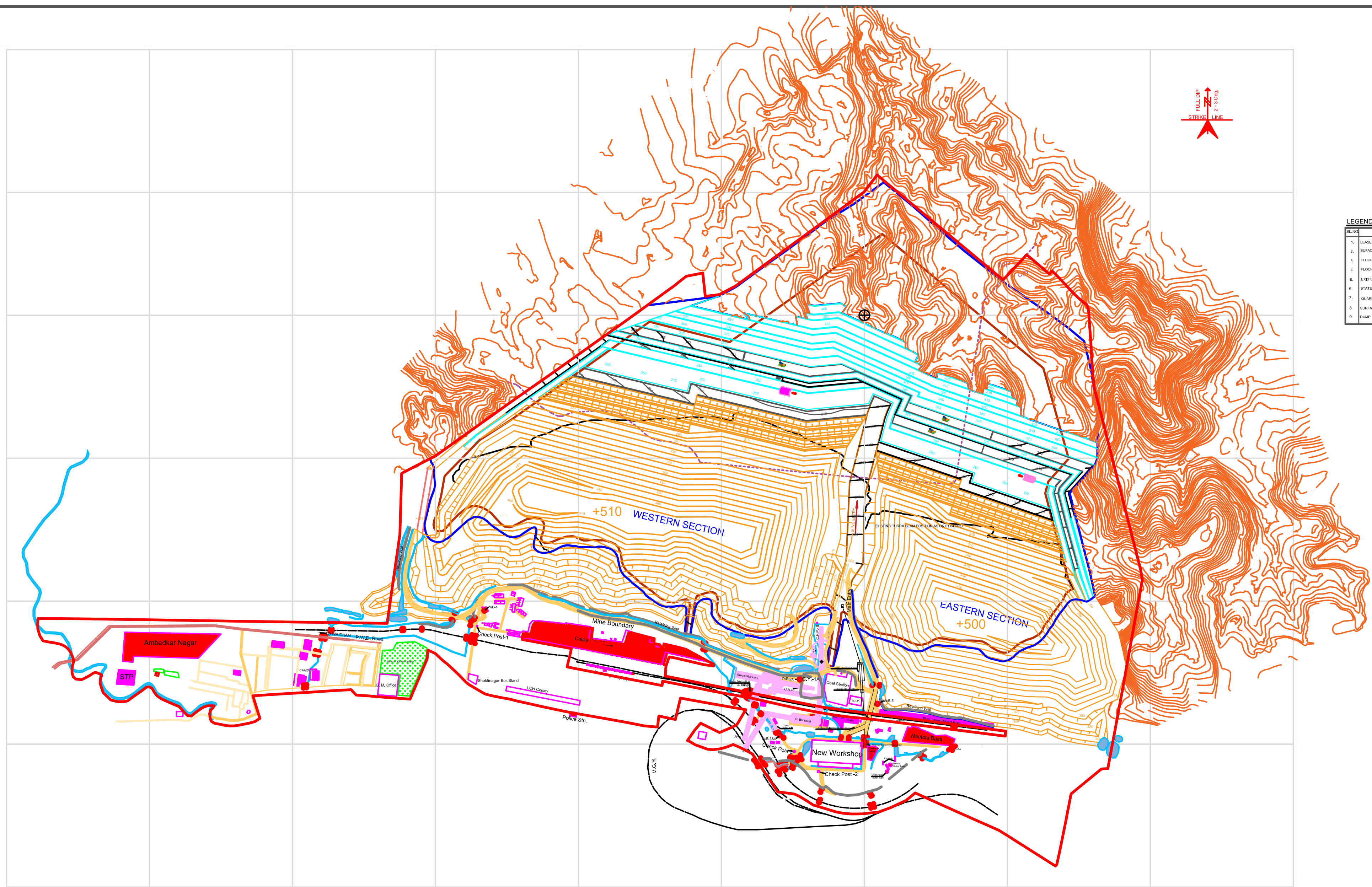


PLATE NO.- XXI (a)

Customer :	NORTHERN COALFIELDS LIMITED
Job Title :	Mining Plan for Khadia Expn. OCP (20 Mtpa)
Job No.	232406141
Subject :	PLAN SHOWING EXISTING MINING OPERATION AS ON 1.04.2023 (AS PROVIDED BY PROJECT PROPONENT)
Scale :	1: 10000
Drg.No.	RI-MIN/KHD/2023

Activity	Name	Designation	Signature	Date
Drafted By	Sajveer Singh	Manager(Min)		
Drawn By	Sajveer Singh	Manager(Min)		
Checked By	Ajit Mishra	HOD (MP& PR)		
Approved By	Anil Ghosh	GM		

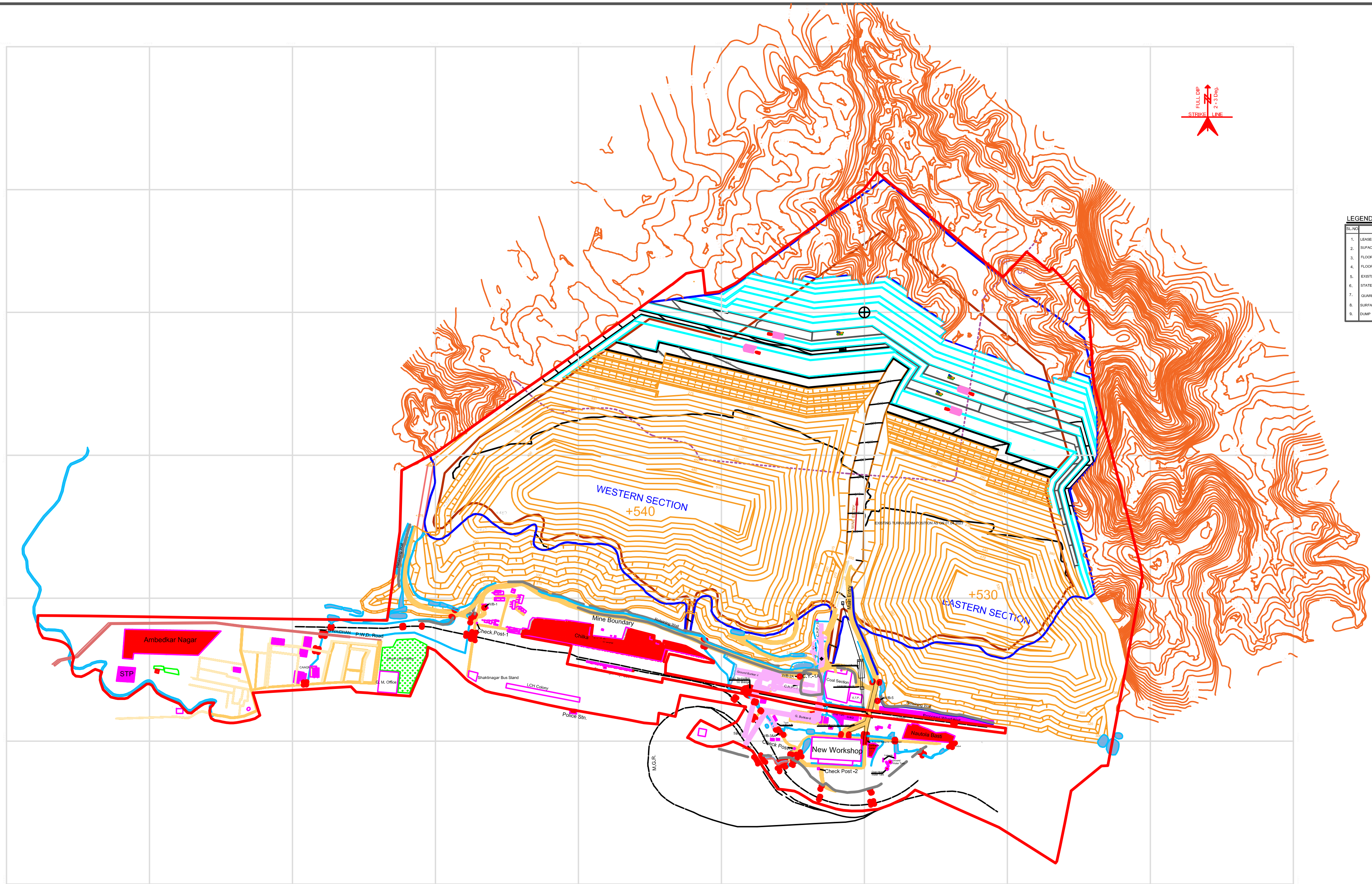


LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	LEASEHOLD BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
2.	SUFACE BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
3.	FLOOR BOUNDARY OF TURRA SEAM (16Mtpa)	
4.	FLOOR CONTOURS OF COAL SEAM	220
5.	EXISTING TURRA SEAM POSITION AS ON 01.04.2023	
6.	STATE BOUNDARY	
7.	QUARRY BATTER	
8.	SURFACE CONTOUR	450
9.	DUMP	

PLATE NO.- XXI (c)

Customer : NORTHERN COALFIELDS LIMITED					
Job Title : Mining Plan for Khadia Expn. OCP (20Mtpa)				Job No. 232406141	
Subject : PLAN SHOWING 3rd YEAR STAGE OF MINING OPERATION WITH DUMP PLAN	Activity	Name	Designation	Signature	Date
	Design By	Satyaveer Singh	Manager(Min)		
	Drawn By	Satyaveer Singh	Manager(Min)		
	Checked By	RK Meena	HOD (Mine Plng.)		
	Approved By	Atal Bihari	RD, RI6		
cmpdi	Scale - 1 : 10000				
	Drg.No.-RI-VI/Min/KHD/2023				



LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	LEASEHOLD BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
2.	SUFACE BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
3.	FLOOR BOUNDARY OF TURRA SEAM (16Mtpa)	
4.	FLOOR CONTOURS OF COAL SEAM	220
5.	EXISTING TURRA SEAM POSITION AS ON 01.04.2023	
6.	STATE BOUNDARY	
7.	QUARRY BATTER	
8.	SURFACE CONTOUR	450
9.	DUMP	

PLATE NO.- XXI (d)

Customer : NORTHERN COALFIELDS LIMITED					
Job Title : Mining Plan for Khadia Expn. OCP (20Mtpa)				Job No. 232406141	
Subject :	Activity	Name	Designation	Signature	Date
PLAN SHOWING 5th YEAR STAGE OF	Design By	Satyaveer Singh	Manager(Min)		
MINING OPERATION WITH DUMP PLAN	Drawn By	Satyaveer Singh	Manager(Min)		
	Checked By	RK Meena	HOD (Mine Plng.)		
	Approved By	Atal Bihari	RD, RI6		
cmpdi	Scale - 1 : 10000				
	Drg.No.-RI-VI/Min/KHD/2023				

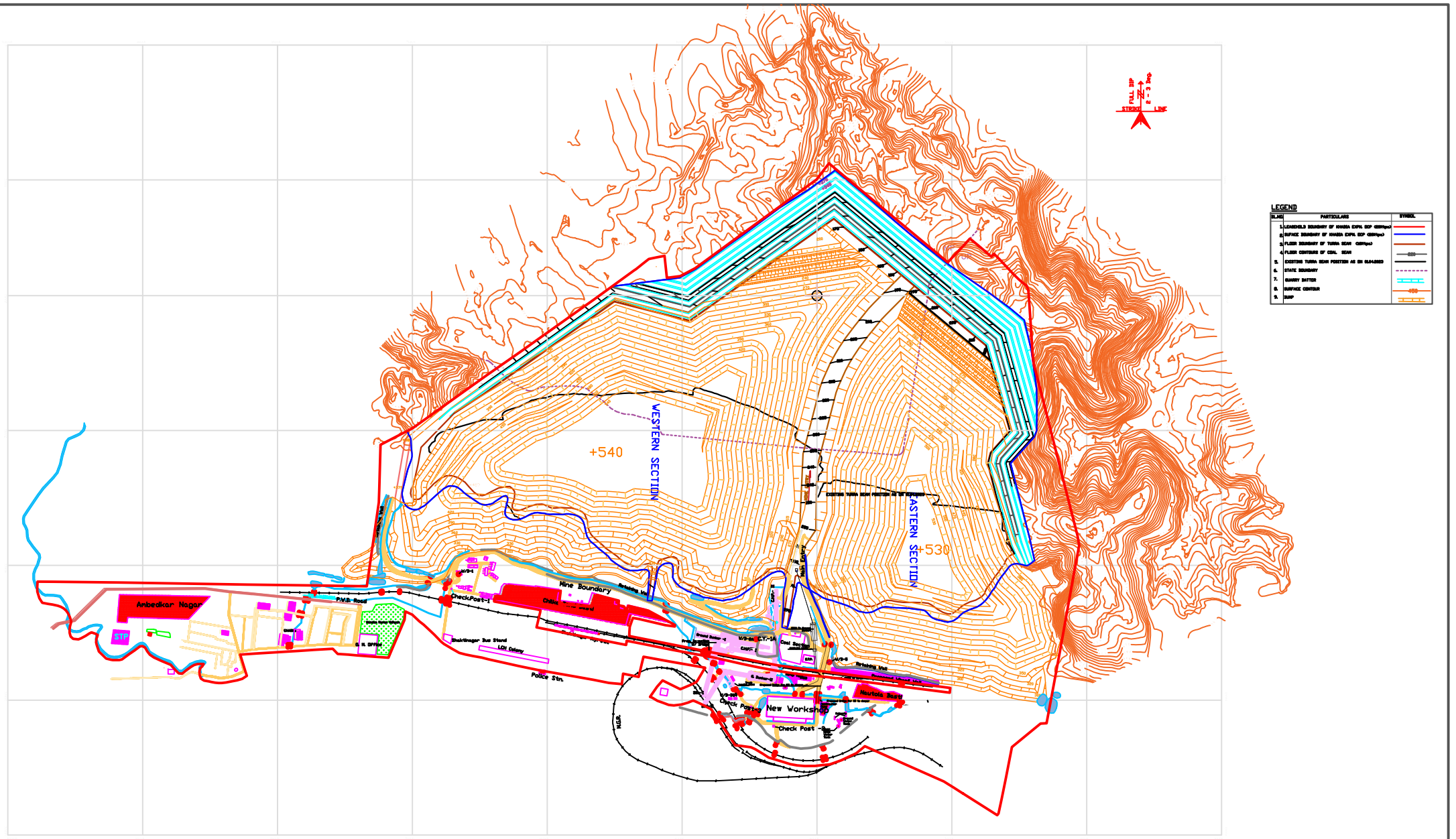


PLATE NO.- XXI(e)

Customer: NORTHERN COALFIELDS LIMITED

Job Title : Mining Plan For KhadiaExpn. DCP (20 Mtpa)

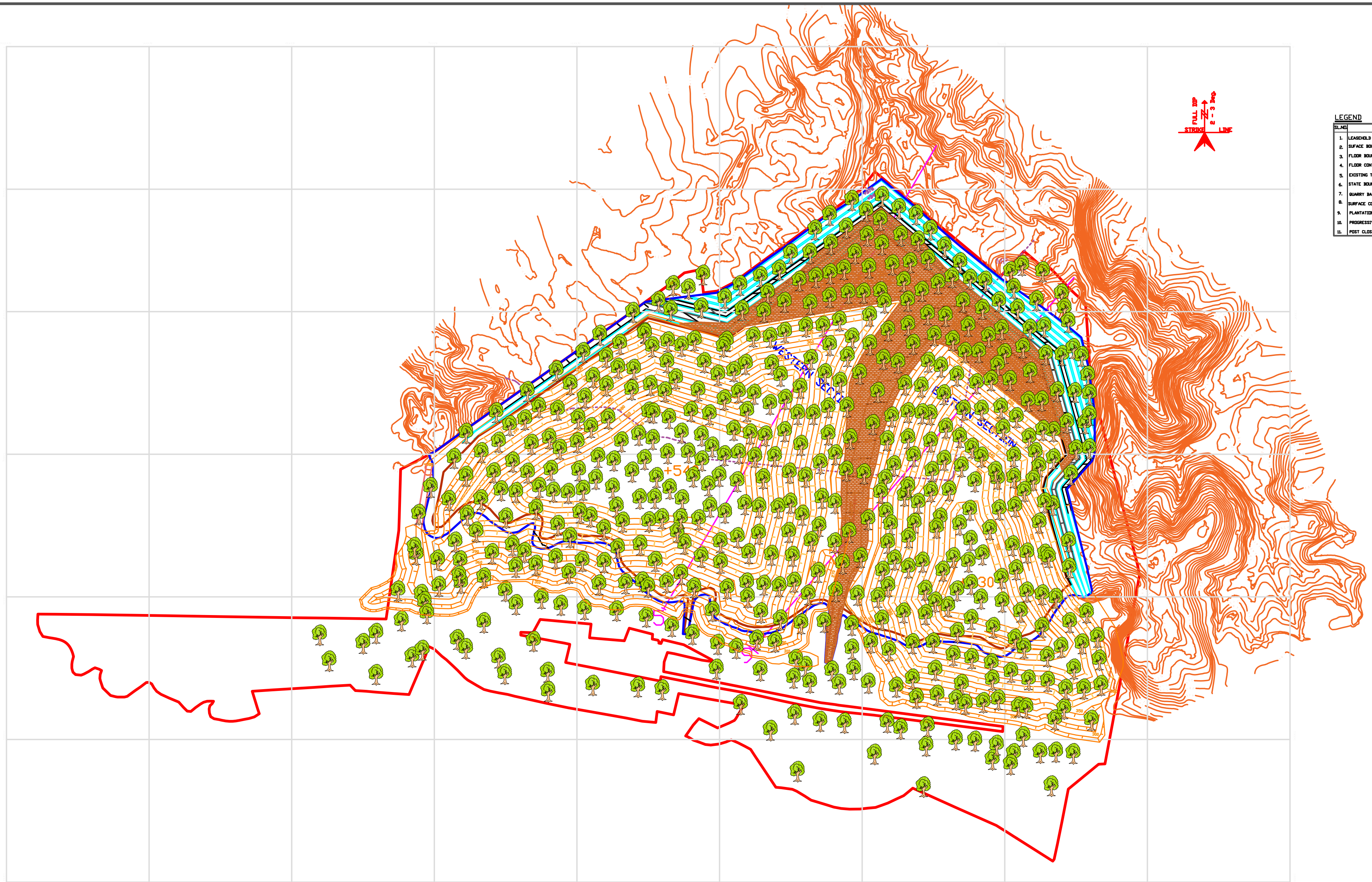
Job No.

Subject : PLAN SHOWING FINAL STAGE OF MINING OPERATION WITH DUMP PLAN

Activity	Name	Designation	Signature	Date
Design By				
Drawn By				
Checked By				
Approved By				

Scale - 1 : 10000

Drg.No.-KI-VI/Mn/KKD/2023



LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	LEASEHOLD BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
2.	SUFACE BOUNDARY OF KHADIA EXPN. OCP (20Mtpa)	
3.	FLOOR BOUNDARY OF TURRA SEAM (20 Mtpa)	
4.	FLOOR CONTOURS OF COAL SEAM	
5.	EXISTING TURRA SEAM POSITION AS ON 01.04.2023	
6.	STATE BOUNDARY	
7.	QUARRY BATTER	
8.	SURFACE CONTOUR	450
9.	PLANTATION	
10.	PROGRESSIVE BACKFILLING	
11.	POST CLOSURE BACKFILLING	

PLATE NO.- XXII (a)

Customer : NORTHERN COALFIELDS LIMITED

Job Title : Mining Plan for Khadia Expn. OCP (20 Mtpa)

Job No. 232406141

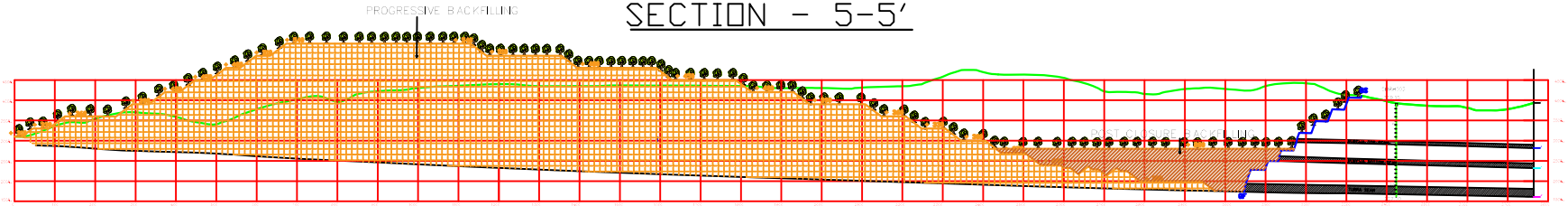
Subject : Post Mining Land Reclamation Plan

Activity	Name	Designation	Signature	Date
Design By	Satyaveer Singh	Manager(Min)		
Drawn By	Satyaveer Singh	Manager(Min)		
Checked By	RK Meena	HOD (Mine Plng)		
Approved By	Atal Bihari	RD, RI6		

Scale - 1 : 10000

Drg.No.-RI-VI/Min/KHD/2023

SECTION - 5-5'



LEGEND

SL.NO.	PARTICULARS	SYMBOL
1.	BOREHOLE NO.	SNK012
2.	COAL SEAM	
3.	SPOT LEVEL	+ 225
4.	SURFACE	
5.	QUARRY BOUNDARY	
6.	DUMP PROFILE	
7.	PLANTATION	

SECTION - 9-9'

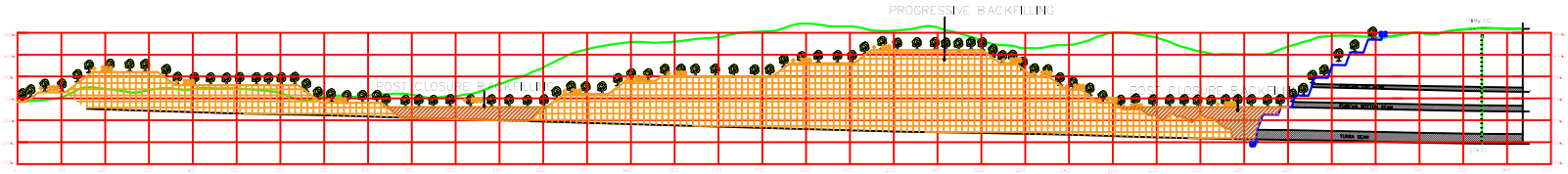


PLATE NO.- XXII(b)

Customer : NORTHERN COALFIELDS LIMITED

Job Title : Mining Plan for Khadia Expn. OCP (20 Mtpa) — Job No.232406141

Subject : Plan Showing The Quarry Cross-Sections along 5-5' & 9-9'

Activity	Name	Designation	Signature	Date
Design By	Satyaveer Singh	Manager(Min)		
Drawn By	Satyaveer Singh	Manager(Min)		
Checked By	RK Meena	HOD (Mine Plng.)		
Approved By	Atal Bihari	RD, R16		

cmpdi — A Miniratna Company

Scale - 1 : 10000

Drg.No.-RI-VI/Min/KHD/2023