

Application No.  
Sahapur EastMP[MP036, MP043]/APP00339/2025  
Coal Controller Organization  
Ministry of Coal  
Government of India

Scope Minar, New Delhi  
2025-11-20

To  
Mineware Advisors Private Limited

Address:

Mineware Advisors Private Limited State- Madhya Pradesh District- [Shahdol, Umaria]

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Contact: 9332023335

Fax:

Subject: Approval of Mining Plan and Mine Closure Plan ( first Modification ) for Sahapur East of M/s Mineware Advisors Private Limited

Sir,

I am directed to refer to your application for approval of Mining Plan and Mine Closure Plan for Sahapur East located in SOHAGPUR Submitted through application number APP00339 of Single Window Portal of Ministry of Coal for approval of the Central Government under Rule 22E of MCR 1960 for a rated capacity of 0.70Mtpa Peak capacity 1.0500 Mtpa, Lease area 659Ha and Project area 659 Ha has been considered and approval of the Central Government there on is hereby conveyed under Section 5(2)(b) of the Mines & Minerals (Development & Regulation) Act 1957 subject to the following conditions:

1. The project proponent should ensure implementation of all observations made by Technical Committee during actual operation.
2. Project Proponent shall take all necessary precautions regarding safety of mine workings and persons deployed therein and shall adhere to all statutory norms/guidelines with regard to safety.
3. Mining lease of this block shall not encroach into any other adjacent coal block.
4. The cost of abandonment for carrying out the closure activities envisaged in the Mine closure plan is indicative. The actual cost for carrying out the activities at the time of final closure may be higher. The actual cost of abandonment will have to be borne by the project proponent for carrying out the closure activities.
5. The approval of the Mining Plan (Including Mine Closure Plan) is without prejudice to the requirement of approvals from competent /prescribed authority under the relevant rules/ regulations etc.
6. Approval of Mining plan is technical in nature, which is granted with a view to facilitating further developmental activities by the allocatee. This approval will have no effect on the penalty provisions of the agreement in case of non achievement of milestones.
7. Monitoring of milestone for development of mine will be as per efficiency parameters in CBDPA/CMDPA (if applicable) and appropriation of PBG will be done in case of failure/delay in compliance with the timelines of CBDPA/CMDPA (if applicable).
8. Evacuation route/ roads/ water bodies/other surface features/infrastructure outside the Geological Block/Project Area shall not be part of the Mining Plan
9. Project Proponent should return the forest land after completion of mining activity as per the land surrender schedule submitted to Central Government during diversion of forest land.
10. Name of manufacturer, make of equipment/HEMM, model name suggesting the name of the manufacturer, if mentioned anywhere in the mining plan, has not been considered for approval.
11. R and R shall be done according to existing laws. If it has been mentioned anywhere in the mining plan, it has not been considered for approval.
12. Optimum utilization of reserves shall be done during mining operations.

13. Provisions of Reg. 108 (5), CMR-2017 shall be adhered to at all stages.

14. Different provisions of Guidelines for preparation of Mining Plan and Mine Closure Plan for Coal and Lignite blocks 2025 of MoC dated 31.01.2025 including that of reduction of emissions by at least 10 percent of annual generation by the 10th year through renewable sources wherever practicable, utilization of minimum 25 of the five yearly escrow amount deposited for community development and livelihood related activities etc. shall be adhered to.

15. There is difference in the allotted block area and the geological block area. Further exploratory study shall be conducted, if required, before mining in the area and a geological report for the allocated block shall be prepared not later than five years of grant of mine opening permission. In case of any difference from the instant mining plan an approved revised mining plan shall be submitted before mining in such area(s) but not later than five and a half years of grant of mine opening permission.

16. Seam IIIB has not been proposed to be mined due to less parting with Seam IIIA seam. A scientific study for exploring a method of mining shall be done during mining operations. In case of favourable conditions liquidation plan of such reserves shall also be proposed before mining in such areas but not later than five and a half years of grant of mine opening permission.

17. Mining has been proposed beneath surface features. Proper scientific study shall be conducted for optimum extraction of reserves ensuring safety.

18. Efforts shall be made to preserve reserves which has not been proposed to be mined at present. In future, in improvement in technology and favourable market conditions efforts shall be made to liquidate the same.

**You are requested to download the copy of the mining plan and mine closure plan duly signed by the competent authority for needful actions and submissions at your end.**

Yours Faithfully

(Akash Shivhare)

Dy. Asstt. Coal Controller

Coal Controller Organisation, Ministry of Coal

Copy to:

1.Under Secretary,NA section,MoC

2.Under Secretary,NA section,MoC

**Mine Plan and Mine Closure Plan**  
(First Modification/Revision)  
**For**

**Sahapur East**  
SOHAGPUR  
(Under Rule 22E of MCR 1960)  
Shahdol  
Madhya Pradesh

Project area 659 ha  
**Rated Capacity 0.70 MTPA**  
**Peak Capacity -1.0500MTPA**

Prepared By  
**Min Mec Consultancy Pvt Ltd**

Contact No. - 9811030881  
Email ID - mining@minmec.com

APPLICANT  
**Mineware Advisors Private Limited**  
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4th Floor, Sai Complex, Salt Lake, Sector-III,  
Bidhan Nagar, North 24 Parganas, West Bengal,  
India, 700098

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# CHECKLIST

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Annexure	<p>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</p> <p>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</p> <p>(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/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</p>	
Annexure	Approval of the Company Board	
Annexure	Copy of earlier approval of mining plan.	
Annexure	Plan / chart showing schedule of Implementation of Mine closure activities (progressive and final closure) with duration of important activities	
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Plates	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	Cadastralplan showing approved block boundary vis-A-vis proposed/existing mining lease & Mine boundary superimposed over it in distinct color, showing land use and infrastructure etc.	
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Plates	Layout of the panel for each system (like Longwall, Continuous Miner, Bord & Pillar, road header etc.) should be given (in case of UG Mines)	
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## Chapter-1: Project Information

### 1.1 Introduction

S.No	Parameters	Details
1.1.1	Name of Coal / Lignite mine or block	Sahapur East
1.1.2	Name of Coalfield/ Lignite field .	SOHAGPUR
1.1.3	The base date of Mining Plan.	16/06/2025
1.1.4	Linked End Use Plant.	Sale of coal, including sale to Affiliates and related parties, utilization of coal for any purpose including but not limited to captive consumption, Coal Gasification, Coal Liquefaction and export of coal.
1.1.5	Distance of End use plant from the pit head of the project in "km"	No specific end users
1.1.6	Mode of Coal Transport/Despatch	All the coal produced from the mine will be directly transported to plants by Rail or Road and the coal will be transported by road to nearest railway stations are Singpur and Bandhwabara located approximately Six km and Four km from the block respectively from where it will be transported by railways

### 1.2 Location, Topography & Communication:

S.No	Parameters	Details
1.2.1	Location of coal mine/block.	Villages - Khamariya Khurd, Khamariya Kalan, Kathotiya, Chuniya, Kholhad and Senduri. Tehsil/ Taluka - Sohagpur Pali. District - Shahdol Umariya. State - Madhya Pradesh. It is covered by the Survey of India Toposheet No. 64E/7 64E/8 (RF-1 in 50000).
	State(s)	Madhya Pradesh
	District(s)	Shahdol
1.2.2	Communication: PWD roads, railway lines, Air	Road link - National Highway No. 78 passes through Shahdol. The block has an all-weather road connection to Shahdol. Rail link - The nearest railway stations are Singpur and Bandhwabara, located approximately 6.5 km and 4.0 km from the block, respectively. Air link - Jabalpur is the nearest airport, about 300 km from the area, with good air connectivity to New Delhi.
1.2.3	Availability of power supply & water etc.	Power supply - There is no power line passing through the project area. The area is expected to be connected to the regional power grid, with provisions for dedicated feeders. Temporary power may be arranged via generators. The terrain is suitable for laying transmission lines. Water supply - There is no potential water source within the project area except Ghinachunia nala passing through the western part of the project area. The villages within the block draw water from the tube wells. Water availability is moderate, supported by the Ghinachunia Nala and scattered ponds. With 86 percent of annual rainfall during monsoon, water management will include reservoir creation, possibly groundwater use for consistent supply, and etc. as per statutory norms.

1.2.4	Prominent physiographic features, drainage pattern, natural water courses, rainfall data, highest flood level.	Prominent physiographic features are - Topography - The landform in Sohagpur Coalfield is controlled by the lithological set up of the different formations. The Talchirs have formed low-lying plains with an average altitude of 450 m to 500 m above MSL. The area to the north rises to an elevation of over 1000m with successive escarpments. The Barakar strata with their undulatory to low dips have given rise to a feature of less rolling topography. However, the Barakar sandstones stand out prominently against the surrounding plains, wherever they are capped by basic sills-dyke. To the east of Singara, one such prominent ridge is noted. The dolerite, a common feature of this coalfield, forms a rugged to hilly topography. In contrast to the featureless topography of the areas where Lower Gondwana strata occurs, the Upper Gondwana rocks form prominent ridges. They constitute a prominent plateau to the north. This plateau joins with the Sonhat plateau in the east. In Sahapur East Block, the maximum elevation is around 490 m. observed in the south-west part near Bh No. MSSE-4 and minimum elevation is 470 m. as observed in the north-east corner of the block for Bh No. MSSE-19. Drainage pattern - The Son River (17.23 km on NE side) with a north-westerly flow is the main drainage channel of Sohagpur coalfield. Several streams originate in the high Trappean region in the south and join the son river. These north flowing streams include Nargara, Sarpa, Bagiha, Bakan, Suthna, Tipon etc. The Kewai river originating in the Supra Barakar plateau of the Sonhat coalfield, forms the main drainage in the eastern part of the coalfield. The easternmost part of the coal field is also drained by the Jhiria and Kulharia nalas, which ultimately discharge into the Hasdeo river, which flows close by. The Sahapur East Block is marked by dendritic pattern of drainage system formed by north-ward flowing nala namely Ghinachunia, this is the only drainage system available within the block. A number of small ponds are found within the block. Climate and Rainfall - The area is characterized by tropical climate with well-defined Summer from April to June, monsoon from July to September and winter from November to February. May is the hottest month when the temperature rises to 46C. During winter the temperature falls as low as 7 degree C to 8-degree C. The relative humidity during monsoon ranges from 76 to 90 percent and in summer 26 to 42 percent. The maximum rainfall recorded was 1894.10 mm (1994). Out of which 1756.70 mm was monsoonal rainfall (June to September). However, the average rainfall is about 1200 mm. Several small ponds are also scattered throughout the area. The average annual rainfall is approximately 1,055.2 mm, with monsoons (June to September) accounting for about 86 of the precipitation. The highest 24-hour rainfall recorded was 365.3 mm in August 1923, and the highest monthly rainfall was 1,036.1 mm in the same month. Soil in the region is mostly clayey loam with patches of sandy loam, and surface drainage generally follows natural valleys toward the northeast. High Flood Level - The HFL of the nala at the point where the natural drainage channel, draining the watershed, is 447m near BH No. MSSE-46.
1.2.5	Important surface features within the project area and major diversion or shifting involved .	6 small villages - Khamariya Khurd, Khamariya Kalan, Kathotiya, Chuniya, Kholhad, and Senduri - are located within the block, with no relocation required and minimal social impact due to the absence of dense or urban settlements. The Shahdol-Khamaria Road crosses the block diagonally from northeast to southwest. Although there is no railway line inside the block, nearby stations Singpur and Bandhwabara, located about 6.5 km and 4.0 km respectively, provide rail connectivity for coal transport, with provisions for sidings or transport corridors possible during planning. There are no sites of historical, tourist, or religious importance within the core zone. The drainage system is characterized by the north-flowing Ghinachunia Nala and several small ponds scattered throughout the block.

### 1.3 Details of the Allotment Agreement:

S.No	Parameters	Details
1.3.1	Name of the Allottee	Mineware Advisors Private Limited
1.3.2	Details of allotment/ vesting order.	NA-104/12/2025-NA
1.3.3(1)	Regd. Office	FR-07, Shilpangan, Block-LB, Plot-1, CF Building, 4th Floor, Sai Complex, Salt Lake, Sector-III, Bidhan Nagar, North 24 Parganas, West Bengal, India, 700098
1.3.3(2)	Principle Place Of Business	State - West Bengal and Madhya Pradesh, Country - India
1.3.4	Name of the Previous Allottee of the Block.	Chowgule and Company Private Ltd
1.3.5	Date of mining opening permission granted by CCO	28/08/2029
1.3.6	Rated capacity as per CMDPA	0.70
1.3.7	Production Schedule as per opening permission (meeting provisions of CMDPA, if any) .	Y1 - 0.00 MTPA, Y2 - 0.05 MTPA, Y3 - 0.49 MTPA, Y4 to Y22 - 0.70 MTPA, Y-23 - 0.69 MTPA and Y-24 to 25 - 0.70 MTPA (Details explained in Annexure-10)
1.3.8	nd Use of Coal/Lignite as per allotment order if any	Sale of coal, including sale to Affiliates and related parties, utilization of coal for any purpose including but not limited to captive consumption, Coal Gasification, Coal Liquefaction and export of coal.
1.3.9	Cardinal points coordinates (WGS84) of the Block Boundary	Cardinal Points files data shown below

### Cardinal Points co-ordinates of the Block boundary :

SAHAPUR EAST			
Cardinal Points from Vesting Order vide NA-104/12/2025-NA DATED 29.05.2025			
	Station Name	Longitude	Latitude
	P1	81°18'51.693" E	23°14'19.752" N
	P2	81°18'48.162" E	23°14'19.745" N
	P3	81°18'48.123" E	23°14'23.071" N

SAHAPUR EAST			
	P4	81°18'48.085" E	23°14'26.397" N
	P5	81°18'48.047" E	23°14'29.724" N
	P6	81°18'48.008" E	23°14'33.050" N
	P7	81°18'47.970" E	23°14'36.376" N
	P8	81°18'47.931" E	23°14'39.702" N
	P9	81°18'47.893" E	23°14'43.028" N
	P10	81°18'47.855" E	23°14'46.354" N
	P11	81°18'47.816" E	23°14'49.680" N
	P12	81°18'47.778" E	23°14'53.006" N
	P13	81°18'47.739" E	23°14'56.332" N
	P14	81°18'47.701" E	23°14'59.658" N
	P15	81°18'47.662" E	23°15'2.984" N
	P16	81°18'47.624" E	23°15'6.310" N
	P17	81°18'47.586" E	23°15'9.636" N
	P18	81°18'47.547" E	23°15'12.963" N
	P19	81°18'47.509" E	23°15'16.289" N
	P20	81°18'47.470" E	23°15'19.615" N
	P21	81°18'47.432" E	23°15'22.941" N
	P22	81°18'47.393" E	23°15'26.267" N
	P23	81°18'47.355" E	23°15'29.593" N
	P24	81°18'47.317" E	23°15'32.919" N
	P25	81°18'50.911" E	23°15'32.932" N
	P26	81°18'54.438" E	23°15'32.951" N
	P27	81°18'57.965" E	23°15'32.971" N
	P28	81°19'1.491" E	23°15'32.990" N
	P29	81°19'5.018" E	23°15'33.009" N
	P30	81°19'8.544" E	23°15'33.028" N
	P31	81°19'12.071" E	23°15'33.048" N
	P32	81°19'15.598" E	23°15'33.067" N
	P33	81°19'19.124" E	23°15'33.086" N
	P34	81°19'22.651" E	23°15'33.105" N
	P35	81°19'26.177" E	23°15'33.125" N
	P36	81°19'29.704" E	23°15'33.144" N
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	P39	81°19'40.284" E	23°15'33.201" N
	P40	81°19'43.810" E	23°15'33.220" N
	P41	81°19'47.337" E	23°15'33.239" N
	P42	81°19'50.864" E	23°15'33.258" N
	P43	81°19'54.390" E	23°15'33.277" N
	P44	81°19'57.917" E	23°15'33.296" N
	P45	81°20'1.444" E	23°15'33.315" N
	P46	81°20'4.970" E	23°15'33.334" N
	P47	81°20'8.497" E	23°15'33.353" N
	P48	81°20'12.023" E	23°15'33.372" N
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	P50	81°20'19.077" E	23°15'33.410" N
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	P53	81°20'29.656" E	23°15'33.466" N
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	P56	81°20'30.360" E	23°15'26.718" N
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	P59	81°20'30.421" E	23°15'16.590" N
	P60	81°20'30.441" E	23°15'13.214" N
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SAHAPUR EAST			
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	P105	81°18'51.693" E	23°14'19.752" N

#### 1.4 Details of the Previous Approval of Mining Plan:

S.No	Parameters	Details		
1.4.1	Whether any mining plan has been previously approved	Yes		
1.4.2	Title of the mining plan	Mining Plan and Mine Closure Plan for Sahapur East Coal Block, Sohagpur Coalfield, District Shahdol and Umaria, State Madhya Pradesh		
1.4.3	Base date			
1.4.4	Submitted By	National Mineral Development Corporation		
1.4.5	Approval reference with date:	27/12/2012		
1.4.6	Condition, if any, and Compliance	S.No.	Conditions	Compliance Status
		1	The mining company shall take all necessary precautions regarding safety of the mine workings persons deployed therein	Will be Complied
		2	Mining Lease to be acquired shall not encroach in to any other coal block.	Will be Complied
		3	The approval of the mining plan is without prejudice to the requirement of approvals from competent/ prescribed authority under the relevant rules/ regulations etc.	Noted
1.4.7	Scheduled year of start of production	2014-15		
1.4.8	Proposed year of achieving the targeted production	3rd Year (2016-17)		
1.4.9	Date of actual commencement of mining operations, if operations already started			
1.4.10	Likely date of mining operations, if operations not yet started & reasons for non-commencement of operations	Non Operational		
		The previous ML was canceled by the judgement of the Honorable Supreme Court in August 2014.		

1.4.12	Statutory obligations vis-à-vis compliance status in a tabular form	S.No	Clearance Type (Mining Plan, Mining Lease Environment, Forest, CTO etc)	Conditions	Compliance Status
		1	Approval of Mining Plan Mine Closure Plan	Annexure-4	Refer para one point four point six above
1.4.13	Reasons for difference between the planned and actual production levels	The allotment to the previous allottee of the coal block was canceled by the judgment passed in an order of Honorable Supreme Court of India in August 2014. There is no production from the Mine at all till now.			

#### 1.5 PARAMETERS OF APPROVED MINING PLAN VIS-A-VIS PROPOSED MINING PLAN :

S.No	Block Area	Approved Mining Plan			Proposed Mining Plan		
1.5.1	Allocated Block Area in "Ha"	693			659.0000		
1.5.2	Allocated Block Area Projectised "Ha"	693			659		
1.5.3	Proposed Mining Lease area "Ha" (Besides, Mineralised zone Lease area may encompass other areas under the definition of a mine)	693			659.0000		
1.5.4	Project Area "Ha"	693			659.0000		
1.5.5	Life of the Project "Yrs" .	33			40		
1.5.6	Minimum and Maximum Depth of working "m"	Minimum - 50 m and Maximum - 200 m			Minimum-39.3m and Maximum-194.15 m		
1.5.7	Geological Block "Ha"	693			659		
1.5.8	Production Target "MTPA"	0.70			0.7000		
1.5.9	Seams Available "As per GR"	Seam IV, Seam L2, Seam IIIA, Seam IIIB, Seam IIIL, Seam II, Seam I, Seam L1			Seam-IV,Seam-L2,Seam-IIIA,Seam-IIIB,Seam-IIIL,Seam-II,Seam-I,Seam-L1		
1.5.10	Seams not considered for Mining with Reasons	S. No	Seams	Reason	S. No	Seams	Reason
		1	Seam IV	Considered	1	Seam-IV	Considered
		2	Seam L2	Considered	2	Seam-L2	Considered
		3	Seam IIIA	Considered	3	Seam-IIIA	Considered
		4	Seam IIIB	Considered	4	Seam-IIIB	Not Considered. Maximum area <1.2 m and also Contiguous with above Seam-IIIA
		5	Seam IIIL	Not Considered. Thickness <1.2 m	5	Seam-IIIL	Not Considered. Thickness <1.2 m
		6	Seam II	Considered	6	Seam-II	Considered
		7	Seam I	Not Considered. Thickness <1.2 m	7	Seam-I	Not Considered. Thickness <1.2 m
		8	Seam L1	Not Considered. Thickness <1.2 m	8	Seam-L1	Not Considered. Thickness <1.2 m
1.5.11	Gross Geological Reserve "Mt" (as per GR,)	70			70		
1.5.12	Net Geological Reserve "Mt" (as per GR)	63.363			63.3630		
1.5.13	Blocked Reserve "Mt"	23.941			24.8161		
1.5.14	Minable Reserve "Mt"	39.422			38.5470		
1.5.15	Extractable Reserve "Mt"	22.397			26.3150		
1.5.16	% of Extraction/ recovery	35.35%			41.5310%		
1.5.17	Production till date (till the base date of the proposed Mining Plan) Reserve " Mt"	0			0.0000		
1.5.18	Balance Extractable Reserve "Mt"	22.397			26.3200		
1.5.19	Average Grade	4030			5292.2500		
1.5.20	OB in Mm3	0			0.0000		
1.5.21	SR Mm3/t	0			0.0000		
1.5.22	Mining Technology	Semi Mechanised UG mining with SDL and CM			Fully Mechanised Underground Mining with two nos of Continuous Miner Package		
1.5.23	Coal Beneficiation envisaged						
1.5.24	Handling of Rejects	Not envisaged			Not envisaged		
1.5.25	Land use pattern " Ha"						
i	Excavation Area	0			0.0000		
ii	Top Soil Dump Area	0			0.5000		
iii	External Dump Area	0.5			0.6000		
iv	Safety Zone	0			0.3000		
v	Other Use	2.60			1.2000		
vi	Infrastructure area	13.02			8.4000		
vii	Green Belt	0			5.9000		
viii	Undisturbed Area	676.88			641.9300		
	Total	693.0000			658.8300		

1.5.26	Reasons for revision	In-line with Cl. 2.9 of Mining Plan Guidelines for Coal and Lignite Mine dated 31/01/2025 - (i) Change in Block area / Project area / Proposed ML area. (ii) Changes in location and type of infrastructure i.e. mine opening, location of shaft and incline for underground working, office premises within the project area, and subsequent related changes. (iii) Increase in production and also the relevant changes required for the production enhancement including the stage plans etc. (iv) Change in sequence of extraction (of different seams) in underground mining. (v) Change in technology within the method of mining for more mechanization.
1.6	<b>Sustainability(Indicative)</b>	
1.6.1	No. of Project Affected People (PAPs)	This Mine is considered as Underground Mine. Therefore, not applicable.
1.6.2	No. of Working-aged persons	None
1.6.3	No. of Skilled/Semi Skilled /Unskilled persons profession wise, gender wise, age wise and location wise	Total Approx. 400-500
1.6.4	No. of persons in Vulnerable Groups (Women, Children, Handicap etc.)	Women - As is where is basis and Children, Handicap, etc. - None
1.6.5	Repurposing of land proposed	An area of 0.20 Ha under the Settling Pond and 8.40 Ha under mine infrastructure will be reclaimed for public or company use after mine closure, in accordance with environmental and regulatory guidelines.
1.6.6	Assessment of possible GHG emissions	This is an UG Mining project, the potential for GHG emissions is relatively low. However, emissions from surface transportation, including diesel-powered vehicles, will be assessed, and appropriate mitigation measures will be implemented as per norms.
1.6.7	Tentative measures to curtail GHG emissions	This is an underground mining project with relatively low GHG emissions. Measures include optimizing diesel vehicle use, using energy-efficient equipment, promoting cleaner fuels, monitoring surface transportation emissions, and developing green belts.
1.6.8	Efforts to achieve net zero, wherever applicable	This underground mining project has relatively low GHG emissions. Strong emphasis will be placed on plantation and green belt development, alongside energy efficiency, cleaner fuels, and use of renewables and carbon offsets where feasible.

APPROVED

**Chapter-2: Exploration, Geology, Seam Sequence, Coal Quality and Reserve**

2.1 Details of the block

S.No	Parameters	Details	
2.1.1	Name of the Geological Report with month and year of preparation	Geological Report on Detailed Exploration for Coal, Sahapur East Coal Block, Sohagpur Coalfield, District: Shahdol and Umaria, Madhya Pradesh. Date: June, 2009	
2.1.2	Name of GR Preparing Agency	Mineral Exploration Corporation Limited	
2.1.3	Particulars of adjacent Ares/blocks: North, South, East, West	North	Sahapur Block
		East	Bicharpur South Block
		South	Block boundary supplied by NMDC. Promotional exploration is in progress by CMPDIL / GSI
		West	Sahapur West Block
2.1.4	Location of the Block	Village - Khamariya Khurd, Khamariya Kalan, Kathotiya, Chuniya, Kholhad and Senduri. Tehsil/ Taluka - Sohagpur (Dist.-Shahdol), Pali (Dist.-Umaria). District - Umaria and Shahdol. State - Madhya Pradesh. The Sahapur East Coal Block falls in the Sohagpur Coalfield and is covered by Survey of India Toposheet No. 64 E/7 and 64 E/8 (R.F. 1 in 50,000).	
	State(s)	Madhya Pradesh	
	District(s)	Umaria	
2.1.5	Area of the Block "Ha"	659	
2.1.6	Area of the geological block projectised in "Ha" (Area of the geological block considered for liquidation of coal resource)	659	
2.1.7	Balance area yet to be projectised "Ha"	NIL	
2.1.8	Likely Geological Resource in the area yet to be projectised "MTPA"	0	
2.1.9	Cardinal Point Co-ordinates of the non- coal/lignite bearing area/ Coal/lignite bearing area within the existing mining lease outside the allotted Geological Coal/Lignite block. (Duly certified in line with Para 2.7 (c) of the Guideline, if fresh mining lease required)	NIL	
	(Duly certified in line with para 1.9 of the Guideline, if fresh minning lease required)	Cardinal Points files data shown below	

2.1.10	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 certificates i) As the State government is the custodian of exploration data under provisions of Rule 16 of MCR 1960, a No Objection Certificate from Mines and Geology Department of concerned State Government (ii) A certificate in proof of the non-existence of coal or lignite in the area beyond the vested or allocated boundary from CMPDIL (iii) In case of existence of coal or lignite, a certificate of technical-viability issued or certified by CMPDIL (iv) In case of Coal bearing area, an undertaking or Affidavit by the project proponent that they will rehandle the OB in a specified time period.	Annexure 2A	Document shown in annexure section.
		Annexure 2B	Document shown in annexure section.
		The Project area, Lease area and geological block area in Ha shall also be envisaged.	The Project area, Lease area and geological block area is 659 Ha (658.83 Ha as per CMPDIL Survey Report, enclosed in Annexure-18)
2.1.11	KML file of the Proposed lease area, Project Area and geological block.	File attached in Plates section below.	
2.1.12	Whether the proposed project area is confined within the allotted block boundary/existing mining lease, if not, the reason for deviation from allotted block boundary, may be given.	Yes, within the vested Block Boundary.	
2.1.13	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	
2.1.14	Type of the Project./Year of Starting.	Underground Project - under implementation / 2029	

**(Duly certified in line with para 1.9 of the Guideline, if fresh minning lease required) :**

SAHAPUR EAST			
	Cardinal Points from Vesting Order vide NA-104/12/2025-NA DATED 29.05.2025		
	Station Name	Longitude	Latitude
	P1	81°18'51.693" E	23°14'19.752" N
	P2	81°18'48.162" E	23°14'19.745" N
	P3	81°18'48.123" E	23°14'23.071" N
	P4	81°18'48.085" E	23°14'26.397" N
	P5	81°18'48.047" E	23°14'29.724" N
	P6	81°18'48.008" E	23°14'33.050" N
	P7	81°18'47.970" E	23°14'36.376" N
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SAHAPUR EAST			
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P15	81°18'47.662" E	23°15'2.984" N	
P16	81°18'47.624" E	23°15'6.310" N	
P17	81°18'47.586" E	23°15'9.636" N	
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P21	81°18'47.432" E	23°15'22.941" N	
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P23	81°18'47.355" E	23°15'29.593" N	
P24	81°18'47.317" E	23°15'32.919" N	
P25	81°18'50.911" E	23°15'32.932" N	
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## 2.2 EXPLORATION, GEOLOGY AND ASSESSMENT OF RESERVE

S.No	Parameters	Details
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).	

**REGIONAL GEOLOGY:**

The rocks of Sohagpur Coalfield, located within Son Valley, exhibit a general E-W trend with a low northerly dip, forming the main coal bearing area of South Rewa. The Sohagpur Coalfield is bounded by latitudes 23°05' and 23°30' and longitudes 81°13' and 82°12'. It is located in the Shahdol and Umaria districts of Madhya Pradesh, while a small area is included within the Surguja district.

The southern margin of the Sohagpur Coalfield runs close to the junction of Kewai and Tipon rivers with the Son. The eastern and north eastern boundaries merge imperceptibly with the Sonhat-Jhilimili Coalfields. The Upper Gondwana Formations occur over a vast expanse linking the Sohagpur Coalfield with the Singrauli Coalfield on the north. Towards west, post Barakar sediments cover the area in between Sohagpur and Johilla Coalfields, while towards south-west, the coal measures are separated from the Deccan Trap of Maikal range by narrow outcrops of Lameta beds.

The geological and stratigraphic sequence of formation occurring in the Sohagpur Coalfield are given in table below:

**REGIONAL GEOLOGY OF SOHAGPUR COALFIELD**

Age	Formation	Lithology (thickness)
Recent		Soil and Alluvium
----- Unconformity -----		
Eocene to Up. Cretaceous	Deccan Trap	Effusive and intrusive rocks, mostly basalt and dolerite.
----- Unconformity -----		
Up. Cretaceous	Lameta Beds	Reddish and greenish sandstones and nodular limestones
----- Unconformity -----		
Up. Triassic	Supra Barakars/ Mahadeva	<b>Pink, buff and red sandstone, red shales etc.</b>
(Up. Gondwana Group)		
----- Unconformity -----		
Lw. Permian	<b>Barakar</b>	<b>Coarse to medium grained sandstone, sub-ordinate shales and coal seams (320m+).</b>
Lw. Permian to	<b>Talchir</b>	Diamictite, sandstone, siltstones and needle shales (430m+)
Up. Carboniferous		
(Lower Gondwana Group)		
----- Unconformity -----		
Pre-Cambrian	<b>Metamorphics</b>	Porphyritic granite-gneiss with aplite and pegmatite veins.

**ROCK FORMATIONS:**

The different geological formations encountered in the boreholes drilled in Sahapur East Block are summarized below:

- A. Talchirs:** The Talchir Formation is not exposed in Sahapur East Block. It has been intersected in 3 GSI boreholes (SSH-21, 24 and 25). They are represented by greenish sandstone with pebbles of granite. Full thickness of Talchir Formation is not intersected in any of the boreholes.
- B. Barakars:** The Barakar Formation overlies the Talchirs and comprises dominantly sandstones with sub-ordinate shales, carbonaceous shale, intercalation of shale and sandstone and six regionally persistent coal seams: viz. IV, L2, III, II, I and L1 in descending order. Seams-III occurs in 3 sections, the top prominent and consistent IIIA and the bottom impersistent IIIB and IIIL seams. Hence altogether eight seams occur in the block. The sandstones are fine to coarse grained, micaceous and feldspathic. The cementing material of the sandstone is normally kaolinised feldspar. The shale is typically grey and is rather insignificant in the sedimentary pile. The Barakar Formation has been intersected in all the boreholes drilled by MECL and GSI. The full thickness of Barakar column has been intersected in only three boreholes of GSI (SSH-21, 24 and 25) and the thickness of Barakar varies from 121.03 m (MSSE-53) to 243.35m (SSH-20).
- C. Barren Measures:** The Barakar formation is overlain by ferruginous sandstones and shales of Barren measures. This horizon is found about 25m to 40m above the youngest coal horizon viz. seam IV of Barakar Formation. Unlike Barakar, the Barren Measures contains shale laminations and shale bands. The persistent shale band at about 25m to 40m above seam IV is taken as a marker horizon for delineating the contact between Barakars and Barren Measures. The Barren Measures have been intersected in all 63 boreholes drilled in the block. The thickness of Barren Measures intersected in Sahapur East Block varies from 3.00m (MSSE-37) to 64.70m (SSH-8).
- D. Soil / Alluvium:** The soil / alluvium in the block is sandy. The thickness of soil ranges from 1.00m (MSSE-3, 6) to 8.75m (SSH-20).
- E. Weathered Mantle:** Weathering has affected all strata. The minimum and maximum depth of weathering ranges from 4.66m (MSSE-9) to 30.25m (MSSE-2).

**REGIONAL STRUCTURE:**

The Sohagpur Coalfield constitutes the middle segment of the Rewa Gondwana basin and has a regional east-west elongation in conformity with the alignment of the basin belt. The beds have a general WNW-ESE to East-west trend and dip at very low angles (1° to 4°) towards NNE or North. Considerable variation in the direction and amount of dip have been observed near fault planes

The Sohagpur basin is composed of three well-defined sub-basinal structures. These include the Jhagrakhand sub-basin to the east, Kotma-Jamuna sub-basin in the middle and the Burhar-Amlai sub-basin to the west. The prominent structural feature of the Sohagpur basin is the system of ENE-WSW to east-west trending sub-parallel faults. The most important of these faults is the Bamni-Chilpa fault, which runs along the middle part of the coalfield. From Bamni to Patgaua, the fault trends east-west. Further east, upto Bargaua, its position is concealed by a thick sill. From there onwards it swerves to ENE and continues upto Thangaon. Westwards, the fault is traced north of Balehi in Dhanpuri area. A salient feature is the emplacement of a dolerite sill and dykes along this fault zone. The throw of this fault is likely to be over 400m at places. In addition to this major fault, there are a number of east-west or ENE-WSW trending faults. Two more sets of faults trend NW-SE and NE-SW, but the frequency of these faults is low. It can be summarised that the east-west trending faults were active periodically during sedimentation and the fault movement might have taken place over a protracted period of time.

2.2.2 Local geology, Structure, Stratigraphic sequence, Characteristics of the litho-logical units (coal seams /partings/overburden)

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**GEOLOGY OF THE BLOCK:**

The Sahapur East Block falls in the North western part of Sohagpur Coalfield. The area explored is mostly covered by sandy soil as few scanty exposures of Barren Measure sandstones are marked along the nala. Dolerite outcrops are observed at two places.

**GEOLOGICAL SUCCESSION:**

The stratigraphic sequence in the block is given below in Table below and the surface geological features based on subsurface data are furnished in Plate 05.

**GEOLOGICAL SUCCESSION OF SAHAPUR EAST BLOCK:**

Age	Formation	Lithology
Recent	Soil	Soil and Alluvium
Mid. Permian	Barren Measures	Pink, buff, red sandstone, red shale etc.
Lw. Permian	Barakar	Coarse to medium grained sandstone subordinate shales and coal seams
Lw. Permian to Up. Carboniferous	Talchir	Sandstone and siltstones with pebbles of Granite.
----- Unconformity -----		
Pre-Cambrian	Metamorphics	Porphyritic granite gneisses

The thickness range of each formation within the block as intersected in the boreholes are also as in table below:

**THICKNESS RANGE OF DIFFERENT GEOLOGICAL FORMATION**

Formation	Thickness Range (m)		Remarks
	Min	Max	
Soil / Alluvium	1.00 (MSSE-3, 18, 44, 46, 53)	8.75 (SSH-20)	
Weathered Mantle	4.66 (MSSE-9)	30.25 (MSSE-2)	
Barren Measure	3.00 (MSSE-37)	64.70 (SSH-8)	
Barakars	121.03 (MSSE-53)	243.35 (SSH-20)	Full column intersected in three Bhs. Of GSI
Talchirs	2.49 (SSH-24)	20.05 (SSH-21)	Talchir intersected in 3 Boreholes of GSI
Metamorphics	Not drilled upto basement		

**GEOLOGICAL STRUCTURE OF THE BLOCK:**

Since the area of Sahapur East Block is entirely covered by Barren Measures formation, the structure is based on integrated floor contour plan (Plates 10B1 to 10B6) drawn for major seams i.e. IV, L2, IIIA, IIIB and II and Geological cross sections (Plate 11).

The structure of Sahapur East Block is very simple and it is devoid of structural disturbances like faults Rolling of dip and bedding is very common. Locally steepening of dip can be seen. In general, the strike of coal seam is NW-SE locally deflecting slightly.

The gradient of the seams varies from 1 in 29 (2°) to 1 in 36 (1-2°) over a larger part of the block, depicting rolling of dip. A slight steepening of dip can be observed in NW and SE corners, of the block near MSSE-37 and MSSE-53 respectively, where the gradient is around 1 in 17 (3°-4°). Two dolerite dykes are demarcated by mapping. The dyke intersected in borehole MSSE-8 is interpreted to extend upto 700 m length and 30 m width, trending in NW-SE direction. Whereas dyke near MSSE-9 and 34, trends along NE-SW direction and its interpreted to have length of around 1.5 km with maximum width, of 40 m. They are depicted as sub vertical/vertical in cross sections.

**COAL SEAMS OF THE BLOCK:****A. GENERAL:**

- Detailed exploration in Sahapur East block has revealed the existence of 8 coal horizons. Out of these four workable seams IV, III, II and I in descending order have been established along with a few local coal seam. In Seam-III there are three sections (IIIA, IIIB and IIIL). The top section IIIA is persistent throughout the block whereas seam-IIIB and IIIL are developed imperisistently in the block. The seam II has developed into the thickest and most potentially workable. The one local seam L2 is also developed in workable thickness.
- The standard norms applicable to non-coking coal have been followed for identification of coal seams and bands. These are as follows:

a)	Coaly Matter	Coal	Ash + Moisture Up to 40%
b)		Shaly Coal	Ash + Moisture 40.1% - 55%
c)		Carbonaceous Shale Low	Ash + Moisture 55.1% - 65%
d)	Combustible Dirt Band	Carbonaceous Shale High	Ash + Moisture 65.1% - 75%
e)	Non Combustible Dirt Band	Sandstone, Shale, Intercalation etc.	Ash + Moisture above 75%

- The carbonaceous shale band has been considered as part of the seam only in cases where its thickness is less than or equal to the thickness of coal/ shaly coal forming the roof and floor of the band.
- A dirt band which is combustible band has been defined as having more than 55% to 75% Ash + Moisture irrespective of thickness (carb. shale band).
- The obvious dirt band of non-carbonaceous matter has been considered as non-combustible band (NCB) irrespective of its thickness (shale and variants and sandstone bands). When the NCB is in continuation with carbonaceous shale, then both the bands are excluded for determining the In-band thickness irrespective of their thicknesses.
- The BCS and I-30 thickness are always excluding NCB.
- The BCS thickness is excluding NCB and all bands having more than 55% Ash + moisture.
- The I-30 thickness is excluding NCB and all carb shale bands, which are having thickness of more than 0.30m.

**B. CORRELATION:**

The detailed exploration carried out by MECL in Sahapur East Block has revealed the presence of eight regionally correlatable Barakar coal seams viz. IV, L2, IIIA, IIIB, IIIL, II, I and L1 in descending order.

Correlation of coal seams is mainly based on :



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- Lateral continuity/persistence of coal seams.
- Actual thickness of individual seams.
- Thickness and nature of parting between seams.
- Presence of marker dirt bands/non-combustible bands within the seam.
- Overall of the seam based on band by band data.
- Quality parameter of seam.
- Nature of roof and floor lithology of the seam.
- Special identification regarding deterioration /non-development of individual seam.

**C. SEQUENCE OF COAL SEAMS:**

The sequence of coal seams, their thickness ranges and range of intervening parting between the seams as established in Sahapur East block is presented in Table below.

Sl. No.	Sequence of Seam / Parting	Range of Seam Thickness (m)		Range of Parting (m)		Prevalent range (m.) Thickness /parting		No. of full intersections
		Min.	Max.	Min.	Max.	Min.	Max.	
1.	IV	0.03 (MSSE-46)	2.85 (MSSE-15)	-	-	1.00	2.00	59
	Parting	-	-	33.95 (MSSE-27)	57.00 (MSSE-39)	45.00	48.00	
2.	L2	0.02 (MSSE-18)	2.28 (SSH-14)	-	-	0.50	2.25	58
	Parting	-	-	5.42 (SSH-14)	26.53 (MSSE-15)	17.00	22.00	
3.	III A	0.30 (MSSE-30)	5.49 (MSSE-13)	-	-	0.50	2.00	61
	Parting	-	-	0.34 (MSSE-53)	3.60 (SSH-8)	0.50	2.00	
4.	III B	0.42 (MSSE-10)	4.76 (MSSE-31)	-	-	0.50	1.20	28
	Parting	-	-	0.77 (MSSE-37)	4.17 (MSSE-53)	0.50	2.50	
5.	III L	0.50 (MSSE-11)	1.05 (MSSE-14)	-	-	0.50	1.00	10
	Parting	-	-	14.07 (MSSE-15)	22.12 (SSH-8)	14.00	16.00	
6.	II	0.15 (MSSE-25)	4.55 (MSSE-31)	-	-	2.50	4.50	62
	Parting	-	-	16.30 (SSH-13)	45.10 (MSSE-39)	16.00	30.00	
7.	I	0.05 (MSSE-5)	0.60 (MSSE-29)	-	-	0.40	0.50	21
	Parting	-	-	16.88 (MSSE-19)	38.70 (MSSE-5)	20.00	25.00	
8.	L1	0.05 (MSSE-3)	0.90 (SSH-25)	-	-	<0.50	0.90	48

2.2.3 Geological Block Area "Ha" 659 Ha (658.83 Ha as per CMPDIL Survey Report, enclosed in Annexure-18)

2.2.4 Status of Exploration of the block

Explored.

Status of Exploration - Summary of agency wise boreholes drilled and meterage are as follows:

Agency	No. of BHS	Meterage
GSI	9	2470.00
MECL	55	11110.30
<b>Total</b>	<b>64</b>	<b>13580.3</b>

2.2.5 Area covered by "detailed" exploration within the block (sq. km) 6.59

2.2.6 Whether entire area has been covered by a detailed exploration. Yes

2.2.7 No. of boreholes drilled within the block 64

2.2.8 Whether any further exploration/study is required or suggested and time frame in which it is to be completed No

2.2.9 Year wise future programme of exploration NA

2.2.10 Overall borehole density within the block (no./ sq. km) approx 9.71

2.2.11 No of Seams available as per GR (Geological Report) Seam-IV, Seam-L2, Seam-III A, Seam-IIIB, Seam-IIIL, Seam-II, Seam-I, Seam-L1

2.2.12 Seams not considered for Mining with Reasons 4 nos. seams (Seam-IIIB, IIIL, L1 and I) not considered for Mining. Seam-IIIB is not considered due to Contiguous with above Seam-III A. Other 3 Seams, i.e. - Seam-IIIL, Seam-I and Seam-L1 are not considered due to patchy deposit, poor quality and less thickness.

2.2.13 Dip of the Seam The coal seams t rth-Easterly Dip and vary from 1 - 2 Degree.

2.2.14 Seam wise thickness, depth and reserve

Seam	Thickness Range 'm'	Depth Range 'm'	Net Geological Reserve "Mte"	Block Reserve Below "Mte"					Min Res "Mte"		Mining Losses	Ext Res "Mte"			As on base date "Mte"							Reason (For seams not considered for mining)
				High wall/Batter	Nala/River/Road	Barrier	Un-economic	Total Blocked	UG	OC		UG	OC	High wall	Depletion of Reserve			Balance Reserve				
															UG	OC	High wall	UG	OC	High wall	Total	
Seam-IV	0.03-2.85	39.93-108.52	10.864			2.622	2.300	4.9220	5.942		1.496	4.446						4.45	0.00		4.45	Considered
Parting	33.95-57.00							0.0000										0.00	0.00			
Seam-L2	0.02-2.28	86.59-149.07	8.781		0.852	0.327	2.000	3.1747	5.606		1.805	3.802						3.80	0.00		3.8	Considered
Parting	5.42-26.53							0.0000										0.00	0.00			
Seam-III A	0.3-5.49	108.10-171.50	11.316			1.302	4.000	5.3020	6.014		1.828	4.186						4.19	0.00		4.19	Considered
Parting	0.34-3.6							0.0000										0.00	0.00			
Seam-III B	0.42-4.76	133.75-173.77	5.619			1.090	3.515	4.6050	1.014		1.014	0						0.00	0.00			Not Considered. Maximum area <1.2 m and also Contiguous with above Seam-III A
Parting	0.77-4.17							0.0000										0.00	0.00			
Seam-III L	0.5-1.05	135.48-172.68	0.356				0.356	0.3560	0		0	0						0.00	0.00			Not Considered. Thickness <1.2 m
Parting	14.07-22.12							0.0000										0.00	0.00			
Seam-II	0.15-4.55	125.78-194.15	24.988		1.425	1.0474	2.545	5.0174	19.971		6.089	13.881						13.88	0.00		13.88	Considered
Parting	16.30-45.10							0.0000										0.00	0.00			
Seam-I	0.05-0.60	159.33-223.35	0					0.0000	0		0	0						0.00	0.00			Not Considered. Thickness <1.2 m

Parting	16.8 8- 38.7 0							0.00 00									0.00	0.00			
Seam-L1	0.50- 0.90	161. 50- 246. 78	1.43 9				1.43 9	1.43 90	0		0	0					0.00	0.00			Not Consi- dere- d. Thick- ness <1.2 m
Total		63.3 630		2.27 70	6.38 41	16.1 550	24.8 161	38.5 470			12.2 320	26.3 150					26.3 150			26.3 150	

S.No	Parameters	Details
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**2.2.15 Methodology of reserves estimation (also mention if any software package has been used).**

In Sahapur East Block, 'net proved' underground reserves by MINEX Software For this purpose isochores for 0.90 m, 1.20 m., 1.50 m, 3.00 m, 5.00 m and > 5.00 m (for superior grade) and 1.20 m, 1.50 m, 3.00 m, 5.00 m and >0.50 m (for inferior grade) on I 30 basis along with isograde lines, have been drawn as folio plans (Plate IXA to IXD). The areas of seam non-development and workable have been demarcated. The 50 m, 100 m, 150 m, 200 m and 250 m depth lines have been marked on the seam folios of seams.

Each MINEX cell having area (sq.m) x Isochore thickness (m) Value x Specific gravity by grade gives the reserves tonnage

The reserves of coal in Sahapur East Block have been estimated by using standard formula as given below:

$$R = A \times Th. \times Sp. Gr.$$

Where,

R = Reserves in million tonnes, A = Area in Sq. km.

Th. = Thickness in meters.

Sp.Gr. = Specific Gravity of coal.

10% deduction has been made towards unforeseen disturbances from gross reserves to arrive at net in situ reserves, available in the block. The specific gravity assumed for different grades of coal for reserves estimation is as follows:

**SPECIFIC GRAVITY ASSUMED FOR DIFFERENT GRADES OF COAL**

Grade	Sp. Gr.
A	1.40
B	1.45
C	1.50
D	1.55
E	1.60
F	1.65
G	1.75

**2.2.16 Average GCV "KCal/kg"**

5292 (G8)

2.2.17	Gross Geological Reserve of the block "Mt"	70
2.2.18	Net Geological Reserve of the block "Mt"	63.3630
2.2.19	Minable Reserve of the block "Mt"	38.547
2.2.20	Blocked Reserve "Mt"	24.8161
2.2.21	Corresponding extractable reserve of the block "Mt"	26.315
2.2.22	Percentage of Extraction	41.531
2.2.23	Resource already depleted (Base date of Mining Plan)	0
2.2.24	Balance Resource (as on Base Date))	26.3150

## Chapter-3: Mining

### 3.1 Mining Method

S.No	Parameters	Details
3.1.1	Existing method of mining if the mine is under operation	The block is virgin and there are no mining activities at site.
3.1.2	Proposed method of mining with justification on suitability of method of mining	

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roof.

**TRANSPORT AND WINDING SYSTEM IN UNDERGROUND FOR COAL AND ROCK:**

- There will be no winding in the mine, since all access in the mine will be by inclines.
- A 1,000 mm conveyor belt (3 m/sec, 500 TPH) will be installed initially at all the 2 nos. inclines during drivage / construction for transport of rock.
- No.1 incline will be used for Man transport by MUV (Multi Utility Vehicle) and Material transport by FSV (Free Steering Vehicle) as well as by direct haulage system.
- No.2 incline shall be used for coal transport by conveyor on one side of the roadway as well as man transport by chair lift man riding system on the other side of the roadway separated by steel fences.
- The seams will be developed initially along trunk roadways where from panels will be flanked out in either direction. Belts (1,000 m, 500 TPH) will be installed along trunk roadways and in the middle of each panel.
- Man riding system shall be provided by chair lift along the incline No.2 and by FSV (battery or diesel) in underground.
- Material transportation in the underground shall be predominantly done with MUV and by direct haulage along incline No.1.

**STOWING:**

Since the mine is proposed to be worked with caving or splitting as final operation using CM technology, no stowing operation is envisaged in this Plan.

**BRIEF DESCRIPTION OF ALL OPERATION:**

- Coal to be won / cut by CM & to be loaded on SC/BH. The SC/BH shall haul coal received from CM & unload onto the FB installed at the Tail End of Gate Belt.
- The FB shall crush the coal to (-)100 / (-)200 mm & discharge onto the Gate Belt.
- The coal will pass through a series of conveyors ultimately be discharged onto the Surface Bunker / Ground Stock.
- After cutting Coal by CM to a pre-determined length (cut-out distance), the CM will move to another Face as per Place Changing Method.
- The cut Face will be supported by Bolting Machine as per SCAMP.
- The ventilation ducting of Aux. Fan will be extended in the face after each cut-out.
- Pumping, belt extension etc. will progress accordingly.

**LIFE OF THE MINE:**

Extractable reserve = 26.315 MT

PRC = 0.70 MTPA

Life of the Mine = 40 years (Construction & Operation Period) + 3 years (Post Mining Closure) + 2 years (Post Closure Monitoring) = 45 years

Construction period = 8 months

Production may be started from 2029-30

Provision may be made to augment PRC suitably after attaining and stabilizing of current PRC @0.70 MTPA.

The lease period to be obtained is generally 30 years.

Accordingly, PRC may be increased at later stage and the life of mine may change accordingly.

**OVERBURDEN REMOVAL & DISPOSAL:**

Since this will be an Underground mining, no overburden removal is required. The debris (Top Soil) removed during incline drivage & shaft sinking are to be disposed of in the area and in the manner shown as per Plate-8.

**MINE ENTRIES:**

- 2 x Inclines & 1 x Air-shaft will be drivaged from the Surface down to the Bottom-most seam (Seam-II).
- Additionally, 3 x inter-seam Drifts will be developed to access Seam-L2 from Seam-IV, as both the inclines bypass Seam-L2, due to its patchy occurrences.
- Details of Inclines: Incline-1: 3.5 m x 5.5 m x 1 in 5 x 850 m; Track, Lowering of MUV & FSV Incline-2: 3.5 m x 6.0 m x 1 in 5 x 850 m; Chairlift & Belt Air-Shaft: 5.5 m Dia x 175 m; Return Airways 3 x Inter-seam Drifts: 3.5 m x 6.0 m x 1 in 6 x 270 m
- Details has been enclosed in Annexure-15.

**GASSINESS OF THE SEAMS:**

As per the Geological Report, the seam has been classified as Degree-I gassiness. The surrounding mines, such as Khairaha, Bangwar, Damni, Baherabandh, Kapildhara, Sheetal dhara etc. are also categorised as Degree-I gassy mines. However, after opening of the seam, a detailed study will be conducted to determine the actual degree of gassiness and appropriate precautions will be taken accordingly.

**TECHNOLOGY TIE-UPS:**

There are no technological tie-ups proposed. However, Mine is to be worked with State-of-the-Art CM equipment package imported from developed countries like USA, Europe, Australia etc.

**ADEQUACY OF VENTILATION SYSTEM:**

- Both Inclines will act as Main Intakes while the Airshaft will serve as Main Return of the Mine where MMV will be installed.
- The trunk roadways will consist of 5 headings, where 3 middle Headings will serve as Intakes while the 2 extreme Headings on either side will act as Returns of the Panels.
- Auxiliary Fan to be installed during drivage of 2 inclines and in the CM panels to comply with the standards of ventilation as defined in CMR 2017.
- There will also be requirements of the air in Sump, Sub.-Station etc.
- To have better ventilation efficiency, the developed panels shall be sectionalized as soon as completed.
- Detailed calculation for Ventilation is enclosed in Annexure-14.

**BLASTING REQUIREMENTS AND REQUIREMENT OF EXPLOSIVES:**

The mining at Sahapur East coal block is proposed with fully mechanized continuous mining technology. No blasting operation is envisaged in the Mine. Both the incline drivages, i.e. Rock cutting to be with Roadheader (RH). Coal to be won with fully mechanized continuous mining Package only. Both make use of cutting technology with no requirement of drilling and blasting.

**PUMPING REQUIREMENTS AND STANDBY ARRANGEMENTS:**

The estimated make of water is approx. 1,000 GPM. During the rainy season, it may go up by 1.5 times. The dewatering capacity will accordingly be 1,500 GPM. There will be Main Sumps in each seam. Seepage water from individual seams will be collected in these Main Sumps via Face & Intermediate Pumps. Water from individual Main Sumps will be collected at the Main Sump of Topmost Seam, i.e. Seam-IV, from where it will be pumped out of the Mine.

3.1.3	Coal production capacity proposed MTPA	0.7000
3.1.4	Justification for optimization Coal production capacity	

The extractable reserve is 26.315 MT from the Seam-IV, L2, IIIA and II considered to be worked by Underground Mining Bord & Pillar method with caving, where seam thickness attained >1.2 m with Continuous Miner Technology in combination with Electric Shuttle Car or Coal Hauler (Battery/Diesel).

Considering tentative coal production period to be 40 years, where production schedule will be as -

- Y-1 = 0.045 MTPA : Construction Period & Pit Bottom Development
- Y-2 = 0.491 MTPA : Development
- Y-3 = 0.70 MTPA : Achieving PRC
- Y-4 to Y-38 = 0.70 MTPA : Development / Depillaring
- Y-39 = 0.450 MTPA : Depillaring
- Y-40 = 0.129 MTPA : End of Life. If PRC is increased subsequently, the final year will be reduced accordingly.

As per Allocation Order & CMDPA both, the PRC should be 0.70 MTPA.

Hence, the optimized coal production capacity is fixed as 0.70 MTPA.

3.1.5	Calendar year from which the production will start	2029-30
3.1.6	Year of Achieving rated production	2031-32

### 3.1.7 Tentative Coal production Plan Mt

Year		Coal Production Schedule			OB MM3	SR Cum/t
Year of Operation	Calendar Year	UG	OC	Total		
1	2029-30	0.045		0.0450		0
2	2030-31	0.491		0.4910		0
3	2031-32	0.70		0.7000		0
4	2032-33	0.70		0.7000		0
5	2033-34	0.70		0.7000		0
6	2034-35	0.70		0.7000		0
7	2035-36	0.70		0.7000		0
8	2036-37	0.70		0.7000		0
9	2037-38	0.70		0.7000		0
10	2038-39	0.70		0.7000		0
11	2039-40	0.70		0.7000		0
12	2040-41	0.70		0.7000		0
13	2041-42	0.70		0.7000		0
14	2042-43	0.70		0.7000		0
15	2043-44	0.70		0.7000		0
16	2044-45	0.70		0.7000		0
17	2045-46	0.70		0.7000		0
18	2046-47	0.70		0.7000		0
19	2047-48	0.70		0.7000		0
20	2048-49	0.70		0.7000		0
21	2049-50	0.70		0.7000		0
22	2050-51	0.70		0.7000		0
23	2051-52	0.70		0.7000		0
24	2052-53	0.70		0.7000		0
25	2053-54	0.70		0.7000		0
26	2054-55	0.70		0.7000		0
27	2055-56	0.70		0.7000		0
28	2056-57	0.70		0.7000		0
29	2057-58	0.70		0.7000		0
30	2058-59	0.70		0.7000		0
31	2059-60	0.70		0.7000		0
32	2060-61	0.70		0.7000		0
33	2061-62	0.70		0.7000		0
34	2062-63	0.70		0.7000		0
35	2063-64	0.70		0.7000		0
36	2064-65	0.70		0.7000		0
37	2065-66	0.70		0.7000		0
38	2066-67	0.70		0.7000		0
39	2067-68	0.45		0.4500		0
40	2068-69	0.129		0.1290		0

Note: Calendar Plan/Production Plan for the entire life of the mine.

3.1.8	Rated Capacity Mtpa	By OC : 0 By UG : 0.70 Overall : 0.7000																																																																						
3.1.9	Life of the mine: Years	By OC : 0 By UG : 45 Overall : 45																																																																						
3.1.10	Whether the proposed external OB dump site is coal/ lignite bearing: If so, whether coal/lignite below the waste disposal area is extractable, If so, by OC or UG method.	Not Applicable																																																																						
3.1.11	Whether negative proving for coal/lignite in the proposed site for OB dump/ infrastructure has been done.	Not Applicable																																																																						
3.1.12	Results of any investigation carried out for scientific mining, conservation of minerals and protection of environment; future proposals	Hydrogeology study has been carried out in 2023 by Geo Climate Risk Solutions Pvt. Ltd. (Enclosed in Annexure-16)																																																																						
3.1.13	Type of Equipment/ HEMM proposed	<table border="1"> <thead> <tr> <th>S.No.</th> <th>Type of Equipment</th> <th>Capacity</th> <th>Unit</th> <th>Population</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Road Header</td> <td>300</td> <td>TPH</td> <td>2</td> </tr> <tr> <td>2</td> <td>Low Height Continuous Miner</td> <td>1260</td> <td>TPH</td> <td>1</td> </tr> <tr> <td>3</td> <td>Standard Height Continuous Miner</td> <td>1260</td> <td>TPH</td> <td>1</td> </tr> <tr> <td>4</td> <td>Low Height Shuttle Car Battery Hauler</td> <td>9.6</td> <td>Cubic Meter</td> <td>2</td> </tr> <tr> <td>5</td> <td>Standard Height Shuttle Car Battery Hauler</td> <td>16.37</td> <td>Cubic Meter</td> <td>2</td> </tr> <tr> <td>6</td> <td>Roof Bolter</td> <td>30</td> <td>Bolt/Hr.</td> <td>4</td> </tr> <tr> <td>7</td> <td>Feeder Breaker</td> <td>600</td> <td>TPH</td> <td>2</td> </tr> <tr> <td>8</td> <td>Battery Operated MUV</td> <td>10</td> <td>Tonnes</td> <td>1</td> </tr> <tr> <td>9</td> <td>Battery Operated FSV</td> <td>12</td> <td>seater</td> <td>2</td> </tr> <tr> <td>10</td> <td>Load Haul Dumper</td> <td>1.5</td> <td>Cubic Meter</td> <td>2</td> </tr> <tr> <td>11</td> <td>Pay Loader</td> <td>1.5</td> <td>Cubic Meter</td> <td>2</td> </tr> <tr> <td>12</td> <td>Tipper</td> <td>35</td> <td>Tonnes</td> <td>2</td> </tr> <tr> <td>13</td> <td>Load Centre</td> <td>1500.000</td> <td>KVA</td> <td>2</td> </tr> </tbody> </table>	S.No.	Type of Equipment	Capacity	Unit	Population	1	Road Header	300	TPH	2	2	Low Height Continuous Miner	1260	TPH	1	3	Standard Height Continuous Miner	1260	TPH	1	4	Low Height Shuttle Car Battery Hauler	9.6	Cubic Meter	2	5	Standard Height Shuttle Car Battery Hauler	16.37	Cubic Meter	2	6	Roof Bolter	30	Bolt/Hr.	4	7	Feeder Breaker	600	TPH	2	8	Battery Operated MUV	10	Tonnes	1	9	Battery Operated FSV	12	seater	2	10	Load Haul Dumper	1.5	Cubic Meter	2	11	Pay Loader	1.5	Cubic Meter	2	12	Tipper	35	Tonnes	2	13	Load Centre	1500.000	KVA	2
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3.1.14	Upload Require Document	OC : NA UG : UG files data shown below																																																																						

### UG Document :

**YEAR WISE EQUIPMENT PHASING**

1. LHCM Package will be deployed in Seam-IV, L2, IIIA & II.
2. SHCM Package will be deployed in Seam-IIIA & II.
3. At a time 2 CM panels will be working.

S.N	Equipment	Capacity	Population	Location	Deployment Years							
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	
1	Road Header	300 TPH	2 nos.	Surface for Incline Drivage	2							
2	Low Height Continuous Miner with following Packages	1260 TPH	1 no.	Seam-IV		1						
3	Shuttle Car / Battery Hauler	9.60 Cum	2 nos.	Seam-IV		2						
4	Roof Bolter	20-30 Bolt/Hr.	2 nos.	Seam-IV		2						
5	Feeder Breaker	600 TPH	1 no.	Seam-IV		1						
6	Load Centre	1.5 Cum	1 no.	Seam-IV		1						
7	Standard Height Continuous Miner with following Packages	1260 TPH	1 no.	Seam-IIIA					1			
8	Shuttle Car / Battery Hauler	16.37 Cum	2 nos.	Seam-IIIA					2			
9	Roof Bolter	20-30 Bolt/Hr.	2 nos.	Seam-IIIA					2			
10	Feeder Breaker	600 TPH	1 no.	Seam-IIIA					1			
11	Load Centre	1.5 Cum	1 no.	Seam-IIIA					1			
12	Battery operated MUV	10 Tonnes	1 no.			1						
13	Battery operated FSV	12 seater	2 nos.			2						
14	LHD	1.5 Cum	2 nos.			1		1				
15	Pay Loader	1.5 Cum	2 nos.			1	1					
16	Tipper	35 Tonnes	2 nos.			1	1					

APPROVED

**Chapter-4: Safety and Health Management**

**4.1 Safety and Health Management System Audit**

S.No	Parameters	Details
4.1.1	Important safety aspects:Major Risks and uncertainties to the project viz. Proximity to 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 inrush of water etc. Every mine should conduct a safety audit based on Safety Health Management Audit Guidelines.	<p>There are no major risks and uncertainties envisaged w.r.t. proximity of river (Inundation), adjacent working, Geo-mining disturbances, Slope Stability (this being an UG mine) etc. in the Block.</p> <p><b>Inundation from Surface Water:</b> The drainage of the Block is controlled by the Ghinachunia Nala flowing at the through the western part of the Block from south to North. The HFL of Nala is 447 m above MSL. The ground elevation of the block varies from 470 m to 490 m above MSL. Hence, the above mentioned nala do not possess any danger of inundation as their HFLs are far below the general level of the Block. All infrastructures like Inclines &amp; Air-Shaft, Sub-Station &amp; Diesel Generator Sets etc. shall be constructed at least 1.5 m above HFL.</p> <p><b>Inundation from Underground Water:</b> The Block is virgin and there is no adjacent working around the Block. Hence, there is no source of underground water body. The developed workings shall always be kept free from accumulation of water. The Pumping capacity shall be 1.5 times the peak requirement during monsoon, when the seepage will be the maximum. Alternate source of power supply will be ensured either by drawing power from a separate feeder or by providing diesel generator set of adequate capacity in order to maintain ventilation and pumping during prolonged power failure. Hence, there is absolutely no danger apprehended from underground water.</p> <p><b>Danger from Surface Fire:</b> Coal Stockpile shall not be allowed to accumulate beyond certain height and to be liquidated promptly. If there is prolonged disruption of dispatch, the production to be controlled or even suspended. Sufficient water hydrants to be provided for suppression of duct &amp; heating, if any. Adequate fire extinguishers will be provided at selected locations on surface like Electrical Sub-stations, DG room, workshop, Garage, Diesel Depot, Stores, offices etc.</p> <p><b>Danger from Underground Fire:</b> Mine shall be worked in Panel system &amp; to be sectionalized as soon as completed to prevent spontaneous heating &amp; for better utilization of ventilating air. Depillaring Panels shall be isolated as soon as they are goaved out. Old workings to be regularly inspected by a competent person for early detection of spon-con or fire.</p> <p><b>Danger from Explosion / Inflammable &amp; Noxious Gas:</b> Elaborate system of detection and dilution of inflammable gasses to be maintained. Adequate Statutory persons with sufficient gas Detectors of approved type to be provided for regular checking and monitoring of gasses. Aux. fan to be installed at Faces for dilution of inflammable gasses. Only Flame Proof (FLP) and Intrinsically safe equipment &amp; apparatus shall be used in the Mine as per Statute. COP, SOP and HIRA to be implemented as per world best practices.</p> <p><b>Danger from Adjacent Working:</b> The block is virgin; hence there is absolutely no danger from adjacent workings.</p> <p><b>Danger from Slope Stability:</b> Not Applicable, since the Mine will be worked by Underground method &amp; there will be no generation of overburden.</p> <p><b>Danger from Geological Disturbances:</b> The Mine is completely fault free. There are only 2 nos. prominent Dykes in the block. The Dykes will be kept as Panel Barriers during operation.</p> <p><b>Danger from Subsidence:</b> No depillaring shall be undertaken below built-up areas, roads, power line poles, villages, nala etc. and sufficient safety barrier shall be kept against them w.r.t. Angle of Draw, Depth and other Subsidence Parameter. Since the Mine will be worked by Underground method, there will be less chance of subsidence. Hence, the detailed Subsidence Study and Site Scientific Investigation (SSI) to be done during operation of the mine and shall be worked as per conditions laid down in DGMS permission.</p>
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 and & wherever specific permission will be required the company will approach the concerned authorities	Commitment of the company Board is enclosed as Board Minute (Annexure 3A1).

**Chapter-5: Infrastructure Facilities**

5. Infrastructure Facilities

S.No	Parameters	Details		
5.1.1	Mine infrastructure required e.g., Equipment maintenance planning, Office buildings, Workshop, Power supply arrangement, Water supply etc.	S.No	Facilities/ infrastructure to be retained	Area in HA
		1	Road and Infrastructure area	8.40
		2	Settling Pond	0.20
5.1.2	Infrastructure to be dismantle	S.No	Facilities/ infrastructure to be Dismantled	Area in HA
		1	Safety Zone	0.30
		2	External Dump	0.60
		3	Top Soil Dump	0.50
		4	Garland Drains	0.60
		5	UG Entry	0.40
		6	Green Belt	5.90
5.2	Power supply & illumination			
<p><b>Power supply:</b>                      The 6.0 MW power at 33 KV will be drawn from nearest sub station to the local sub-station from where the power will be supplied to the mine and other functional buildings. An emergency arrangement for power supply has been made by providing a set of 1x1000 KVA and 2x500 KVA DG sets which will take care of ventilation and pumping.</p> <p><b>Brief Technical Specifications of Load Centre and Transformer:</b></p> <p><b>HV Circuit Breaker:</b></p> <ul style="list-style-type: none"> <li>• Circuit Breaker</li> <li>• Off load Isolator (ON/OFF/EARTH)</li> <li>• Static overload and short circuit transformation protection</li> <li>• Voltage and current display.</li> </ul> <p><b>Power Transformer Specification:</b></p> <ul style="list-style-type: none"> <li>• Rating 1500 kVA at 40°C ambient.</li> <li>• Off load ratio 3300/1130V</li> <li>• Tappings ±5%, ±10%</li> <li>• Impedance 3-4% (Typical)</li> </ul> <p><b>Load centre Specification:</b></p> <ul style="list-style-type: none"> <li>• Transformer secondary 1100V earth fault protection</li> <li>• 1100V, 1200Amp circuit breaker with short circuit tripping function</li> <li>• 1100V Test switch</li> <li>• 5 kVA 120V lighting transformer with 4 switched outlets</li> <li>• 3.5 kVA 110V 3 phase drill transformer with 2 outlets</li> <li>• 2 off 400A vacuum contactors feeding 350 Amp 1100V restrained Victor sockets</li> <li>• 8 off 160A vacuum contactors feeding 200 Amp 1100V restrained Victor sockets</li> <li>• Individual pilot circuit control on all outgoing motor drives sockets</li> <li>• Individual short circuit protection on all 1100V motor drives</li> <li>• Individual overload protection on all 1100V motor drives</li> <li>• Earth fault protection on all 1100V motor drives</li> <li>• Loss of vacuum protection on all 1100V motor drives</li> <li>• Indication of voltage, current and power for all 1100V socket outlets.</li> </ul> <p><b>BRIEF DESCRIPTION ON UNDER GROUND ELECTRICAL LAY OUT:</b>                      Power is to be supplied to the districts at a tension of 3.3 KV. The main feed cable to the district transformers (HT) shall be supplied and installed along the central roadway. This would be required whichever technology is employed.</p> <p>It is required to have an installed capacity of 1500 KVA to supply the face equipment in the mechanized B&amp;P district from the conveyor tail end in bye.</p> <p>The face equipment will operate at 1100V. The CM package will include all electrical equipment, transformer (3.3 to 1.1 KV), switchgear, cables sockets etc. for the face equipment.</p> <p>It is necessary to provide separate HT cable and section isolator to the face transformer and between the district transformer and the face switchgear.</p>				
5.3	Drainage & Pumping : Assessment of Volume of Water for Pumping, Pumping Capacity and Pump Selection			

The lease area forms a part of Son river catchment and is drained by Murna and Basar streams which flow northerly draining the storm water from the lease area and from the upper catchment of these streams. These streams are seasonal over flooding their bank during monsoon season and fed through groundwater in parts during summer season. Besides the lease hold is studded with several natural ponds.

**GROUND WATER:**

The thickness of Quarternary alluvial sediments in the lease hold is hardly 2 to 3 m. The Gondwana sediments (Barren Measure and Barakar) form the main water bearing zone in the area. Mostly the groundwater in the area is exploited through open wells rang in depth from 10 – 15 m. Few shallow tubewells tapping aquifer down to 60 m depth are also present. The water table in the area varies between 2.0 to 14.0 m. In the south-eastern corner of coal block artesian condition is reported.

**ESTIMATION OF MAKE OF WATER:**

The probable source of water to be taken care as mine drainage in any mine could be either accumulation of rain/surface water in working area or contribution of groundwater as mine seepage. The proposed mine will be worked out though underground mining technique. Hence accumulation of rain / surface water has not been considered. Only the groundwater seepage will form the source water for mine drainage. The make of water in the underground mine will be from following sources.

- Normal seepage / leakage from overlying sandstone of Barren measure / Barakar formation.
- Inflow of water from Barakar sandstone roof during underground mining.

The water will be automatically drained to the sump in underground working at the lower most part of the mine. Adequate provision for draining out the seepage water from the sump will be provided and the working face will be kept dry. The pumped out water shall be utilised to meet the industrial need of mine working and only surplus water, if any, will be discharged into natural drainage.

**QUANTIFICATION OF MINE SEEPAGE:**

Hydrogeology study has been carried out in 2023 by Geo Climate Risk Solutions Pvt. Ltd. (enclosed in Annexure-16) as per which the make of water has been estimated as 46 to 4520 cum/day during the 1st 5 years.

**PUMPING ARRANGEMENTS:**

The pumps will be required for 1000 GPM on safe side. It is expected that during monsoon days the same go up to one and half times. The pumping will be done through stages with sumps in all four working seams.

There will be sumps in all four working seams in the close proximity of incline landing. The seepage water from the individual coal seam will be collected in these sumps via face pumps.

The minimum discharge height required for pumping from deepest seam II will be around 180m. Again it will be 180m from seam IIIA and 130m for seam L2. The shallowest seam IV has discharge height of about 80m.

A set of Three pumps of head of about one and half times the discharge height with 500GPM capacity each will be installed in seam IV with following specifications:

Capacity	= 500 GPM
Delivery Head	= 120 m
Motor power(KW)	= 125 KVA each
Delivery size	= 200 mm (two separate pipe lines)

The third pump set with the common delivery with other two pumps is installed in main sump for emergency applications.

The sumps in seam L2, IIIA and II will be equipped with pumps of 500GPM capacity each with head of 80m, 110m and 150m respectively. The face pumps of suitable capacity will be deployed in individual coal seams to collect the water from low laying area up to sump.

The underground make of water will be collected in the sumps. Suspended particles will get settled and clean water will be pumped to the surface reservoir from where it will be used for industrial needs of the mine and surplus water, if any, will be discharged into Ghinachuhia nala flowing in the west after treating in a limited manner, if required to meet the discharge standards.

**REQUIREMENT OF WATER:**

	Requirement of Water (cum/day)	Y-1 to Y-2	Y-3 to Y40
2 x CM equipment packages = 130 x 2 cum/day			260
2 x Roadheaders = 45 x 2 cum/day		90	
UG water spray for dust suppression = 10 cum/day			10
Dust Suppression in the Haul Road = 50 cum/day		50	50
Washing of Vehicles @2cum/vehicle for 10 vehicles considering 50% recirculation		10	10
Plantation @15cum/Ha		90	90
Office @25 LPD for 460 heads		12	12
Residential @100 LPD for ~400 head		40	40
Peripheral Villages = 20 cum/day		20	20
<b>Overall requirement of water for the project (cum/day)</b>		<b>312</b>	<b>492</b>

The water requirement projected above can be easily met from the mine water (after treatment as required) after the mine is adequately developed. However, during the initial stage of few years, the water requirement will have to be met from the ground water through bore wells.

5.4	Coal Handling Arrangement: Brief detail of the CHP/ Mode of Dispatch, Coal quality and Coal staking and handling arrangement	The coal coming out from the incline through belt conveyor will be directly filled into the 4 x 100 Tonne Surface Bunker. Then loaded into trucks to the consumers. Some coal will be stacked on ground and rehandled to load the truck by FELs.
5.5	Coal washing and the proposed handling/ disposal of rejects	No coal beneficiation process is proposed at the pit head by the company
5.6	Water Consumption and Wastewater generation (for coal handling/washing as applicable, manpower engaged, utilities, firefighting requirements, HEMM washing/maintenance, dust suppression as well as plantation, etc.)	Total requirement of water for mining and allied activities are estimated as approx Three Hundred and Twelve cum per day in Year one and two and Four Hundred and Ninety Two cum per day in Year three to forty
5.7	Other infrastructures for air pollution control (fog cannons, fixed water spraying systems, cold fog, Vertical Greenery System (VGS), wind barriers, or other relevant technologies)	This is an underground mine so the air pollution sources will be limited and The coal stack on surface will be provided with stationary whirling sprinklers and The coal evacuation routes will be kept dust free by water sprinklers

**Chapter-6: Land Requirement**

6.1 Land requirement

S.No	Parameters	Details																	
6.1.1	Total Land requirement for the mine in "Ha". Indicative source of data.																		
<p><b>Indicative Source of Data:</b>                      M.P. Bhu Abhilekh Website and CMPDIL Survey Report</p> <p><b>Indicative Break up of Pre-mining Land Type:</b></p> <table border="1"> <thead> <tr> <th>Land Type</th> <th>Area (Ha)</th> </tr> </thead> <tbody> <tr> <td>Tenancy</td> <td>574.59</td> </tr> <tr> <td rowspan="7">Govt. Land (Non-Forest)</td> <td>Road</td> <td rowspan="7">71.51</td> </tr> <tr> <td>Waterbodies</td> </tr> <tr> <td>Cremation Ground</td> </tr> <tr> <td>Grazing Land</td> </tr> <tr> <td>Khal Khaddar</td> </tr> <tr> <td>Settlement</td> </tr> <tr> <td>Other use</td> </tr> <tr> <td>Forest</td> <td>12.73</td> </tr> <tr> <td><b>Total Area (Ha)</b></td> <td><b>658.83 (~ 659 Ha)</b></td> </tr> </tbody> </table>			Land Type	Area (Ha)	Tenancy	574.59	Govt. Land (Non-Forest)	Road	71.51	Waterbodies	Cremation Ground	Grazing Land	Khal Khaddar	Settlement	Other use	Forest	12.73	<b>Total Area (Ha)</b>	<b>658.83 (~ 659 Ha)</b>
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Break up of pre-mining land type (indicative) and source of data.		<table border="1"> <thead> <tr> <th>S.No.</th> <th>Land Type</th> <th>Existing/pre-Mining Use</th> <th>Area</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Tenancy</td> <td>Agriculture</td> <td>574.59</td> </tr> <tr> <td>2</td> <td>Govt. Land (Non-Forest)</td> <td>Road, Waterbodies, Grazing Land, Settlement, and etc.</td> <td>71.51</td> </tr> <tr> <td>3</td> <td>Forest</td> <td>Revenue</td> <td>12.73</td> </tr> </tbody> </table>	S.No.	Land Type	Existing/pre-Mining Use	Area	1	Tenancy	Agriculture	574.59	2	Govt. Land (Non-Forest)	Road, Waterbodies, Grazing Land, Settlement, and etc.	71.51	3	Forest	Revenue	12.73	
S.No.	Land Type	Existing/pre-Mining Use	Area																
1	Tenancy	Agriculture	574.59																
2	Govt. Land (Non-Forest)	Road, Waterbodies, Grazing Land, Settlement, and etc.	71.51																
3	Forest	Revenue	12.73																

6.1.2 During mining Land use details:

Type	Land use (Proposed)	Land Use (End of Life)	Land Use (Post Closure)						
			Agricultural land	Plantation	Water Body	Public/Comp any Use	Forest Land (Returned)	Undisturbed	Total
Excavation Area									
Backfilled Area									
Excavated Void									
Without Plantation									
Top Soil Dump	0.50	0.50		0.50					0.5000
External Dump	0.60	0.60		0.60					0.6000
Safety Zone	0.30	0.30		0.30					0.3000
Haul Road between quarries									
Road diversion									
Diversion Or Below River Or Nala Or Canal									
Settling Pond	0.20	0.20			0.20				0.2000
Road And Infrastructure Area	8.40	8.40				8.40			8.4000
Rationalizat Area									

Garland Drains	0.60	0.60		0.60					0.6000
Embankment									
Green Belt	5.90	5.90		5.90					5.9000
Water Reservoir Near Pit									
UG Entry	0.40	0.40		0.40					0.4000
Undisturbed OR Mining Right For UG	641.93	641.93					12.73	629.20	641.9300
Resettlement									
Pit Head Power Plant									
Water Harvesting									
Agricultural Land, Undisturbed OR Mining Right For UG									
<b>Total</b>	<b>658.83</b>	<b>658.83</b>	<b>0.00</b>	<b>8.30</b>	<b>0.20</b>	<b>8.40</b>	<b>12.73</b>	<b>629.20</b>	<b>658.83</b>

S.No	Parameters	Details
6.1.3	Surface features over the block area	Habitation - Land of 6 villages (KHAMARIYA KHURD, KHAMARIYA KALAN, KATHOTIYA, CHUNIYA, KHOLHAD and SENDURI) lies within the Block. There are habitations lying within the block. Road - Shahdol - Khamaria Road passes diagonally through the block in NE-SW direction. Rail - There is no railway line within the block. Nalas - Block is marked by dendritic pattern of drainage system formed by north-ward flowing nala namely Ghinachunia, This is the only drainage system available within the block. A number of small ponds are found within the block. The Ghinachunia Nala is the main surface watercourse, flowing northward through the western part of the block. Several small ponds are also present, contributing to local water availability.
6.1.4	No. of villages/Houses to be shifted	NIL
6.1.5	Population to be affected by the project	NIL
6.1.6	Proposed Rehabilitation programme	NIL

## 6.2 DETAILS OF LEASE

S.No	Parameters	Details
6.2.1	Status of Lease	
Applied		
6.2.2	Existing Lease Area "Ha"	NIL
6.2.3	Period for which Mining Lease has been granted/is to be renewed/ is to be applied. for.	30 years from the date of grant and to be renewed up to life of the Mine.
6.2.4	Date of expiry of earlier Mining Lease, if any .	Not Applicable
6.2.5	Whether the lease boundary/ required boundary is same as mentioned in the allotment order.	Yes
6.2.6	Lease Area (applied/ required) as per the Mining Plan under consideration (Ha)	659 Ha (658.83 Ha as per CMPDIL Survey Report, enclosed in Annexure-18)
6.2.7	Whether the applied lease area falls within the allotted block.	Yes
6.2.8	Area (Ha) of lease which falls outside the delineated Block Boundary/Existing Mining Lease.	NIL
6.2.8	Area (Ha) of lease which falls outside the delineated Block Boundary/Existing Mining Lease.	NIL
6.2.9	Details of outside area	Not Applicable
	Whether forms part of any other coal block	Not Applicable

	Whether it contains any coal/lignite reserves.	Not Applicable
	Purpose for which it is required, e.g. roads/ OB dumps/ service buildings/ colony/ safety zone/ others (specify).	Not Applicable
6.2.10	Whether some part(s) of the allotted block has not been applied for mining lease	Not Applicable
	Total area in Ha of such part(s).	Not Applicable
	Total resource in such part(s). (Mt).	Not Applicable
	Brief reasoning for leaving such part(s).	Not Applicable

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**Chapter-8: Progressive & Final Mine Closure Plan**

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			
Up to Base year		Excav	Dump (Extn + Top Soil)	Infra/others	Total	Backfill/Stowing	Dump (Extn + Top Soil)	Others	Total
	2029-30	0.40	0.50	9.00	9.9000				0.0000
Y-3	2031-32	0.40	0.50	9.00	9.9000	0.28			0.2800
Y-5	2033-34	0.40	0.50	9.00	9.9000	0.28			0.2800
Y-10	2038-39	0.40	0.50	9.00	9.9000	0.28			0.2800
Y-15	2043-44	0.40	0.50	9.00	9.9000	0.28			0.2800
Y-20	2048-49	0.40	0.50	9.00	9.9000	0.28			0.2800
Y-25	2053-54	0.40	0.50	9.00	9.9000	0.28			0.2800
Y-40	2068-69	0.40	0.50	9.00	9.9000	0.28			0.2800
<b>Post Mining closure</b>									
Y-43	2071-72		0.50	7.20	7.70	0.40		9.00	9.40
<b>Post Closure Monitoring</b>									
Y-45	2073-74		0.50	7.20	7.70	0.40		9.00	9.40

8.1.2 Tentative Biological Reclamation (Cumulative in "Ha")

Year/Stage		Biologically Reclaimed Area					Forest land (Return)	Un Disturbed/ To be left for Public/com Use	Total
Up to Base year		Agriculture	Plantation	Water Body	Public/ Company Use	Total			
Y-1	2029-30		2.95	0.20		3.1500		655.68	658.8300
Y-3	2031-32		5.90	0.20		6.1000		652.73	658.8300
Y-5	2033-34		5.90	0.20		6.1000		652.73	658.8300
Y-10	2038-39		5.90	0.20		6.1000		652.73	658.8300
Y-15	2043-44		5.90	0.20		6.1000		652.73	658.8300
Y-20	2048-49		5.90	0.20		6.1000		652.73	658.8300
Y-25	2053-54		5.90	0.20		6.1000		652.73	658.8300
Y-40	2068-69		5.90	0.20		6.1000		652.73	658.8300
<b>Post Mining Closure</b>									
Y-43	2071-72		7.70	0.20	9.00	16.90	12.73	629.20	658.83
<b>Post Closure Monitoring</b>									
Y-45	2073-74		7.70	0.20	9.00	16.90	12.73	629.20	658.83

S.No	Parameters	Details
8.2	<p>Post Closure Water Quality management</p> <p>(Existing water bodies available in the lease hold area; Measures to be taken for protection of the same including control of erosion, sedimentation, siltation, watertreatment, diversion of water course, if any; Measures for protection of contamination of ground water from leaching etc;)</p>	<p>The post closure water quality management depends upon mainly two factors. One is assessment of the existing water regime and the second one is the estimation of impact of the proposed project. The estimated impact due to the proposal can be superimposed over the existing condition to arrive at the post project scenario. The study area shall be 10 km radius from the center of the block as per guidelines of MoEFCC. The core zone is 659 Ha (more precisely 658.83 Ha). Since, the mine will be worked by underground method there will not be any disturbance on the existing water bodies like first order drainage channels (rain cuts), ponds etc. There is no nala / streams / river flowing through the block. The waste dump of stone debris will not contain any harmful chemical substances. So, there is no danger of leaching to the ground water table. Therefore, no adverse impact on ground water is anticipated. Rain water harvesting facilities would continue to be operated for 2-3 years after closure of mining operations. Monitoring of water quality to be continued at quarterly intervals for a period of 3 years after closure of mining operations.</p>

8.3	Post Closure Air Quality management.	Base line air quality status to be carried out during the planning stage. Impact assessment study depends on mainly two factors. One is assessment of the existing environmental condition and another is the estimation of impact of the project. The estimated impact due to the proposal can be superimposed over the existing condition to arrive at the post project scenario. The study area shall be 10 km radius from the center of the block as per guidelines of MoEFCC. The core zone is 659 Ha (more precisely 658.83 Ha). Since, the block will be worked with underground mining, dust generation will be minimal except at discharge point of belt conveyor at surface bunkers, transport by conveyor to the adjacent washery for beneficiation, due to wind at stockyard, loading and transportation of coal by trucks etc. There will be sufficient dust suppression arrangement in the form of water sprinkling. System shall be developed to ensure that transport vehicles only having valid certificate of fitness (CF) and pollution under control (PUC) ply on the roads in order to ensure minimum emission of foul gases. Monitoring of air quality to be continued at quarterly intervals for a period of 3 years after closure of mining operations.
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#### 8.4 Waste Management (Figures in MM3) (Tentative)

Year/Stage		OB Removal (Cumulative)			External Dump (Cumulative)		Internal Backfilling (Cumulative)		Embankment (Cumulative)	
Up to Base year		Top Soil	OB	Total	Top Soil	OB	Top Soil	OB	Top Soil	OB
	2029-30	0.0500	0.0296	0.0796	0.0500	0.0296				
Y-3	2031-32	0.1000	0.0592	0.1592	0.1000	0.0592	0.1000			
Y-5	2033-34	0.1000	0.0592	0.1592	0.1000	0.0592	0.1000			
Y-10	2038-39	0.1000	0.0592	0.1592	0.1000	0.0592	0.1000			
Y-15	2043-44	0.1000	0.0592	0.1592	0.1000	0.0592	0.1000			
Y-20	2048-49	0.1000	0.0592	0.1592	0.1000	0.0592	0.1000			
Y-25	2053-54	0.1000	0.0592	0.1592	0.1000	0.0592	0.1000			
Y-40	2068-69	0.1000	0.0592	0.1592	0.1000	0.0592	0.1000			
Post Mining Closure										
Y-43	2071-72						0.1000	0.0592		
Post closure Monitoring										
Y-45	2073-74						0.1000	0.0592		

#### 8.5 Top Soil Management — (Including Action plan for Top Soil management) (Tentative)

(All Figures are Cumulative and in “MM3”)

Year/Stage		Top Soil Removal Plan	Top Soil Used				Total Utilised
Up to Base year			Spreading Over Embankment	Spreading Over Backfill area	Spreading Over External OB Dump area	Used in Green Belt area	
	2029-30	0.0500					0.0500
Y-3	2031-32	0.1000				0.1000	
Y-5	2033-34	0.1000				0.1000	
Y-10	2038-39	0.1000				0.1000	
Y-15	2043-44	0.1000				0.1000	
Y-20	2048-49	0.1000				0.1000	
Y-25	2053-54	0.1000				0.1000	
Y-40	2068-69	0.1000				0.1000	
Post Mining Closure							
Y-43	2071-72					0.1000	
Post Closure Monitoring							
Y-45	2073-74					0.1000	

S.No	Parameters	Details
8.6	Management of Coal Rejects.	Not applicable
8.7	Restoration of Land used for Infrastructure.	Out of total facilities area (16.90 Ha), 8.30 ha area is to be dismantled and 8.60 Ha area is to be retained. The detailed list of facilities for these two groups are given under para 5.1.1 and 5.1.2 respectively in Chapter-5. The dismantled facilities area shall be reclaimed by plantation while the retained facilities area will be utilised by the public/Company.
8.8	Disposal of Mining Machinery.	All machinery and installations (mentioned under para 3.1.13 and para no 5.2) shall be removed from the site. Machinery will either be transferred to other sites of the Company (if applicable), sold off or disposed of as a scrap.

8.9	Safety & Security.	Measures to be implemented to prevent access to surface opening for underground working, excavation etc. Inclines and Shaft will be effectively sealed so that entry therein would not be possible even if it is attempted by miscreants. The following safety and security measures will be adopted during the final mine closure activities of the Under Ground Mine. (1) All surface openings to underground work sites will be filled and leveled to blend in with the surrounding topography or will be concrete-capped. (2) Approach roads to the mines will be reclaimed and a fence or embankment meeting regulatory standards will be built. All permanent roads, which serve the villages, will remain in place. (3) Any impact on the surface land use will be known after the subsidence study is completed which is under preparation. Subsidence, if any, will be taken care of by filling it up and restoring the surface to the original. (4) However, thorough monitoring / inspections will be undertaken during the progressive and post closure period to identify any cracks extended to surface. And if found, it will be properly filled by dozing and all other precautions will be taken as stipulated by DGMS. (5) All the boreholes, exploration holes will be properly capped and sealed to prevent ingress of air into the underground workings to prevent fire due to left out coal. (6) Only authorized personnel will be allowed to carry out abandonment and post-project monitoring activities. (7) No coal will be left on the ground to prevent accidents, fire etc. (8) All the boreholes, cuttings in the mining leasehold area shall be properly sealed so as to prevent access to these. (9) All the electrical/ mechanical equipment such as in shaft, Incline, conveyor belt etc./ facilities shall be decommissioned suitably so as to prevent any accident. (10) Monitoring facilities have been established for monitoring the soil/ air/ water quality, effectiveness of reclamation measures etc. The provisions of Coal Mines Regulations/Rules/Circulars of DGMS would be strictly followed during mine closure operations. Safety training will be imparted to the employees for protection against land slide/ fall, moving equipment, protection against accidental fire or electric shock etc. In case of any temporary discontinuance, security guards will be provided to prevent stray animals or people entering the mine. Temporary fencing with notices will be put up.
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## 8.10 Mine Closure Cost and Financial Assurance

### 8.10.1 Mine Closure Cost

Cost of Activities to be taken up for closure of the mines					
Head	Particulars	Unit	Proposed Mine Closure Activities Cost		
			Quantity	Rs / Unit	"RS Cr"/
A. Progressive Mine Closure	Barbed wire fencing around the mine (Pit and Dump)	m	810	1500	1215000.00
	Waste Management	MCum	0.10	60000000	6000000.00
	Filing of Void - Rehandling of Dump (Not carried out as part of regular mining operation)	MM3			0.00
	Top soil Management	MM3	0.02	50000000	1000000.00
	Technical and Biological Reclamation of mined out land and OB Dump.	Ha			0.00
	Plantation over Virgin Area including green belt	Ha	5.90	200000	1180000.00
	Manpower Cost and supervision	MM3	200.00	500000	100000000.00
	Toe wall around the dump	m	500	1000	500000.00
	Garland Drain	m	310	500	155000.00
	Stowing				0.00
	Subsidence Monitoring and Management	m			0.00
	Isolation Stoppings	m	504	500	252000.00
	Any other Activity	m	1	1000000.00	1000000.00
Sub Total (A)	m	2331.02	111703500.00	111302000.00	
B. Post Closure Activities					
Dismantling of infrastructure & Disposal/ rehabilitation of mining Machinery	Dismantling of workshop	Ls	1	1000000	1000000.00
	Dismantling of CHP	Ls	1	1000000	1000000.00
	Dismantling of mine structures	Ls	1	1000000	1000000.00
	Dismantling of Civil structures	Ls			0.00
	Rehabilitation of the dismantled facilities	Ls	1	5000000	5000000.00
	Dismantling of pump and pipes/ other facilities.	Ls	1	1000000	1000000.00
	Dismantling of stowing bunker, provisioning of pumps for borewell pumping arrangement.	Ls			0.00
	Dismantling of UG equipment	Ls	1	1000000	1000000.00

	Rearranging water pipeline to dump top park/Agriculture land	Ls	1	1000000	1000000.00
	Dismantling of power lines.	Ls	1	2500000	2500000.00
	Sub total	Ls	8.00	13500000.00	13500000.00
Safety and Security	Barbed wire fencing around mine (Pit and dumps )				0.00
	Concrete wall with masonry / concrete pillars around the pit	m	1500.00	5000	7500000.00
	Securing entries (shaft/inclines)	No.	1	300000	300000.00
	Securing of Inclines	m	2	300000	600000.00
	Appropriate fencing around the water body				0.00
	installation of bore well pump				0.00
	Stabilisation  viz., benching, pitching et) of side walls of the water body				0.00
	Toe Wall around the dump				0.00
	Garland drain				0.00
	Drainage Channel from main OB dump				0.00
	Sub total				
Technical and Biological Reclamation of mined out of land and OB Dump	Filling of Void	Mm3			
	OB Rehandling for backfilling	MM3			
	Terracing, blanketing with soil and vegetation of External OB Dump	Ha			
	Paripharel road, gates, view point, cemented steps on bank	Ha			
	Expenditure on development of Agriculture land				
	Landscaping and Plantation				
	Sub total		0.00	0.00	0.00
Post Closure management and supervision	Power Cost	Ls	8.00	360000	2880000.00
	Post mining water quality management	Ls	12.00	5000000	60000000.00
	Post mining air quality management	Ls	12.00	5000000	60000000.00
	Subsidence monitoring for 5 years	Ls	15.00	1000000	15000000.00
	Manpower Cost and supervision	Ls	458	40000	18320000
	Sub total	LS	505.00	2280000.00	156200000.00
Sustainability	Skill Development and Trainings (Alternative Source of livelihood)	LS	1	10000000	10000000.00
	Fruit bearing, medicinal & local species plantation / Afforestation	LS	1	10000000	10000000.00
	Agriculture and other Allied Activities	LS	1	10000000	10000000.00
	Eco-Tourism Development	LS	1	10000000	10000000.00
	Flora and fauna Conservation/Wildlife conservation				0.00
	Water Resource Management/Conservation	LS	1	10000000	10000000.00
	Clean Energy Projects	LS	1	10000000	10000000.00
	Art and Culture	LS	1	10000000	10000000.00
	Women Empowerment	LS	1	10000000	10000000.00
	Welfare of aged and disabled people	LS	1	10000000	10000000.00
	Sustainable Living	LS	1	10000000	10000000.00
	Sanitation	LS	1	10000000	10000000.00
	Sub total(B)	LS	2027.00	126385000.00	288100000.00
Grand Total(A+B)			4358.02	238088500.00	399402000.00

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

Latest WPI Available	Mar25	154.70
WPI as on base date	May-24	153.50
Escalation rate of Financial assurance	Escalation rate of Financial assurance	1.008
	UG	OC
The base Rate of Financial assurance amount " Crs./Ha"	0.02	0
Financial assurance amount ". Crs/Ha"	0.02	0
Project Area "Ha"	659	0
Amount to be deposited into Escrow Account " in Crs	13.18	0
Amount already deposited into Escrow Account " in Crs	0	0
Net Amount to be deposited into Escrow Account " in Crs	13.18	0
Rate of compounding of Annual Financial assurance amount		5.00%
Balance production Life of the project "in Yrs"	40	0
Annual Financial assurance amount	0.33	0
Amount to be deposited into Escrow Account after compounding @ of 5% " in Crs"		39.862

Amount to be deposited into Escrow Account annually (" in Crs")

Year	OC	Year	UG	Total
		1	0.33	0.33
		2	0.347	0.347
		3	0.364	0.364
		4	0.382	0.382
		5	0.401	0.401
		6	0.421	0.421
		7	0.442	0.442
		8	0.464	0.464
		9	0.488	0.488
		10	0.512	0.512
		11	0.538	0.538
		12	0.564	0.564
		13	0.593	0.593
		14	0.622	0.622
		15	0.653	0.653
		16	0.686	0.686
		17	0.72	0.72
		18	0.756	0.756
		19	0.794	0.794
		20	0.834	0.834
		21	0.876	0.876
		22	0.919	0.919
		23	0.965	0.965
		24	1.014	1.014
		25	1.064	1.064
		26	1.117	1.117
		27	1.173	1.173
		28	1.232	1.232
		29	1.294	1.294
		30	1.358	1.358
		31	1.426	1.426
		32	1.498	1.498
		33	1.572	1.572
		34	1.651	1.651
		35	1.734	1.734
		36	1.82	1.82
		37	1.911	1.911

		38	2.007	2.007
		39	2.107	2.107
		40	2.213	2.213
<b>Total</b>	<b>0.000</b>		<b>39.862</b>	<b>39.862</b>

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