Modification & Review of Approved Mining Plan & Progressive Mine Closure Plan
(Under Rule 17(3) of MCR 2016 & 23 of MCDR 2017)

PART A (Text)

In Respect of

Surda Copper & Associated Minerals U/G Mines, Category: "A" (Fully Mechanized)
IBM Registration No: IBM/6381/2011 Mine Code: 14BHR27005
Reserved Forest: 88.83 Hectare
Protected Forest: 60.20 Hectare
Total Forest Area (A): 149.03 Ha (Final clearance obtained from MoEF & CC for non-forest use for 83.51 Ha (C) Action initiated for payment of NPV for balance 65.52 ha of forest land (D))
Total Non-Forest Area (B) 239.65 Ha
Total Lease Area (A + B) : 388.68 Hectare
Mining Area restricted within the area under (B) and (C) totaling to 325.16 Hec tare
Mineral: Copper & Associated Minerals
Village: Surda, Sohada, Benashole, Pathargora
& Forest Block
District: Singhbhum (E) Taluka: Ghatsila, State: Jharkhand
Period of Proposal: 01.04.2022 TO 31.3.2025
Validity of Lease up to 31.03.2040

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APPLICANT

HINDUSTAN COPPER LIMITED, INDIAN COPPERCOMPLEX, GHATSILA – 832303 SINGHBHUM (E) , JHARKHAND

PREPARED BY

1. **Amit Degvekar, Chief Manager (Exploration)**
   HCL, Indian Copper Complex
   Ghatsila -832303, Distt. Singhbhum (East), Jharkhand

2. **Parvez Alam, Chief Manager Mines**
   HCL , Indian Copper Complex,
   Ghatsila -832303, Distt. Singhbhum (East), Jharkhand

AMIT DEGVEKAR
Chief Manager - Exploration
HINDUSTAN COPPER LTD.
(A GOVT. OF INDIA ENTERPRISE)
INDIAN COPPER COMPLEX
P.O.- Moubhandar-832103
East Singhbhum, Jharkhand

PARVEZ ALAM
Chief Manager (Mines)
HINDUSTAN COPPER LIMITED
INDIAN COPPER COMPLEX
MOUBHANDAR

पत्र संख्या द्वारा
Vide letter No. RAN/ESB/C4/MP-34/2021-22, dt-27/04/22

Modification & Review of Approved Mining Plan & Progressive Mine Closure Plan
(Under Rule 17(3) of MCR 2016 & 23 of MCDR 2017)

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Action initiated for payment of NPV for balance 65.52 ha of forest land (D))
Total Non-Forest Area (B) 239.65 Ha
Total Lease Area (A + B) : 388.68 Hectare
Mining Area restricted within the area under (B) and (C) totaling to 323.16 Hec tare
Mineral: Copper & Associated Minerals
Village: Surda, Sohada, Benashole, Pathargora
& Forest Block
District: Singhbhum (E) Taluka: Ghatsila, State: Jharkhand
Period of Proposal: 01.04.2022 TO 31.3.2025
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APPLICANT

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   HCL , Indian Copper Complex,
   Ghatsila -832303, Distt. Singhbhum (East), Jharkhand

भारत सरकार-भारतीय खान ब्यूरो
GOVT OF INDIA-INDIAN BUREAU OF MINES
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क्षेत्रीय खान नियंत्रक
Regional Controller of Mines
भारतीय खान ब्यूरो
Indian Bureau of Mines

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MOUBHANDAR

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Index

PART A:	CHAPTER 1	GENERAL INFORMATION
	CHAPTER 2	GEOLOGY & EXPLORATION
	CHAPTER 3	MINERAL PROCESSING
	CHAPTER 4	MINING OPERATIONS
	CHAPTER 5	SUISTAINABLE MINING
	CHAPTER 6	PROGRESSIVE MINE CLOUSER PLAN
	CHAPTER 7	FINANCIAL ASSURANCE/ PERFORMANCE SURETY
	CHAPTER 8	REVIEW OF PREVIOUS PROPOSALS
	CHAPTER 9	IMPACT ASSESSMENT
PART B:	ANNEXXURES	
PART C:	PLANS & SECTIONS	

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Chapter 1: General Information

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1.1 : Lease Details

IBM Registration Number:	IBM/6381/2011
Lease Code:	36391901
Mine Code:	14BHR27005
Name of Lessee:	Shri Sanjay Panjyar
Address of Lessee:	Director (Operation) & Nominated Owner Hindustan Copper Limited 1, Ashutosh Chowdhury Avenue, Kolkata- 19
Type of Lessee :	PSU
Name of Mining Lease:	Surda Mining Lease
State:	Jharkhand
District:	Singhbhum (E)
Tehsil/ Taluk/ Mandal:	Ghatsila
Village:	SURDA, SOHADA, BENASHOLE, PATHARGORA AND FOREST BLOCK
Lease Area (Ha):	388.68 Hectare
Forest Area (Ha):	149.03 Hectare
Name of Minerals:	Copper
Name of associated minerals:	Associated minerals like Magnetite, pyrite, pyrrhotite are in traces and its occurrences is not minable.
Type :	Existing lease
Five Year Block (Financial Year)	2020-21 TO 2024-25
Type of working:	Underground
Nature of Use:	Captive
Category of Mine:	Category A

1.1.1: Initial/subsequent Lease grant details

Grant	From	To	Lease deed execution date	Lease registration date	Column1
Initial Grant	16.06.1939	15.06.1984	26.12.1941	26.12.1941	Annexure 2a
1st Extention	16.06.1984	15.06.2004	02.01.1990	02.01.1990	Annexure 2b
2nd Extention	16.06.2004	15.06.2014	22.02.2007	22.02.2007	Annexure 2c
3rd Extention	16.06.2014	31.03.2020	15.07.2017	15.07.2017	Annexure 2e
4th Extention	01.04.2020	31.03.2040	-	-	Annexure 1c

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1.1.2: Mining Plan Submission Criteria Details

Type of Document	Modification of mining plan
Reason/s for modification	Modified Mining Plan for Surda Mining lease over 388.68 ha (Mining area is restricted over 323.16 ha with in the lease area) as directed by MOEF&C, Govt. of India vide letter dtd. 08.03.2022 (**Annexure 3g**)
Period for which modification is proposed	2022-23 to 2024-25
LOI Number:	State Govt. letter no 50/04/52/M. Ranchi.
Date:	6/1/2022

1.2: Land Ownership Details

S.N.	Village	Taluka	Area (Ha)	Thana No/Khasra No	Type of Land	Nature of Land
1	Benashol	Musabani	1.58	100	Forest Land	
2	Benashol	Musabani	1.54	100	Private Land	
3	Benashol	Musabani	0.51	100	Government Land	
4	Sohada	Musabani	54.47	101	Forest Land	
5	Sohada	Musabani	49.49	101	Private Land	
6	Sohada	Musabani	78.81	101	Government Land	
7	Surda	Musabani	33.56	102	Forest Land	
8	Surda	Musabani	58.61	102	Private Land	
9	Surda	Musabani	24.52	102	Government Land	
10	Patharghara	Musabani	3.29	160	Forest Land	
11	Patharghara	Musabani	3.34	160	Private Land	
12	Patharghara	Musabani	3.89	160	Government Land	
13	Forest Block	Musabani	56.13	1098	Forest Land	
14	Forest Block	Musabani	8.82	1098	Private Land	
15	Forest Block	Musabani	10.12	1098	Government Land	

1.3: Existing Lease

Date of Execution	26-12-1941

1.3.1: Approval of earlier Mining Plan & Its Subsequent Review in Chronological Order

S.N.	Letter Number	Date	Period		Type Of Approved Document
			From	To	
1	RAN/ESB/Cu/MP-36/2019-20	27-11-2020	01.04.2020	31.03.2025	Modification of mining plan
2	RAN/ESB/Cu/MP-21/2018-19	16-04-2019	01.04.2019	31.03.2020	Mining plan
3	314(3)/2012-MCCM(CZ)/MP-36/181	18-02-2015	16.06.2014	31.03.2019	Mining plan
4	314(3)/2012-MCCM(CZ)/MP-5	22-01-2013	01.04.2012	15.06.2014	Scheme of mining

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1.3.2: Partial Surrenderd Area During Stages of Operations in Chronological Order

S.N.	Date	Supplementary Surrender order/ Letter Number	Supplementary Lease Deed Date	Final Retained Area over which current Mining Plan is Prepared (ha)
1	05.08.1994	Approved vide letter no 4021/M Dt. 05.08.1994, patna for the area 2430Hect	Nil	4493.00
2	22.06.2004	State Gazette Sl. No. 3 Dt.22.06.2004 for an area of 4104.32	22.02.2007	388.68

1.3.3: Transfer of Lease Area Subsequent to Grant

S.N.	Transfer of lease deed Number	Date of execution of Transfer lease deed	Name of Transferor	Nature of block transferred	
				Granted through auction	other than through auction for captive use
1	NA	NA	NA	No	No

1.3.4: Statutory Compliances

1.3.4.1: Environment Clearance

Applicable	No
Letter No	Inprinciple approval granted by MoEF&CC Letter No. F.No.I-11015/80/2012-IA.II(M) (Annexure 3a)
Date	29.12.2020
Validity	NA
ROM Mineral in tonnes	900000

1.3.4.2: SPCB Approvals

Letter No	JSPCB/HO/RNC/CTO-10942274/2022/278 (Annexure 3F)
Approval of	Consent to operate
Date	13-03-2022
Validity	31-12-2022
ROM Mineral in tonnes	317289

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1.3.4.3: Forest Clearance

Applicable	Yes
Letter No	a) Surda Mines has been accorded Stage-II Forestry Clesrance by the MoEF&CC (Forest Conservation Division) vide Letter No.F.No.8-64/93-FC dated 15.05.1998 (**Annexure 3a**) b) PCCF-cum-ED/ Nodal Officer have given extension vide Letter No. 360
Date	23-02-2021
Validity	31.03.2040 Co terminus with mining lease.
Area (Ha)	83.51

1.3.4.4: Land Acquisition Details

Total Area acquired/purchased so far	Surda Mine is an underground mineand Company possesses surface right over the land for mining operation a) This comprise of 31.07 ha forest land for which the forest clearance obtained b) Company obtained surface right of Govt. land 24.50 ha (permission granted by ADC vide Memo no. 9379/R dated 24.03.1973. c)The company has purchased 10.76 ha of land , and thus the total area put to use comes to 66.33 ha
Total Amount Paid (INR)	

1.3.5: Mine Location Details

Toposheet Number:	73J/1 (F45IG)

1.3.5.1: Location of Boundary Pillars

Pillar No.	Pillar Latitude *(dd:mm:ss.ss)*	Pillar Longitude *(dd:mm:ss.ss)*
A	22:34:18.848"N	86:25:31.849"E
B	22:32:43.119"N	86:25:58.633"E
C	22:32:56.241"N	86:26:45.097"E
D	22:34:17.401"N	86:26:22.197"E

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1.3.6: Owner/Nominated Owner Details

Name	PAN of Nominated Owner	Address of Nominated Owner	Mobile Number	Email	Please attach Minutes of Board Resolution in case of Nominated Owner
Shri Sanjay Panjiyar		Hindustan Copper Limited 1, Ashutosh Chowdhury Avenue, Kolkata- 19	8878951491	panjiyar_s@hindustancopper.com	Annexure 4b

1.3.7: Qualified Person Details as per M(OAHCEM)CR, 2016

S.N.	Prefix	Name	PAN of QP	Address	Mobile no.	Qualification	Exp in years as prescribed under the rule	Email	Column1
1	Mr.	Amit Degvekar	AIHPD9655N	Hindustan Copper Limited Indian Copper Complex Ghatsila - 832303	8210071178	MSc- Geology	16 year	amit_nd@hindustancopper.com	Annexure 8a
2	Mr.	Parvez Alam	AHOPA0471A	Hindustan Copper Limited Indian Copper Complex Ghatsila - 832303	8084227920	BE- Mining	18 year	parvez_a@hindustancopper.com	Annexure 8b

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Chapter 2: Geology & Exploration

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2.1: GEOLOGY

2.1.1: Topography

Terrain *
Undulating

Relief
Highest Level (m) from MSL *
210

Lowest Level (m) from MSL *
105

Average Level (m) from MSL
150

Drainage Pattern *
Dendritic

Order of Stream *
Order 2

Minimum Distance of Stream from Lease Area (m) *
6

2.1.2: Details of Physiographic features and Infrastructures avalalbe in and around the lease/ block area

Description	Location if existing Within the lease/block area.	Distance from boundary periphery in kms, if existing outside the lease/block area. (within 5.00Kms)	Remark if any
River/Nallah/Reservoir	Center ,North,South part of Mining lease.		Gharaduba Nala & Surda Nala goes across the lease boundary
Public roads (Tar road, cart road)	About 2 km north of Surda, a road branches off from the Jamshedpur Mocabani Road leading to Ghatsila		The nearest National Highway is NH-33, which is at an aerial distance of 6.5 km from the mine and can be approached via Ghatsila
Railway track	-	6 Km	The Lease is situated 6 km away from

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Haman settlements	Surda mining leasehold area spread over villages Surda, Sohada and Pathargora	Pathargora and Benasholo and Forest Block	Human settlement are present within the lease & 5.00 kms from outside the lease/block area.
Archaeological monuments/ places of worship/public utilities etc.	-	-	No Archaeological monuments/ places of worship/public utilities etc. within 5.00Km distance from ML boundary
Wild life sanctuaries/ national parks	-	-	No wild life sanctuaries /National Parks within 5.00Km distance from ML boundary
Coastal Regulation Zone (CRZ)	-	-	Area do not falls under Coastal Regulation Zone (CRZ)
Power transmission lines/telephone lines	The mine substation located adjacent to Surda Mining Lease	-	-
Firing range	-	-	-
Ordinance factory	NA	NA	NA
grazing land/ burial ground or cremation ground	-	-	-
Any other specify	-	-	-

Particulars	s from lease boundary in kms
Near by village	SURDA, SOHADA, BENASHOLE, PATHARGORA AND FOREST BLOCK
Nearest Railway station	The nearest Railway station is Ghatsila, which is at a distance of 6 Km away.
Nearest Port	Haldia port (223 Km)
Distance of SH/MH from lease area	The nearest National Highway is NH-33, which is at an aerial distance of 6.5 km from the mine and can be approached via Ghatsila

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2.1.3: Regional Geology

Regional Geology *

The generalized regional stratigraphic succession of this area as proposed by Sarkar and saha (1983 &1987) is given below,Precambrian Succession of Singhbhum Craton
(Saha & Sarkar,1983. 1987)

Age (Ma) Groups/Formation
1600-950 Newer Dolerite Dykes and Sills.
2000-2100 Moyurbhunj Granite, Soda Granite
2200-2100 Kolhan Group
----------Unconformity----------
2300-2400 Jaganthpur Lavas Dhanjori Group
Singhbhum Group 1) Dalma Lavas
2) Dhalbhum Formation
3) Chaibasa Formation
----------Unconformity----------
3000-3100 Singhbhum Granite (Phase II&III)
3200-3300 Iron Ore Group (IOG)
----------Unconformity----------
3400-3500 Singhbhum Granite (Phase-1)
_____Older metamorphic Orogeny_____
3500-3800 Older metamorphic group (OMG)
With Older Metamorphic Tonalite Gneiss.

(Reference: a) Saha, A. K.(1994).Crustal Evolution of Singhbhum-North Orissa, Eastern India.Mem.Geol.Soc.Ind.27.b) Sarkar, S. N. & Saha, A. K.(1977). Present Status of Precambrian Stratigraphy Tectonics and Geochronology of Singhbhum, Mourbhanj & Keonjhar Region .Ind. Jour. Earth. Sci. S. Roy Vol.37-65)

2.1.4: Local Geology & Structure

2.1.4.1: Local Geological Set-up *

Surda Mine Lease block is associated with Dhanjori and Chaibasa rocks of Singhbhum group of Archean age. The rock formations within the area are regionally metamorphosed argillaceous sediments and meta-volcanics of Pre-Cambrian age.
The rocks within the shear zone are highly sheared and mylonitised equivalents to siliceous rocks, granite and quartzites. The mineralization is mainly hosted by Dhanjori lavas altered to quartz-biotite-chlorite schist, biotite schist and chlorite schist. The shearing is most intense in the apex region of the arcuate shear zone (in the vicinity of Rakha mine). In this region, the shear zone is narrow ranging in width from 20m to 60 m and copper lodes are well developed and persistent.

2.1.4.2: Structure *

The general strike of the rocks in the area is NW-SE with dip varying from 30^0 to 50^0 towards NE. The thrust zone maintains a NW-SE trend in this part of the belt. The rock formations have been affected by tectonic movements giving rise to a series of major plunging folds and axes trending approximately ESE-WNW and developed within the shear zone. On the limbs of these folds, S-shaped cross folds have been observed. The Quartzite rocks shows well developed joint pattern. There are three mutually perpendicular tension fractures and two diagonal shear fractures are observed in the host rocks. The linear structure in the area is represented by (i) Pebble elongation (ii) Slicken-Slide (iii) Parallel alignment of mineral grains and (iv) axes of Micro fold, the lineation normally pitching 450 to 500 towards N 500 E.

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2.1.4.3: Lithology, Petrographic & Mineralogical Description for Major, Associated & Indicator Minerals *

On the basis of Geological Mapping done by Geological Survey of India, the following sequence of rock from S.W. to N.E. is reconstructed for the Surda area .
The details are given below:-
North East:-
11. Spilosite and basic rocks (Dalma Trap)
10. Sericite-Quartz-Schist
9. Quartzite (Chaibasa Stage)
8. Sericite-Kyanite-Quartz-Schist
7. Feldspathic-Schist with Tourmaline and Magnetite rock (not continuous along strike)
6. Quartz-Conglomerate(not continuous along the strike and well developed in the mines- Shear Zone rocks)
5. Granular-Quartz-Chlorite rock with tourmaline and magnetite and vein Quartz conglomerate
4. Biotite-Schist
3. Quartzite (Dhanjori Quartzite)
2. Biotite-Schist
1. Talc-Chlorite-Schist and ultrabasic Dhanjori Traps rocks

2.1.4.4: Mode of Occurance & Controls of Mineralization *

The ore bodies in the area are primarily copper lodes with dominate chalcopyrite, pyrite and subordinate pyrrhotite and a large number of minor and trace minerals which are mostly sulphides, arsenides and tellurides of nickel, cobalt, molybdenum, bismuth, uranium, precious metals etc. The copper mineralisation is in the form of disseminations in the granular quartz-chlorite schist to give fairly uniform low grade wide ore zones with considerable persistence along strike and dip. Within this wide zone, stringers and veins are found within biotite-chlorite schists. Thin, rich massive sulphide zones are confined in to brecciated quartz veins. Very sporadic replacement patches are noticed. Thus, the ore is essentially of the dissemination and cavity filling type. The ore zones are exposed on the surface in the form of leached outcrops and gossans with indigenous limonite with gangue minerals. Since the total sulphide ore minerals are small in proportion, the resultant gossan zones are not conspicuous. The copper lodes have been delineated in borehole cores and in the mines on the basis of the assay data. The lodes are mostly sheared zones with branches and interlocks of sulphides. In Surda mine three lodes are identified and the details are as under:-
I.)Hanging Wall Lode:
II)Inter Lode:
III) Footwall Lode:

2.1.4.5: Extent of Weathering/ Alteration *

Mineralisation and alteration:-
Intense shearing may be observed in the shear zone rocks. Shearing accompanied by silicification, feldspathisation, tourmalinisation and other metasomatic activities have resulted in alteration of the adjoining rock units to biotite chlorite quartz schists and to granular quartz biotite (tourmaline-magnetite) rocks with disseminated copper ores. Vein lets and stringers of chalcopyrite may be noted as filling within the fractures and also along the foliations in the chlorite/biotite quartz schist. The fracture filling type of ores may be observed in the conglomeratic quartzites.
Zone of oxidation:
The zone of oxidation extends over the entire strike length of the area. The depth of oxidation varies from 20 to 35m from the surface level. The lower limit of the zone of oxidation follows the topographic profile and there are no abrupt changes.
Zone of secondary enrichment:
The primary sulphides appear just below the zone of oxidation without a zone of secondary enrichment which is practically absent in the area. The sulphide minerals in the oxidized zone are invariably leached, leaving iron hydroxide as a residue. These leached outcrops on the surface indicate the presence of sulphide mineralisation at depth. Some of these leached outcrops exhibit limonitisation with shades of brown, grey and purple colours.
Paragenesis:
The paragenetic sequence of the ore minerals has been worked out on the basis of mutual textural and replacement relationship. In the ascending order of appearance it is limonite, chromite, pyrite, pyrrhotite, molybdenite, uraninite, nicolite, arsenopyrite, chalcopyrite, tetradymite and melonite.

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2.1.4.6. Nature/Form of Mineral: Lump

Specify if any other

2.1.4.7. Extent of Mineralization:

In Surda mine three lodes of mineralisation are identified and the detail are as under:-

Hanging Wall Lode

This is the richest among all the lodes of the mine block, occur between 450mS to 600m N near No. 3 shaft and between 900m S to 1300mS around No.4 shaft area. This lode shows an en-echelon pattern along strike, folded in places and the thickness (1m. to 6.5m) increases or decreases along strike and dip directions, however, the grade is consistent and mined by Room and Pillar and Cut and fill / PP methods.

Inter Lode

It occurs between 1300 m S to 950 m S around NO. 4 shaft and 300 m S to 150mS around No. 3 shaft. The width varies between 1.65m to 16m, variation is strike and dip directions also. The host rock varies from hard granular quart-chlorite to Quartz-schist, chlorite-schist. Both Room & Pillar and HCF/PP methods of stoping are suitable here.

Footwall Lode

This lode occurs around central part of the mining area between 400 m S to 900mS. Width varies 1.5m to 7.0m approx. This lode is suitable for HCF method of stoping.

2.1.4.8. Deposit Type (as per MEMC Rule)

Stratiform regular habit Deposit : In macro level, copper mineralization occurs as lode form which confines within share zone, occurring along schistosity of rock and this ore bearing shear zone shows stratified layered in habit confined only on shear zone.

Strike / Trend of the Ore Body: *

N	20	W

TO

S	20	E

Amount of Dip of the Ore Body (degree) *

30

(from)

Amount of Dip of the Ore Body (degree) *

50

(to)

Dip Direction of the Ore Body *

N	70	E

Plunge of Mineral Body (degree) (if any) *

0

Direction of Plunge *

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1.3: Exploration

1.3.1: Summary of The Previous Exploration (for fresh grant) / During Last Plan Period (for existing leases)

Name of The Agency *
Mineral Exploration Corporation Ltd.
Address: Dr. Babasaheb Ambedkar
Bhawan, Seminary Hills, Nagpur-440
006, Maharashtra
Email: headmd@mecl.gov.in

1.3.1.1: Geological Mapping

S.N	Year	Scale	Area Covered (Ha/km²)
1	Year 1	NA	Nil
2	Year 2	NA	Nil

Detailed Geological Mapping of Singhbhum copper belt between Surda and Bhatin was carried out in 1955-56 hence the proposal is Nil

1.3.1.2: Underground Geological Mapping

S.N	Year	Scale	Area Covered (Ha/km²)
1	Year 1	NA	NA
2	Year 2	NA	NA

1.3.1.3: Airborne Geophysical Survey

S.N	Type of Survey	Spacing (m)	Total line (km)	Area Covered (Ha/km²)	Latitude		Longitude	
					To	From	To	From
1	Nil	NA	NA	NA	NA	NA	NA	NA

1.3.1.4: Geophysical Survey

S.N	Type of Survey	Spacing (m)	Total line (km)	Area Covered (Ha/km²)	Latitude		Longitude	
					To	From	To	From
1	Nil	NA	NA	NA	NA	NA	NA	NA

1.3.1.5: Geochemical Survey

S.N	Type of Sample	No of Samples	Aanlysis reprt	Area Covered (Ha/km²)
1	NA	Nil	NA	Nil

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2.2.1.6: Underground Exploratory Mining

S. No.	Adit ID	Length in Mtr	Width in Mtr	Depth in mtrs	Volume (m^3)
1	NA	NA	NA	NA	NA
	As the mine is already an old u/g mine, definition drilling will be carried out to delineate the lodes during the development of the mine				

2.2.1.7: Underground Exploratory Drilling

2.2.1.7.1 Core/Non-core Drilling

S.N	Year	Exploration agency	Core holes: Number of boreholes drilled	Core holes: Total metr	Non-core (RC/DTH): Number of boreholes drilled	Non-core (RC/DTH): Total mtrs	Grand total: Total boreholes	Grand total: Total mtr	Attaching sheet of each borehole in [illegible]
1	2012-15	M/s MECL	8	7483.6	0	0	8	7483.6	12a
2	2018-20	M/s MECL	13	8924.5	0	0	13	8924.5	

2.2.1.7.2 Ore drive

S.N	Type	Drive id	Size Of Drive (m x m)	Length of Drive (m)	Location Of Drive
1	Ore Drive			Nil	NA
	The mining operation could not been started for the period 2020-21 to 2021-22 due to non extension of mining lease by State Govt.				

2.2.1.8: Sampling

S.N	Type of sample	No of samples collected	Number of samples analyzed	Location: Latitude	Location: Longitude	Remark if any
1	Nil	Nil	Nil	NA	NA	
	The mining operation could not been started for the period 2020-21 to 2021-22 due to non extension of mining lease by State Govt.					

2.2.1.9: Chemical Analysis

S.N.	Sample ID	Minerals	Radical with garde in %	Name of Agency	Type of agency	Attachment
1	MSM-01 to MSM-08	chalcopyrite	Cu%	M/s MECL	Govt. lab	Annexure 17

* Chemical analysis of core /non core samples may be uploaded in CSV file which shall normally include Five files namely collar file, survey file and Geology log file, Assay file and RQD File.

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2.2.1.10: Petrology & Mineralogical Studies

S.N	Type of Sample	Number of Sample Drawn	Number of Sample Analyzed	Petrographic Study Report
1	Mineral	20 (Petrology) 25 (Mineralogical)	20	Annexure 11a

2.2.1.11: Beneficiation Studies

S.N	Type of Beneficiation	Number of Samples	Attach
1	Nil	NA	NA

2.2.1.12: Bulk Density Study as per M(EMC) Rules, 2016 and SOP of CGPB

Method adopted for calculating bulk density of ore and waste

walker's steelyard balance.

S.N	Nature of Ore/OB	Mineral	Number of samples	Bulk Density Established (t/m^3)
1	Ore	Chalcopyrite	40	2.88

2.2.1.13: Area Covered under Exploration

Level of exploration	Area in Ha		Total area in Ha.
	Forest	Non-forest	
G-1	31.07	131.01	162.08
G-2	52.44	19.01	71.45
G-3	65.52	89.63	155.15
G-4			0
Area proved as Non-mineralized			0
Area to be explored			0
Total	149.03	239.65	388.68

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2.2.2: Summary of The Previous Exploration (Before Last Plan Period)

Name of The Agency *

Mineral Exploration Corporation Limited

2.2.2.1: Geological Mapping

S.N.	Year	Scale	Area Covered (Ha/km²)
1	1955-56	0.739111111	388.68 Ha

2.2.2.2: Underground Geological Mapping

S.N.	Year	Scale	Area Covered (Ha/km²)
1	NA	Nil	Nil

All drive is mapped regularly in order to keep track on the payable lode, the geological map og drive is being done on 1:600 scale

2.2.2.3: Airborne Geophysical Survey

S.N.	Type of Survey	Spacing (m)	Total line (km)	Area Covered (Ha/km²)	Latitude		Longitude	
					To	From	To	From
1	Nil	NA	NA	NA	NA	NA	NA	NA

2.2.2.4: Geophysical Survey

S.N.	Type of Survey	Spacing (m)	Total line (km)	Area Covered (Ha/km²)	Latitude		Longitude	
					To	From	To	From
1	Resistivity	152.4	9 No	388.68	N21°32'43.119"	N22°34'17.401	86°25'31.849"	E86°26'45.097"
2	Magnetic	152.4	9 No	388.68	N21°32'43.119"	N22°34'17.401	86°25'31.849"	E86°26'45.097"
3	Self-Potential(SP)	152.4	9 No	388.68	N21°32'43.119"	N22°34'17.401	86°25'31.849"	E86°26'45.097"

Annexure: 9d

2.2.2.5: Geochemical Survey

S.N.	Type of Sample	No of Samples	Aanlysis reprt	Area Covered (Ha/km²)
1	Nil	NA	NA	NA

2.2.2.6: Underground Exploratory Mining

S.N.	Adit ID	Length in Mtr	Width in Mtr	Depth in mtrs	Volume (m³)
1	No.5 Adit	70	2.4mX1.8 m	1st L	870.912

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2.2.2.7: Underground Exploratory Drilling

2.2.2.7.1:Core/Non-core Drilling

S.N.	Year	Exploration agency	Core holes		Non-core (RC/DTH)		Grand total		Attach log sheet of each borehole in
			Number of boreholes drilled	Total metr	Number of boreholes drilled	Total mtrs	Total boreholes	Total mtr	
1	1955 to 2020	HCL	3058	50953	0	0	3058	50953	Annexure 17

2.2.2.7.2 Ore drive

S.N.	Type	Drive id	Size Of Drive (m x m)	Length of Drive (m)	Location Of Drive
1	Ore Drive	1st L	3 x 2.4	1020	1st L
2	Ore Drive	2nd L	3 x 2.4	1670	2nd L
3	Ore Drive	3rd L	3 x 2.4	1760	3rd L
4	Ore Drive	4th L	3 x 2.4	2045	4th L
5	Ore Drive	5th L	3 x 2.4	3380	5th L
6	Ore Drive	6th L	3 x 2.4	1740	6th L
7	Ore Drive	7th L	3 x 2.4	1750	7th L
8	Ore Drive	8th L	3 x 2.4	1750	8th L
9	Ore Drive	9th L	3 x 2.4	1295	9th L
10	Ore Drive	10th L	3 x 2.4	920	10th L
11	Ore Drive	11th L	3 x 2.4	900	11th L
12	Ore Drive	12th L	3 x 2.4	400	12th L
13	Ore Drive	13th L	3 x 2.4	150	13th L

2.2.2.8: Sampling

S.N.	Type of sample	No of samples collected	Number of samples analyzed	Location		Remark if any
				Latitude	Longitude	
1	NA	NA	NA	NA	NA	NA

2.2.2.9: Chemical Analysis

S.N.	Sample ID	Minerals	Radical with garde in %	Name of Agency	Type of agency	Attachment
1	CSV five files namely collar file, survey file and Geology log file, Assay file and RQD File enclosed as Annexure 17					

* Chemical analysis of core /non-core samples may be uploaded in CSV file which shall normally include Five files namely collar file, survey file and Geology log file, Assay file and RQD File.

2.2.2.10: Petrology & Mineralogical Studies

S.N.	Type of Sample	Number of Sample Drawn	Number of Sample Analyzed	Petrographic Study Report
1	Nil			

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2.2.2.11: Beneficiation Studies

S.N.	Type of Beneficiation	Number of Samples	Attach
1	Nil		Attach beneficiation study report in pdf

2.2.2.12: Bulk Density Study as per M(EM/C) Rules, 2016 and SOP of CGPB

Method adopted for calculating bulk density of ore and waste

S.N.	Nature of Ore/OB	Mineral	Number of samples	Bulk Density Established (t/m^3)
1	Nil	NA	NA	NA

2.2.2.13: Area Covered under Exploration

Level of exploration	Area in Ha		Total area in Ha.
	Forest	Non-forest	
G-1	31.07	131.01	162.08
G-2	52.44	19.01	71.45
G-3	65.52	89.63	155.15
G-4			0
Area proved as Non-mineralized			0
Area to be explored			0
Total	149.03	239.65	388.68

Year	Area converted to G1 from G2, G3 & G4	% increase in G-1 Area	Remaining Area % in G2	Remaining Area % in G3	Remaining Area % in G4	Remaining Area in G2	Remaining Area in G3	Remaining Area in G4
Year 1	162.08	41.70	18.38	39.92	0	71.45	155.15	0
Year 2								
Year 3								
Year 4								
Year 5								
Potentially Mineralized area (Ha)								

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2.2.3: Ore Body Geometry & Grade

S.N.	Name of the ore band	General Strike / Trend	Dip Of Mineral Body	Average Strike Length (m)	Average Width (m)
	FW, INT, HW, HW1 and MERGED	NW-SE	30° to 50°	1450	6.04

Table continued..

S.N.	Chemical parameters				
	Average Depth (m)	Name of the radical	Min Grade (%)	Max Grade (%)	Avg Grade (%)
	NA	Cu	0.5	1	1.02

2.2.4: Reserve / Resource Estimation Method

2.2.4.1: Methodology

Resource / Reserve Estimation Method * : Sectional Area Method

Methodology

i. Reserves which have been estimated on the basis of surface boreholes are categorized as 331/332/333 categories (Figure 3.1)

ii. In areas where consecutive two payable borehole intersections are available which are at a distance of 300 m along dip and 150 m to 200 m along strike, the reserves in theses are categorized under 331 categories.

iii. Drill reserves lying up to 50m along dip and 60m along strike from the extents of 331 categories are categorized in 332 categories

iv. Reserves which have been estimated on the basis of single borehole intersection or where the consecutive borehole intersections are more than 300m apart along dip and 150 to 200m along strike are categorized in 332 categories

v. Drill reserves lying up to 25 m along dip and 10 m along strike from the extents of 332 categories are categorized in 333 categories.

vi. Underground development i.e. ore drive, raise, crosscut is done at underground in prior of mining to convert the resource into reserve i.e. 111 category in UNFC classification.

2.2.4.2: Resource Calculation

S.N.	Cross section/Block	Sectional Area/Block area (sq mtr)	Influence (m)	Depth in mtr	Volume (m³)	Bulk Density (t/m³)	Resource Quantity (t)
1	A-A' / HW_SL	3.72	121	52	23406	2.88	67410
2	L-L' / INT-1_SL	2.29	50	24	8473	2.88	24402
3	L-L' / F.W_SL	1.57	50	36	2826	2.88	8139
4	M-M' / INT-1_SL	2.46	50	84	10332	2.88	29756
5	M-M' / INT-2_SL	2.77	50	48	6648	2.88	19146
6	A-A' / HW_SL	3.72	25	52	4836	2.88	13928
7	L-L' / INT-1_SL	2.29	28	74	4745	2.88	13665
8	L-L' / F.W_SL	1.57	28	36	1583	2.88	4558
9	M-M' / INT-1_SL	2.46	28	66	4729	2.88	13617
10	M-M' / INT-2_SL	2.77	28	48	2393	2.88	6893

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MODIFICATION REVIEW OF MINING PLAN
SURDA MINING LEASE (388.68 Ha.)
(Mining Area: 323.16 Ha)
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11	A-A' / HW_5L	3.72	6	52	1161	2.88	3343
12	A-A' / HW_6L	3.72	121	54	25207	2.88	72595
13	L-L' / INT-1_6L	2.29	50	54	6412	2.88	18467
14	L-L' / F.W_6L	1.57	50	60	4710	2.88	13565
15	M-M' / _6L	2.46	50	60	7380	2.88	21254
16	M-M' / INT-2_6L	2.77	50	60	8310	2.88	23931
17	A-A' / HW_6L	3.72	25	56	5208	2.88	14999
18	L-L' / INT-1_6L	2.29	28	56	3591	2.88	10341
19	L-L' / F.W_6L	1.57	28	60	2638	2.88	7596
20	M-M' / _6L	2.46	18	60	2657	2.88	7652
21	M-M' / INT-2_6L	2.77	18	60	2992	2.88	8618
22	A-A' / HW_6L	3.72	6	56	1250	2.88	3600
23	A-A' / HW_7L	1.9	121	54	12415	2.88	35754
24	L-L' / INT-1_7L	1.85	50	60	5550	2.88	15984
25	L-L' / HW_7L	1.85	50	60	5550	2.88	15984
26	L-L' / F.W_7L	1.57	50	60	4710	2.88	13565
27	A-A' / HW_7L	1.9	25	54	2565	2.88	7387
28	L-L' / INT-1_7L	1.85	28	60	3108	2.88	8951
29	L-L' / HW_7L	1.85	28	60	3108	2.88	8951
30	L-L' / F.W_7L	1.57	28	60	2638	2.88	7596
31	A-A' / HW_7L	1.9	6	54	616	2.88	1773
32	A-A' / HW_8L	1.9	121	56	12874	2.88	37076
33	L-L' / INT-1_8L	1.85	50	62	5735	2.88	16517
34	L-L' / HW_8L	1.85	50	62	5735	2.88	16517
35	L-L' / F.W_8L	2.56	50	62	7936	2.88	22856
36	A-A' / HW_8L	1.9	25	56	2660	2.88	7661
37	L-L' / INT-1_8L	1.85	28	62	3212	2.88	9249
38	L-L' / HW_8L	1.85	28	62	3212	2.88	9249
39	L-L' / F.W_8L	2.56	28	62	4444	2.88	12799
40	A-A' / HW_8L	1.9	6	50	638	2.88	1839
41	A-A' / HW_9L	1.9	121	58	13334	2.88	38402
42	L-L' / INT-1_9L	1.85	50	60	5550	2.88	15984
43	L-L' / F.W_9L	2.56	50	60	7680	2.88	22118
44	A-A' / HW_9L	1.9	25	58	2755	2.88	7934
45	L-L' / INT-1_9L	1.85	28	60	3108	2.88	8951
46	L-L' / F.W_9L	2.56	28	60	4301	2.88	12386
47	A-A' / HW_9L	1.9	6	58	661	2.88	1904
48	A-A' / HW_10L	1.9	121	18	4138	2.88	11918
49	A-A' / Local_10L	2.56	121	56	17347	2.88	49958
50	L-L' / INT-1_10L	6	50	68	13600	2.88	39168
51	L-L' / F.W_10L	2.56	50	40	5120	2.88	14746
52	M-M' / HW_10L	4.11	50	10	2055	2.88	5918
53	M-M' / INT-1_10L	2	50	6	600	2.88	1728
54	M-M' / FW_10L	2.23	50	6	669	2.88	1927
55	A-A' / HW_10L	1.9	25	18	855	2.88	2462
56	A-A' / Local_10L	2.56	25	56	3584	2.88	10322
57	L-L' / INT-1_10L	4	28	68	7616	2.88	21934
58	L-L' / F.W_10L	2.56	28	40	2867	2.88	8258
59	M-M' / HW_10L	4.11	18	10	740	2.88	2131
60	M-M' / INT-1_10L	2	18	6	216	2.88	622
61	M-M' / FW_10L	2.23	18	6	241	2.88	694
62	A-A' / HW_10L	1.9	6	18	205	2.88	591
63	A-A' / Local_10L	2.56	6	56	860	2.88	2477

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64	A-A' / Local_11L	2.56	111	54	16727	2.88	48174
65	L-L' / INT-1_11L	4	50	66	13200	2.88	38016
66	M-M' / HW_11L	4.11	50	56	11508	2.88	33143
67	M-M' / INT-1_11L	3	50	56	5600	2.88	16128
68	M-M' / FW_11L	2.23	50	56	6244	2.88	17983
69	A-A' / Local_13L	2.56	25	54	3456	2.88	9953
70	L-L' / INT-1_13L	4	28	66	7392	2.88	21289
71	M-M' / HW_13L	4.11	18	56	4143	2.88	11931
72	M-M' / INT-1_13L	3	18	56	2016	2.88	5806
73	M-M' / FW_13L	2.23	18	56	2248	2.88	6474
74	A-A' / Local_13L	2.56	6	54	829	2.88	2389
75	11L	1364	NA	37.5	51140	2.88	147283
76	12L	5103	NA	37.5	191358	2.88	551133
77	12L	6683	NA	37.5	250613	2.88	721765
78	12L	12251	NA	37.5	459423	2.88	1323138
79	13	3012	NA	37.5	112944	2.88	325279
80	13	3053	NA	37.5	113752	2.88	327605
81	13	11014	NA	37.5	413026	2.88	1189514
82	14	2759	NA	37.5	103475	2.88	298009
83	14	2711	NA	37.5	101673	2.88	292818
84	14	7023	NA	37.5	263349	2.88	758444
85	15	3059	NA	37.5	114700	2.88	330335
86	15	3093	NA	37.5	115980	2.88	334021
87	15	13636	NA	37.5	511363	2.88	1472725
88	16	2566	NA	37.5	96217	2.88	277162
89	16	2380	NA	37.5	89263	2.88	257078
90	16	18532	NA	37.5	694200	2.88	1999296
91	17	2788	NA	37.5	104261	2.88	300273
92	17	2611	NA	37.5	97931	2.88	282043
93	17	6051	NA	37.5	226932	2.88	653567
94	18	3701	NA	37.5	138758	2.88	399737
95	18	3910	NA	37.5	146634	2.88	422249
96	18	4884	NA	37.5	183159	2.88	527499
97	19	914	NA	37.5	34259	2.88	98666
98	19	962	NA	37.5	36069	2.88	103878
99	19	10171	NA	37.5	381421	2.88	1098492
100	20	1772	NA	37.5	66445	2.88	191363
101	20	1909	NA	37.5	71581	2.88	206152
102	20	8364	NA	37.5	313642	2.88	903289

Table continued...

S.N	Level of Exploration	Type of Land	Name of the radical	Grade (%)	Method used for resource estimation
1	331	Non Forest	Cu	1.28	Cross section
2	331	Non Forest	Cu	1.02	Cross section
3	331	Non Forest	Cu	0.94	Cross section
4	331	Non Forest	Cu	1.05	Cross section
5	331	Non Forest	Cu	1.05	Cross section
6	332	Non Forest	Cu	1.28	Cross section
7	332	Non Forest	Cu	1.02	Cross section
8	332	Non Forest	Cu	0.94	Cross section

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[illegible]	332	Non Forest	Cu	1.05	Cross section
[illegible]	332	Non Forest	Cu	1.05	Cross section
[illegible]	333	Non Forest	Cu	1.28	Cross section
[illegible]	331	Non Forest	Cu	1.28	Cross section
[illegible]	331	Non Forest	Cu	1.02	Cross section
[illegible]	331	Non Forest	Cu	0.94	Cross section
[illegible]	331	Non Forest	Cu	1.05	Cross section
[illegible]	331	Non Forest	Cu	1.05	Cross section
[illegible]	332	Non Forest	Cu	1.28	Cross section
[illegible]	332	Non Forest	Cu	1.02	Cross section
[illegible]	332	Non Forest	Cu	0.94	Cross section
[illegible]	332	Non Forest	Cu	1.05	Cross section
[illegible]	332	Non Forest	Cu	1.05	Cross section
[illegible]	333	Non Forest	Cu	1.28	Cross section
[illegible]	331	Non Forest	cu	2.36	Cross section
[illegible]	331	Non Forest	cu	1.02	Cross section
[illegible]	333	Non Forest	cu	1.19	Cross section
[illegible]	331	Non Forest	cu	0.94	Cross section
[illegible]	332	Non Forest	cu	2.36	Cross section
[illegible]	332	Non Forest	cu	1.02	Cross section
[illegible]	332	Non Forest	cu	1.19	Cross section
[illegible]	332	Non Forest	cu	0.94	Cross section
[illegible]	333	Non Forest	cu	2.36	Cross section
[illegible]	331	Non Forest	cu	2.36	Cross section
[illegible]	331	Non Forest	cu	0.82	Cross section
[illegible]	331	Non Forest	cu	1.19	Cross section
[illegible]	331	Non Forest	cu	0.89	Cross section
[illegible]	332	Non Forest	cu	2.36	Cross section
[illegible]	332	Non Forest	cu	0.82	Cross section
[illegible]	332	Non Forest	cu	1.19	Cross section
[illegible]	332	Non Forest	cu	0.89	Cross section
[illegible]	333	Non Forest	cu	2.36	Cross section
[illegible]	331	Non Forest	cu	2.36	Cross section
[illegible]	331	Non Forest	cu	0.82	Cross section
[illegible]	331	Non Forest	cu	0.89	Cross section
[illegible]	332	Non Forest	cu	2.36	Cross section
[illegible]	332	Non Forest	cu	0.82	Cross section
[illegible]	332	Non Forest	cu	0.89	Cross section
47	333	Non Forest	cu	2.36	Cross section
48	331	Non Forest	cu	2.36	Cross section
49	331	Non Forest	cu	0.91	Cross section
50	331	Non Forest	cu	1.09	Cross section
51	331	Non Forest	cu	0.89	Cross section
52	331	Non Forest	cu	2.00	Cross section
53	331	Non Forest	cu	1.64	Cross section
54	331	Non Forest	cu	1.06	Cross section
55	332	Non Forest	cu	2.36	Cross section
56	332	Non Forest	cu	0.91	Cross section
57	332	Non Forest	cu	1.09	Cross section
58	332	Non Forest	cu	0.89	Cross section
59	332	Non Forest	cu	2.00	Cross section
60	332	Non Forest	cu	1.64	Cross section
61	332	Non Forest	cu	1.06	Cross section

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62	333	Non Forest	cu	2.36	Cross section
63	333	Non Forest	cu	0.91	Cross section
64	331	Non Forest	cu	0.91	Cross section
65	331	Non Forest	cu	1.09	Cross section
66	331	Non Forest	cu	2.00	Cross section
67	331	Non Forest	cu	1.64	Cross section
68	331	Non Forest	cu	1.06	Cross section
69	332	Non Forest	cu	0.91	Cross section
70	332	Non Forest	cu	1.09	Cross section
71	332	Non Forest	cu	2.00	Cross section
72	332	Non Forest	cu	1.44	Cross section
73	332	Non Forest	cu	1.06	Cross section
74	333	Non Forest	cu	0.91	Cross section
75	331	Non Forest	cu	1.16	Cross section
76	331	Non Forest	cu	1.17	LEVEL PLAN METHOD
77	332	Non Forest	cu	1.06	LEVEL PLAN METHOD
78	333	Non Forest	cu	1.16	LEVEL PLAN METHOD
79	331	Non Forest	Cu	0.91	LEVEL PLAN METHOD
80	332	Non Forest	Cu	0.91	LEVEL PLAN METHOD
81	333	Non Forest	Cu	0.83	LEVEL PLAN METHOD
82	331	Non Forest	Cu	0.95	LEVEL PLAN METHOD
83	332	Non Forest	Cu	0.94	LEVEL PLAN METHOD
84	333	Non Forest	Cu	0.95	LEVEL PLAN METHOD
85	331	Non Forest	Cu	0.87	LEVEL PLAN METHOD
86	332	Non Forest	Cu	0.86	LEVEL PLAN METHOD
87	333	Non Forest	Cu	0.99	LEVEL PLAN METHOD
88	331	Non Forest	Cu	1.05	LEVEL PLAN METHOD
89	332	Non Forest	Cu	1.05	LEVEL PLAN METHOD
90	333	Non Forest	Cu	0.87	LEVEL PLAN METHOD
91	331	Non Forest	Cu	0.82	LEVEL PLAN METHOD
92	332	Non Forest	Cu	1.38	LEVEL PLAN METHOD
93	333	Non Forest	Cu	0.73	LEVEL PLAN METHOD
94	331	Non Forest	Cu	0.82	LEVEL PLAN METHOD
95	332	Non Forest	Cu	0.82	LEVEL PLAN METHOD
96	333	Non Forest	Cu	0.82	LEVEL PLAN METHOD
97	331	Non Forest	Cu	0.82	LEVEL PLAN METHOD
98	332	Non Forest	Cu	0.82	LEVEL PLAN METHOD
99	333	Non Forest	Cu	0.80	LEVEL PLAN METHOD
100	331	Non Forest	Cu	0.81	LEVEL PLAN METHOD
101	332	Non Forest	Cu	0.81	LEVEL PLAN METHOD
102	333	Non Forest	Cu	0.81	LEVEL PLAN METHOD

2.2.4.3: Mineral Resource Estimate for Conversion to Mineral Reserve

Underground development i.e. ore drive, raise, crosscut is done at underground to conversion of Resource to Reserve

2.2.4.4: Threshold value & Cut off Parameters

At 0.5% Cu cut-off 2 METER MINIMUM THICKNESS

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2.2.4.5: Mining Factors or Assumptions

The pay limit has been restricted to 0.8% of Cu

2.2.4.6: Metallurgical Factors or Assumptions

Recovery of Cu fro ROM to concentrates 92 to 93 %

2.2.4.7: Cost & Revenue Factors

NA

2.2.4.8: Market Assessment

NA

2.2.4.9: Other Modifying Factors

LME price

2.2.4.10: Classification

UNFC Classification

2.2.4.11: Calculation of blocked resources

S.N	Reserves blocked due to	Cross section/Block	Sectional area/ block area (in Sq mrt)	Influence (m)	Depth (m)	Volume (m^3)	Bulk Density (t/m^3)
1	Others	Locked in in-situ pills	NA	NA	NA	2319821	2.88
2	Others	Locked in in-situ pills	NA	NA	NA	500546	2.88
	Total	8150000					

Table continued...

S.N	Resource Quantity (t)	UNFC code	Type of Land	Name of the radical	Grade (%)	Method used for resource estimation
1	668 1085	211		cu	1.01	
2	1441572	222		cu	1.17	

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3.3.8.12: Calulation of Reserves

Cross Sectinon/Block	Sectional area/block area in Sq mtr	Influence (m)	Depth (m)	Volume (m³)	Bulk Density (t/m³)	Reserves Quantity (t)
4L	6370		4	25480	2.88	73382
4L	170		1.82	491	2.88	1415
4L	880		2.18	1918	2.88	5525
4L	4400		2.18	9592	2.88	27625
4L	640		1.59	1018	2.88	2931
4L	521		2.39	1245	2.88	3586
4L	2700		2.39	6453	2.88	18585
4L	360		6.73	2423	2.88	6979
5L	4395		2.08	9142	2.88	26328
5L	2600		2.26	5876	2.88	16923
5L	1350		1.81	6064	2.88	17463
5L	2105		2.17	4568	2.88	13155
5L	2290		2.08	4762	2.88	13658
5L	2508		3.03	7600	2.88	21889
5L	1425		2.78	3963	2.88	11527
5L	3876		2.67	10349	2.88	29805
5L	6808		2.67	18177	2.88	52349
6L	938		2.65	2486	2.88	7161
6L	1836		2.65	4864	2.88	14009
6L	2795		2.65	7406	2.88	21329
6L	2629		2.65	6968	2.88	20068
6L	4220		2.65	11183	2.88	32270
6L	1316		2.65	3488	2.88	10045
6L	322		2.60	852	2.88	2455
6L	2464		2.65	6533	2.88	18959
6L	2219		2.65	5880	2.88	16934
6L	906		2.65	2400	2.88	6912
6L	1094		2.65	2899	2.88	8349
6L	1188		2.65	3149	2.88	9070
6L	473		2.65	1253	2.88	3609
6L	197		2.26	445	2.88	1282
6L	623		2.39	1490	2.88	4291
6L	549		1.61	884	2.88	2547
6L	633		2.68	1697	2.88	4888
6L	139		2.49	347	2.88	1000
6L	352		2.18	767	2.88	2210
6L	741		1.55	1148	2.88	3307
6L	154		2.27	350	2.88	1009
6L	355		2	710	2.88	2045
6L	587		2.4	1409	2.88	4058
6L	700		2.23	1560	2.88	4493
6L	2318		2.1	4867	2.88	14017
6L	836		1.79	1496	2.88	4309
6L	303		2.65	804	2.88	2316
6L	559		2.65	1481	2.88	4266
6L	525		2.65	1392	2.88	4008
6L	526		2.65	1394	2.88	4014
6L	670		2.65	1775	2.88	5113
6L	263		2.65	698	2.88	2009

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10	6L	64		2.65	170	2.88	491
11	6L	497		2.65	1317	2.88	3792
12	6L	444		2.65	1176	2.88	3387
13	6L	181		2.65	480	2.88	1382
14	6L	219		2.65	580	2.88	1670
15	6L	238		2.65	630	2.88	1814
16	6L	95		2.65	251	2.88	722
17	6L	2895		2.65	7667	2.88	22080
18	6L	1442		2.65	3820	2.88	11003
19	6L	680		2.65	1803	2.88	5192
20	6L	705		2.65	1868	2.88	5381
21	6L	1720		2.65	4558	2.88	13127
22	6L	642		2.65	1700	2.88	4897
23	6L	728		2.65	1930	2.88	5559
24	6L	1087		2.65	2880	2.88	8293
25	7L	13711		3.4	46617	2.8	130528
26	7L	54302		3.4	184626	2.8	516952
27	8L	61962		4	247848	2.8	693975
28	8L	46635		3.5	163224	2.8	457026
29	9L	58106		2.5	145266	2.8	406745
30	10L	79111		2.5	197778	2.8	553779
31	10L	9721		2.5	24302	2.8	68046
32	11L	67923		2.5	169808	2.8	475462
33	11L	96199		2.5	240497	2.8	673392
34	12L	59911		2.5	149777	2.8	419375

Table continued...

S.N.	UNFC code	Type of Land	Name of the of radical	Grade (%)	Method used for resource estimation
1	111	Forest	Cu	1.1	LEVEL PLAN METHOD
2	111	Forest	Cu	1.37	LEVEL PLAN METHOD
3	111	Forest	Cu	1.31	LEVEL PLAN METHOD
4	111	Forest	Cu	1.31	LEVEL PLAN METHOD
5	111	Forest	Cu	1.26	LEVEL PLAN METHOD
6	111	Forest	Cu	1.18	LEVEL PLAN METHOD
7	111	Forest	Cu	1.18	LEVEL PLAN METHOD
8	111	Forest	Cu	1.29	LEVEL PLAN METHOD
9	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
10	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
11	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
12	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
13	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
14	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
15	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
16	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
17	111	Non Forest	Cu	1.18	LEVEL PLAN METHOD
18	111	Non Forest	Cu	1.33	LEVEL PLAN METHOD
19	111	Non Forest	Cu	1.3	LEVEL PLAN METHOD
20	111	Non Forest	Cu	1.92	LEVEL PLAN METHOD
21	111	Non Forest	Cu	1.44	LEVEL PLAN METHOD

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22	111	Non Forest	Cu	1.28	LEVEL PLAN METHOD
23	111	Non Forest	Cu	0.69	LEVEL PLAN METHOD
24	111	Non Forest	Cu	0.78	LEVEL PLAN METHOD
25	111	Non Forest	Cu	1.17	LEVEL PLAN METHOD
26	111	Non Forest	Cu	0.99	LEVEL PLAN METHOD
27	111	Non Forest	Cu	1	LEVEL PLAN METHOD
28	111	Non Forest	Cu	1.33	LEVEL PLAN METHOD
29	111	Non Forest	Cu	1.08	LEVEL PLAN METHOD
30	111	Non Forest	Cu	1.25	LEVEL PLAN METHOD
31	122	Non Forest	Cu	1.33	LEVEL PLAN METHOD
32	122	Non Forest	Cu	1.17	LEVEL PLAN METHOD
33	122	Non Forest	Cu	1.5	LEVEL PLAN METHOD
34	122	Non Forest	Cu	1.06	LEVEL PLAN METHOD
35	122	Non Forest	Cu	0.92	LEVEL PLAN METHOD
36	122	Non Forest	Cu	1.51	LEVEL PLAN METHOD
37	122	Non Forest	Cu	1.99	LEVEL PLAN METHOD
38	122	Non Forest	Cu	1.33	LEVEL PLAN METHOD
39	122	Non Forest	Cu	0.8	LEVEL PLAN METHOD
40	122	Non Forest	Cu	1.62	LEVEL PLAN METHOD
41	122	Non Forest	Cu	1.96	LEVEL PLAN METHOD
42	122	Non Forest	Cu	1.28	LEVEL PLAN METHOD
43	122	Non Forest	Cu	1.29	LEVEL PLAN METHOD
44	122	Non Forest	Cu	1.65	LEVEL PLAN METHOD
45	122	Non Forest	Cu	0.92	LEVEL PLAN METHOD
46	122	Non Forest	Cu	1.25	LEVEL PLAN METHOD
47	122	Non Forest	Cu	1.44	LEVEL PLAN METHOD
48	122	Non Forest	Cu	1.28	LEVEL PLAN METHOD
49	122	Non Forest	Cu	0.69	LEVEL PLAN METHOD

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50	122	Non Forest	Cu	0.76	LEVEL PLAN METHOD
51	122	Non Forest	Cu	1.17	LEVEL PLAN METHOD
52	122	Non Forest	Cu	0.99	LEVEL PLAN METHOD
53	122	Non Forest	Cu	1	LEVEL PLAN METHOD
54	122	Non Forest	Cu	1.33	LEVEL PLAN METHOD
55	122	Non Forest	Cu	1.08	LEVEL PLAN METHOD
56	122	Non Forest	Cu	1.23	LEVEL PLAN METHOD
57	122	Non Forest	Cu	1.35	LEVEL PLAN METHOD
58	122	Non Forest	Cu	0.91	LEVEL PLAN METHOD
59	122	Non Forest	Cu	0.82	LEVEL PLAN METHOD
60	122	Non Forest	Cu	0.87	LEVEL PLAN METHOD
61	122	Non Forest	Cu	0.98	LEVEL PLAN METHOD
62	122	Non Forest	Cu	0.35	LEVEL PLAN METHOD
63	122	Non Forest	Cu	0.78	LEVEL PLAN METHOD
64	122	Non Forest	Cu	0.72	LEVEL PLAN METHOD
65	111	Non Forest	Cu	1.13	LEVEL PLAN METHOD
66	122	Non Forest	Cu	1.25	LEVEL PLAN METHOD
67	111	Non Forest	Cu	1.11	LEVEL PLAN METHOD
68	122	Non Forest	Cu	1.23	LEVEL PLAN METHOD
69	122	Non Forest	Cu	1.21	LEVEL PLAN METHOD
70	111	Non Forest	Cu	1.16	LEVEL PLAN METHOD
71	122	Non Forest	Cu	1.10	LEVEL PLAN METHOD
72	111	Non Forest	Cu	1.19	LEVEL PLAN METHOD
73	122	Non Forest	Cu	1.06	LEVEL PLAN METHOD
74	122	Non Forest	Cu	1.23	LEVEL PLAN METHOD

2.2.4.13

Mineral	Chalcopyrite
Reserves/ Resources estimated as on	01.04.2021
UNIT of estimation	MT

Classification	Code	Quantity			Grade	
		Forest	Non-Forest	Total	Forest	Non-Forest
A. Mineral Reserve						
1. Proved Mineral Reserve (A)	111	552821	1586439	2139260	1.15	1.15
2. Probable Mineral Reserve (A)	121			0		
3. Probable Mineral Reserve (A)	122	743941	2134898	2878839	1.17	1.17
B. Remaining Resources						
1. Feasibility Mineral Resource (B)	211	1726505	4954580	6681085	1.01	1.01
2. Prefeasibility Mineral Resource (B)	221			0		
3. Prefeasibility Mineral Resource (B)	222	372527	1069045	1441572	1.17	1.17
4. Measured Mineral Resource (B)	331	1460645	4189914	5649959	1.07	1.07
5. Indicated Mineral Resource (B)	332	838741	2409819	3249560	1.00	1.00
6. Inferred Mineral Resource (B)	333	2569651	7374169	9943820	0.9	0.9
7. Reconnaissance Mineral Resource (B)	334			0		
Total Mineral Resources (A+B)				31984055		

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2.2.5.3: Geophysical Survey

S.N.	Type of Survey	Spacing (m)	Total line (km)	Area Covered (Ha/km²)	Latitude		Longitude	
					To	From	To	From
1	NA	NA	NA	NA	NA	NA	NA	NA

2.2.5.4: Underground Exploratory Mining

S.N.	Adit ID	Length in Mtr	Width in Mtr	Depth in mtrs	Volume (m³)
1	Nil	Nil	Nil	Nil	Nil
As the mine is already an old u/g mine, definition drilling will be carried out to delineate the lodes during the development of the mine					

2.2.5.5: Underground Exploratory Drilling

2.2.5.7.1 Core/Non-core Drilling

S.N.	Year	Exploration agency	Core holes		Non-core (RC/DTH)		Grand total		Attaching sheet of each borehole in enclosed
			Number of boreholes drilled	Total metr	Number of boreholes drilled	Total mtrs	Total boreholes	Total mtr	
1	2022-23	HCL	30	3000	0	0	30	3000	
2	2023-24	HCl	44	4400	0	0	44	4400	
3	2024-25	HCL	36	3600	0	0	36	3600	

2.2.5.6: Sampling

S.N.	Type of sample	No of samples collected	Number of samples analyzed	Location		Remark if any
				Latitude	Longitude	
1	NA	NA	NA	NA	NA	NA

2.2.5.7: Petrology & Mineralogical Studies

S.N.	Type of Sample	Number of Sample Drawn	Number of Sample Analyzed	Petrographic Study Report
1	NIL	NA	NA	NA

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Chapter 3: Mineral Beneficiation / Processing

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Name of The Ore/Mineral: Chalcopyrite

3.1: Mineralogy of the ROM ore/ Mineral:

S.N	Valuable Mineral Name	Approx. Mineral %	Gangue Mineral/s Name	Approx. Gangue Mineral %
1	Chalcopyrite	2.3	Quartz , Plagioclase, Muscovite , chlorite,Epidote	97.7

3.2: Complete Chemical Analysis of the ROM Ore/Mineral:

S.N.	Radicals	Wt %
1	Na2O	0.53
2	Mgo	3.36
3	Al_2O_3	10.06
4	SiO2	63.53
5	P2O5	0.95
6	SO2	2.63
7	ACaO	0.89
8	TiO2	0.41
9	MO	0.08
10	Cu	2.4
11	Fe	12.34
12	K2O	3.74

3.3: Crushing Section:

3.3.1: Primary Crushing

S.N.	Type of Crusher	Make	Capacity of Crusher (tph)	Feed Size (mm)	Product Size (mm)
1	Jaw Crusher	Blake Jaw Crusher, Fraser and Chalmers Engineering Works, England	100	305	100
2	Jaw Crusher	Blake Jaw Crusher, Fraser and Chalmers Engineering Works, England	100	305	100

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3.3.2: Secondary Crushing

S.N	Type of Crusher	Make	Capacity of Crusher (tph)	Feed Size (mm)	Product Size (mm)
1	Cone	4' Symons Standard Head Cone Crusher, Nordberg Manufacturing Company USA 53207	100	100	40
2	Cone	4' Symons Standard Head Cone Crusher, Nordberg Manufacturing Company USA 53207	100	100	40

3.3.3: Tertiary Crushing

S.N	Type of Crusher	Make	Capacity of Crusher (tph)	Feed Size (mm)	Product Size (mm)
1	Cone Crusher	5.5' Symons Short head cone crusher, Nordberg Manufacturing Company USA 53207	125	40	12
2	Cone Crusher	5.5' Symons Short	125	40	12

3.4: Grinding Section

3.4.1: Dry Grinding

Not Applicable

S.N	Type of Mill	Stages	Make of the mill	Feed Flow Rate (tph)	Feed Size (mm)	Product Size Mill Discharge (mm)	Type of screen
1	NA	NA	NA	NA	NA	NA	NA

Table continued...

S.N	Make	Aperture Size of Screen/Classifier (mm), if applicable	Classifier / Screen undersize (tph)	Classifier / Screen oversize (tph)
1	NA	NA	NA	NA

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3.4.2: Wet Grinding

S.N	Type of Mill	Stages	Make of the mill	Feed Flow Rate (tph)	Feed Size (mm)	Product Size (mm)	Type of screen / Classifier
1	Ball Mill	Single	8'X12', Bharat Mcnally	26	16	0.074(60 % passing)	Akins Double Pitch, Series 125
2	Ball Mill	Single	8'X12', Bharat Mcnally	25	16	0.074(60 % passing)	Akins Double Pitch, Series 125
3	Ball Mill	Single	8'X12', Bharat Mcnally	25	16	0.074(60 % passing)	Akins Double Pitch, Series 125
4	Ball Mill	Single	8'X12', Bharat Mcnally	25	16	0.074(60 % passing)	Akins Double Pitch, Series 125
5	Ball Mill	Single	9'X11', Bharat Mcnally	36	16	0.074(60 % passing)	Akins Double Pitch, Series 125

Table continued...

S.N	Aperture Size of Screen/Classifier (mm), if applicable	Classifier / Screen undersize (tph)	Classifier / Screen oversize (tph)	Water Requirement (l/h)	Fresh Water Requirement (l/h)	Recirculated Water (l/h)
1	NA	NA	NA	56000	37000	19000
2	NA	NA	NA	56000	37000	19000
3	NA	NA	NA	56000	37000	19000
4	NA	NA	NA	56000	37000	19000
5	NA	NA	NA	69000	50000	19000

3.5: Dry Processing

3.5.1: Screening and Classification

Not Applicable

S.N.	Type of screen / classifiers	Stages	Make	Capacity (tph)	Aperture Size of Screen/Classifier (mm), if applicable	Feed Size (mm)	Product Size (mm)	Product quality (if applicale)
1	NA	NA	NA	NA	NA	NA	NA	NA

3.5.2: Other Operations

Not Applicable

S.N.	Type of equipment / operation	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product Size (mm)	Product-Mid (tph), if available	Product-Tail (tph)
1	NA	NA	NA	NA	NA	NA	NA	NA

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3.5.1: Product Quality

Not Applicable

Products	Wt %	In tonnes	Size (range) mm	Complete chemical analysis
Concentrate	NA	NA	NA	NA
Sub-grade	NA	NA	NA	NA
Rejects	NA	NA	NA	NA

3.6: Wet Processing

3.6.1: Scrubbing / Washing

S.N	Type of Scrubbers / washers	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product Size (mm)	Product quality (if applicale)
1	NA	NA	NA	NA	NA	NA	NA

Table continued..

S.N.	Water Requirement (l/h)	Fresh Water Requirement (l/h)	Recirculated water (l/h)
1	NA	NA	NA

3.6.2: Screening and Classification

S.N.	Type of screen / classifiers	Stages, if applicable	Make	Capacity (tph)	Aperture Size of Screen/Classifier (mm), if applicable	Feed Size (mm)	Product Size (mm)
1	VIBRATING SCREENING	SINGLE STAGE	TRF Jamshedpur	100	20X20 mm	-75	-20
2	VIBRATING SCREENING	SINGLE STAGE	TRF Jamshedpur	100	20X20 mm	-75	-20

Table continued..

S.N.	Product quality (if applicale)	Water Requirement (l/h)	Fresh Water Requirement (l/h)	Recirculated water (l/h)
1	NA	Nil	Nil	Nil
2	NA	Nil	Nil	Nil

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3.6.3: Gravity Separation

S.No.	Type of separators (jig, table, spiral, etc.)	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product (Conc) (tph)	Product-Mid (tph), if available
1	NA	NA	NA	NA	NA	NA	NA

Table continued...

S.No.	Product-Tail (tph)	Water Requirement (l/h)	Fresh Water Requirement (l/h)	Recirculated water (l/h)
1	NA	NA	NA	NA

3.6.4: Magnetic Separation

Sl. No.	Type of magnetic separators (magnetic intensity)	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product-Mag (tph)	Product-Mid (tph), if available
1	NA	NA	NA	NA	NA	NA	NA

Table continued...

Sl. No.	Product non-Mag (tph)	Water Requirement (l/h)	Fresh Water Requirement (l/h)	Recirculated water (l/h)
1	NA	NA	NA	NA

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3.6.5: Flotation

S.N	Type of flotation equipment (froth/ column)	Stages (rougher/ cleaner, etc), if applicable	Make	Capacity (tph)	Feed Size (mm)	Product-Float (tph)	Product non-Float (tph)
1	Froth Flotation	Rougher /Scavenger / Cleaner	Wemco Cells (Flumidth)	2600 cft	<74 micron	6	151

Table continued..

S.N	Water Requirement (l/h)	Fresh Water Requirement (l/h)	Recirculated water (l/h)
1	120000	108000	12000

3.6.6: Other Operations

S.N	Type of equipment / operation	Stages, if applicable	Make	Capacity (tph)	Feed Size (mm)	Product-Conc (tph)	Product-Mid (tph), if available
1	Ceramic Disc Filter	single	TCSO, Nuchar Industries, Metallon Holdings	9	0.074	9	NA

Table continued..

S.N	Product-Tail (tph)	Water Requirement (l/h)	Fresh Water Requirement (l/h)	Recirculated water (l/h)
1	NA	NA	NA	NA

3.6.7: Product Quality (wet processing)

Products	Wt %	In tonnes	Size (range) mm	Complete chemical analysis
Concentrate	4	4	-325#	25% Cu
Sub-grade	NA	NA	NA	NA
Rejects	96	96	-325#	0.06% cu

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3.7: Overall Product Quality (Dry cum Wet Processing)

Products	Wt %	In tonnes	Size (range) mm	Complete chemical analysis
Concentrate	4	4	-325#	25% Cu
Sub-grade	NA	NA	NA	NA
Rejects	96	96	-325#	0.06% cu

3.8: Disposal Method for tailing/ rejects

a) Explain the disposal method for tailing or reject from processing plant with detail chemical / mineral analysis of tailing	Attach as annexure 15a
b) Size and capacity of tailing pond, toxic effect of such tailings, process adopted to neutralise its effect (if any)	Attach as annexure 15b
c) Any other data (if available)	NA

3.9: Overall water requirement of mining and mineral processing

Indicate quantity, source of supply, disposal of water and extent of recycling and chemical analysis of water	Annexure 15c

3.10: Flow sheets and charts

Material balance chart of mineral processing plant(s) (each stage of process)	Attach as annexure 15d
Attach flow sheet of beneficiation of plant(s)	Attach as annexure 15e
Any other data (if applicable)	NA

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Chapter 4: Mining Operations

4.1: Mining Method (Underground)

4.1.1: Existing Method of Mining

☑ Cut & Fill ☐ Shrinkage Stoping ☑ Room & Pillar MSP/RPM / VCR
☐ Block Caving ☐ Sublevel ☑ Others

4.1.2: Proposed Method of Mining

☑ Cut & Fill ☐ Shrinkage Stoping ☑ Room & Pillar MSP/RPM / VCR
☐ Block Caving ☐ Sublevel ☐ Others

4.2: Operational Parameters

4.2.1: Inventory of Existing Pits, Dumps & Mine entries

4.2.1.1: Dumps and Stacks

4.2.1.1.1: Dump Details

S.N.	Dump ID	Dump Status	Type of Dump	Total Dump Quantity (t)	Area covered by Dump (Ha)	Height (m)	Location
1	NA	Nil	Nil	Nil	Nil	Nil	Nil

4.2.1.1.2: Stack Details

S.N.	Stack ID	Type of Stack	Total Stack Quantity (t)	Area covered by Stack (Ha)	Height (m)
1	NA	Nil	Nil	Nil	Nil

4.2.1.2: Details of stabilised dumps

S.N.	Dump ID	Number of Terraces	Average Height of Terraces (m)	Length of Toe Wall (m)	Length of Garland Drain (m)	Area Stabilized (ha)	Method of Stabilization
1	NA	Nil	Nil	Nil	Nil	Nil	Nil

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4.2.1.3: Levels & Stopes

S.N.	Level (mRL)	Stope ID	Mine Grid	Sect. Ref. Grid	2022-23 Production in MT	2023-24 Production in MT	2024-25 Production in MT	Reserve - As on 01.04.2022
1	Level(mRL)6th level,700 S	Block no.18	820 S- 675 S	930S- 740S	30000	-	-	39858
2	7th level,330mS	Block no.20	395 S – 260 S	505S- 365S	40000	72000	72000	534146
3	8th level,900mS	Block no.42	375 S – 235 S	495S- 350S	20000	-	-	30580
4	8th level,700mS	Block no.29	745 S – 590 S	855S- 795S	45000	60000	72000	501448
5	8th level,1000mS	Block no.28	1130 S – 930 S	1810S- 1045S	66000	72000	72000	587784
6	11th level,200mN	Block no.43/43A	65 N – 225 N	1005-65N	36000	36000	40000	230859
7	11th level,400mN	Block no.58	230 N - 430N	75 N- 280 N				
8	11th level,200mS	Block no.45	240 S – 20 S	435 S -210 S	50000	60000	60000	317453
9	9 L, 250 N,	Block no. 59	225 N - 390 N	190 N-350 N	0	14000	30000	367418
10	9 L, 250 N,	Block no. 60	260 N - 390 N	200 N - 350 N	0	14000	10000	336454
11	9 L, 700 S	Block no. 61	715 S- 410 S	490 S -855 S	0	0	7000	694237
12	10 L, 700 S	Block no. 62	700 S- 450 S	900 S- 740 S	0	0	7000	501448
13	10 L, 1000S	Block no. 63	1115 S- 860 S	1050 S -1350 S	0	0	7000	581533
14	11L 300 S	Block no. 64	350S - 240 S	420 S -550 S	0	19000	24000	690989
15	11 L 440 N	Block no. 65	375 N- 500 N	220 N-350 N	0	15000	24000	526694

4.2.2: Mining Method

4.2.2.1: Mode of entry

S.N.	Mode of Entry	Name/ID of the entry	Length/Depth (m)	Size (m x m)
1	Vertical Shaft,	No.3 Vertical Shaft	176	4.6mX2.12 m
2	Adit	No.5 Adit	20	2.4mX1.8 m
3	Inclined Shaft	Sub-inclined Shaft	475	4.6mX1.75 m
4	Inclined Shaft	No.4 sub-inclined Shaft.	360	4.6mX2.6m

System of Winding / Hoisting	☑ Winder with Skips & Chutes ☐ Direct Haulage ☐ Conveyer Belts ☑ Loco Operated Haulage ☑ Low Profile Dumpers ☐ Others		
Average Level difference between Two Main Levels (m)	37.5M		
Cross section of Main Level (m x m)	3M	x	2.4M
Average Spacing between the Two Main Interconnects of	50M		
Cross Section of Interconnect (m x m)	3M	x	2.4M
Distance of Blind Heading beyond Last Ventilation	50M		

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4.2.2.2: Method & Sequence of Stoping

Description of stoping

Method of Stoping :

The width of the ore body in Surda deposit varies from 1.5 m to over 20 m and the average dip is 350 to 400. Depending upon the geometry and geology of the ore body following mining method are most suitable.

Room & Pillar Stoping Method:

The method is used where the orebody width is between 1.5 m to 4.0 m. A pilot raise is put along the H/W contact from lower level to upper level. A wooden chute is installed at the lower level, together with an electric scraper engine. A pillar of 5 m above the lower level and a crown pillar of 4 m below the upper level are left as support.

In this method both faces of vertical raise are advanced to a span of 10-15 m ,with systematic bolting of the roof at a spacing of 1.2 m. 1.5 m long 20 mm dia. Top-steel grouted rock bolt are used as conventional support in place of timbers. 1.8/2.4 long bolt are also occasionally used for roof support in geological disturbed area. A 3-4 m wide rib pillar is left between the two stopes. Floor stripping is undertaken where width of ore body exceeds from 2.5 m. once the mining is completed to the extremities of the stope,back filling of the excavated area is done and adjoin block are mined.

Horizontal Cut & Fill Stoping Method:

Where the width of the ore body is 4-6 m HCF method is used. The stoping is started by driving a sill level of 8 m above the driving and the full width of the ore body is exposed for a maximum vertical height of 4.8 m. The hanging wall is supported by rock bolt systematically at 1.5m pattern. A FW haulage is driven on the FW side of ore drive and orepasses are excavated there from in waste rock to hole into the stope at interval of 60 m along strike. 1.5m dia. Ore pass rings made out of 10mmthick steel plates are welded inside the stope to serve as manway and orepass through the back fill. Cavo 310 or 0.76 cum electric LHDs are used to load and haul broken ore into the operations. Three panels are generally prepared one for production, one for the filling and other for filling operation. Back stripping are carried out in panels with 2.5 m vertical cut at a time.

Post Pillar Stoping Method:

This method is generally adopted in ore bodies exceeding 8 m wide and a minimum strike length of 80 m . Basically, it is identical to HCF mining except for formation of 4m x 4m insitu vertical posts to give additional stability to the roof by breaking long spans excavated. In addition to the rock bolting of the bolt, the back of each cut in ore is also rock bolted using 1.5m long grouted type rock bolts on 1.5m x1.5m pattern. The post pillars are spaced at an interval of 13m along strike and 9m across it. Generally, 2.2m high cut are taken by drilling 2.2 long upper at 70m to horizontal using two boom stope wagons/ stope air longs. Maximum height of the excavation is limited to 4.8m above the backfill. 0.76 /1.5 cum electric LHDs transfer the broken ore into the ore passes from where it is hauled in larger mine cars by locomotives on to the grizzly.

S.N.	Block (mRL)	Name of Working Stope	Size of the Stope (m x m)	Thickness of Crown Pillar (m)	Thickness of Sill Pillar (m)	Thickness of Rib Pillar (m)	Size / Shape of Man Way (m x m)
1	248.09m	Block no.13	280X50	5	5	4	[illegible]
2	277.5m	Block no.20	130X40	5	5	4	[illegible]
3	308.22m	Block no.42	150X50	5	5	4	[illegible]
4	333.03m	Block no.29	280X50	5	5	4	[illegible]
5	246.17m	Block no.28	280X40	5	5	4	[illegible]
6	448.76m	Block no.42/43A	125X20	5	5	4	[illegible]
7	434.36m	Block no.58	200X9	5	5	4	[illegible]
8	436.72m	Block no.45	220X45	5	5	4	[illegible]

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Table continued..

S.N	Size / Shape of Ore Pass (m x m)	Method of Stowing / Back Filling	Proposed Stope Design Sequence of Stopping	Sub Level Interval (m)
1	1.36 Ring diameter	Hydraulic Stowing	Details given in Annexure	NA
2	1.36 Ring diameter	Hydraulic Stowing	Details given in Annexure	NA
3	1.36 Ring diameter	Hydraulic Stowing	Details given in Annexure	NA
4	1.36 Ring diameter	Hydraulic Stowing	Details given in Annexure	NA
5	1.36 Ring diameter	Hydraulic Stowing	Details given in Annexure	NA
6	1.36 Ring diameter	Hydraulic Stowing	Details given in Annexure	NA
7	1.36 Ring diameter	Hydraulic Stowing	Details given in Annexure	NA
8	1.36 Ring diameter	Hydraulic Stowing	Details given in Annexure	NA

4.2.2.3: Support of the working

Geo-Mechanical Studies of the Rock Mass

Details of Underground support plan	Annexure 9c
Details of approved SSR	Annexure 9c
Name of Institution	CIMFR
Size of Ore Pass (m x m)	1.36 m dia, steel ring

4.2.2.4: Transportation

From Face to Pit Bottom

- ☐ Load Haul Dump Machines with Dumpers
- ☑ LHD
- ☑ Drawal through Chutes in combination with Mine Tubs
- ☐ Drawal through Chutes in combination with Low Profile

From Pit Bottom to Surface

- ☐ Low Profile Dumpers
- ☑ Chutes and Skips
- ☑ Direct Haulage
- ☐ Belt conveyor

- ☑ Battery Loco
- ☐ Electric Loco
- ☐ Diesel Loco

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Safety Features provided on Conveyor / Haulage Track / Roadway as per Mine	NA
Stop Block	Stop Block is provided at haulage tracks as required
Runaway Switch	NA
Drop Warwick	NA
Fencing around the Moving Parts	Available
Others, specify (no caravan)	1) Winder interlock arrangement with the cage gate is provided at pit top. 2) Audio visual alarm is provided in LHD's. 3) Limit switch is provided at ore dumping point.

4.2.2.5:Year wise Underground Development

S.N.	Year	Level ID	Stope ID	Type Of Development	Bulk Density of Waste (t/m³)	Bulk Density of Mineral (t/m³)	Running Meter Waste Zone (m) (A)
1	2022-23	9 L , Drive North, F/W , From No.4 Shaft	460 S-790 S	Level/Drive		2.88	0
2	2022-23	10 L Drive South , H/W, From No.4 Shaft	980 S -1320 S	Level/Drive		2.88	0
3	2022-23	10L , Drive North, F/W, From No.4 Shaft	455 S -625 S	Level/Drive		2.88	0
4	2022-23	10 L X-cut , from No.3 Shaft	North	Cross Cut	2.68		20
5	2022-23	10L , Drive South, F/W , From No.4 shaft	25 S -280 S	Level/Drive		2.88	0
6	2022-23	11 L Drive North, H/W, From No.3 Shaft	340 N-550 N	Level/Drive		2.88	0
7	2022-23	11 L Drive South , H/W , From No.3 Shaft	370 S -440 S	Level/Drive		2.88	0
8	2022-23	9L	605 S	Level Interconnects (Winze/Raise)		2.88	0
9	2022-23	9L	840 S	Level Interconnects (Winze/Raise)		2.88	0
10	2022-23	10L	1100 S	Level Interconnects (Winze/Raise)		2.88	0
11	2022-23	11L	485 S	Level Interconnects (Winze/Raise)		2.88	0
12	2022-23	11L	270 N	Level Interconnects (Winze/Raise)		2.88	0
13	2022-23	Deepening of 4 Shaft below 10L in Mts		Shafts	2.68		0

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[illegible]	Stripping in Cum (Ore transfer from 10th L to 10th L ore bin & Construction of Ore bin)		Ore Pass	2.68		
[illegible]	Deepening of Sub Incline	13L-14L winzing	Level Interconnects (Winze/Raises)	2.68		0
[illegible]		14L Sl plate X-cut	Cross Cut	2.68		0
[illegible]	25 S Winze in Ore Mts				2.8	
[illegible]	New Vertical shaft		Shafts	2.68		184
[illegible]	X-cut between Sl & VS	11 L	Cross Cut	2.68		189
[illegible]	X-cut between Sl & VS	12 L	Cross Cut	2.68		15
[illegible]	X-cut between Sl & VS	13 L	Cross Cut	2.68		15
[illegible]	X-cut between Sl & VS	14 L	Cross Cut	2.68		15
[illegible]	X-cut between Sl & VS	15 L	Cross Cut	2.68		15
[illegible]	X-cut between Sl & VS	16 L	Cross Cut	2.68		15
[illegible]	X-cut between Sl & VS	17 L	Cross Cut	2.68		0
[illegible]	X-cut between Sl & VS	18 L	Cross Cut	2.68		0
[illegible]	Stripping in Cum (Ore bin 10th L Sl , Ore transfer & spillage bin)		Ore Pass	2.68		
[illegible]	9 L , Drive North, F/W , From No 4 Shaft	460 S-790 S	Level/Drive		2.88	0
[illegible]	9 L X-cut , From No 4 Shaft	North	Cross Cut		2.88	0
[illegible]	10L , Drive North, F/W, From No 4 Shaft	455 S -625 S	Level/Drive		2.88	0
[illegible]	10 L X-cut , From No 3 Shaft	North	Cross Cut		2.88	0
[illegible]	10L , Drive South , F/W , From No 3 shaft	25 S -280 S	Level/Drive		2.88	0
[illegible]	10L , Drive North, H/W, From No 3 Shaft	470 N - 560 N	Level/Drive		2.88	0
[illegible]	11 L Drive North, H/W, From No 3 Shaft	540 N-550 N	Level/Drive		2.88	0
[illegible]	12 L Drive North, H/W , From No 3 Shaft	60 N-550 N	Level/Drive		2.88	0
[illegible]	12 L Drive South , H/W , From No 3 Shaft	240 S -540 S	Level/Drive		2.88	0
[illegible]	12 L X-cut , From No 3 Shaft	North	Cross Cut		2.88	0
[illegible]	9L	605 S	Level Interconnects		2.88	0
[illegible]	10L	595 S	Level Interconnects		2.88	0
[illegible]	10L	1100 S	Level Interconnects		2.88	0
[illegible]	10L	485 S	Level Interconnects		2.88	0
[illegible]	11L	680 N	Level Interconnects		2.88	0
[illegible]	12L	320 S	Level Interconnects		2.88	0
[illegible]	12L	295 N	Level Interconnects		2.88	0
[illegible]	12L	550 N	Level Interconnects		2.88	0
[illegible]	Deepening of 4 Shaft below 10L in Mts		Shafts	2.68		100
[illegible]	ore bin & Construction of Ore bin)		Ore Pass	2.68		
[illegible]	Deepening of Sub incline	13L-14L winzing	Level Interconnects	2.68		45
[illegible]		14L Sl plate X-cut	Cross Cut	2.68		30
[illegible]	25 S Winze in Ore Mts				2.8	0
[illegible]	New Vertical shaft		Shafts	2.68		50
[illegible]	X-cut between Sl & VS	11 L	Cross Cut	2.68		0

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MODIFICATION REVIEW OF MINING PLAN
SURDA MINING LEASE (388.68 Ha.)
(Mining Area: 323.16 Ha)
LESSEE: HINDUSTAN COPPER LTD. (HCL)

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	X-cut between SI & VS	12 L	Cross Cut	2.68		153.5
	X-cut between SI & VS	13 L	Cross Cut	2.68		76.5
	X-cut between SI & VS	14 L	Cross Cut	2.68		0
	X-cut between SI & VS	15 L	Cross Cut	2.68		0
	X-cut between SI & VS	16 L	Cross Cut	2.68		0
	X-cut between SI & VS	17 L	Cross Cut	2.68		15
	X-cut between SI & VS	18 L	Cross Cut	2.68		25
	Spillage Bin)		Ore Pass	2.68		
	11 L Drive South, H/W , From No 4 Shaft	1120 S- 980 S	Level/Drive		2.88	0
	11 L Drive North , H/W , From No 4 Shaft	980 S- 770 S	Level/Drive		2.88	0
	11 L, No 4 Shaft X-cut East		Cross Cut		2.88	0
	12 L Drive North, H/W , From No 3 Shaft	60 N-350 N	Level/Drive		2.88	0
	12 L Drive South , H/W , From No 4 Shaft	1100 S- 960 S	Level/Drive		2.88	0
	12 L Drive North , H/W , From No 4 Shaft	960 S- 760 S	Level/Drive		2.88	0
	12 L, No 4 Shaft X-cut East		Cross Cut		2.88	0
	14 L Drive, H/W , From No 3 Shaft	25 N- 90 N	Level/Drive		2.88	0
	14 L SI X-cut		Cross Cut		2.88	0
	12L	460 S	Level Interconnects (Winze/Raise)		2.88	0
	12L	320 S	Level Interconnects		2.88	0
	12L	390 N	Level Interconnects		2.88	0
	12L	550 N	Level Interconnects		2.88	0
	12L		Shafts	2.68		120
	Deepening of 4 Shaft below 20L in Mts		Ore Pass	2.68		
	ore bin & Construction of Ore bin)		Level Interconnects	2.68		0
	Deepening of Sub incline	13L-14L winding	Cross Cut	2.68		0
		14L SI plate X-cut			2.8	0
	25 S Winze in Ore Mts		Shafts	2.68		0
	New Vertical shaft		Cross Cut	2.68		0
	X-cut between SI & VS	11 L	Cross Cut	2.68		0
	X-cut between SI & VS	12 L	Cross Cut	2.68		0
	X-cut between SI & VS	13 L	Cross Cut	2.68		51
	X-cut between SI & VS	14 L	Cross Cut	2.68		0
	X-cut between SI & VS	15 L	Cross Cut	2.68		0
	X-cut between SI & VS	16 L	Cross Cut	2.68		0
	X-cut between SI & VS	17 L	Cross Cut	2.68		0
	X-cut between SI & VS	18 L	Ore Pass	2.68		
	Spillage bin)					

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S. No.	Running Meterage in Mineral Zone (m) (B)	Cross Section (m^2) (C)	Waste Volume (D = A * C) (m^3)	Mineral (ROM) Volume (E = B * C)(m^3)	Waste Quantity(D * Density of the Waste Zone)(t)	Mineral (ROM) Quantity (E * Bulk Density)(t)	Location
	225	7.2	0	1620	0	4664	
	155	7.2	0	1116	0	3214	
	175	7.2	0	1260	0	3629	
		7.2	144	0	386	0	
	150	7.2	0	1080	0	3110	
	200	7.2	0	1440	0	4147	
	75	7.2	0	540	0	1555	
	40	4.32	0	172.8	0	498	
	65	4.32	0	280.8	0	809	
	20	4.32	0	86.4	0	249	
	20	4.32	0	86.4	0	249	
	65	4.32	0	280.8	0	809	
	0	12.74	0	0	0	0	
	0		562	0	1506	0	
	0	5.4	0	0	0	0	
	0	500	0	0	0	0	
	70	5.4	0	378	0	1058	
	0	34.21	6294.64	0	16870	0	
	0	7.2	1353.6	0	3628	0	
	0	7.2	108	0	289	0	
	0	7.2	108	0	289	0	
	0	7.2	108	0	289	0	
	0	7.2	108	0	289	0	
	0	7.2	108	0	289	0	
	0	7.2	0	0	0	0	
	0	7.2	0	0	0	0	
	0		562	0	1506	0	
	150	7.2	0	1080	0	3110	
	50	7.2	0	360	0	1037	
	35	7.2	0	108	0	311	
	30	7.2	0	216	0	622	
	130	7.2	0	936	0	2696	
	75	7.2	0	540	0	1555	
	30	7.2	0	216	0	622	
	300	7.2	0	2160	0	6221	
	110	7.2	0	792	0	2281	
	50	7.2	0	360	0	1037	
	25	4.32	0	108	0	311	
	65	4.32	0	280.8	0	809	
	45	4.32	0	194.4	0	560	
	30	4.32	0	129.6	0	373	
	65	4.32	0	280.8	0	809	

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60	4.32	0	259.2	0	746		
60	4.32	0	280.8	0	809		
65	4.32	0	280.8	0	809		
	12.74	1274	0	5414			
		860	0	2305			
	5.4	243	0	651			
	500	15000	0	40200			
	5.4	0	0	0			
	34.21	1916	0	5134			
	7.2	0	0	0			
	7.2	1105.2	0	2962			
	7.2	550.8	0	1476			
	7.2	0	0	0			
	7.2	0	0	0			
	7.2	0	0	0			
	7.2	108	0	289			
	7.2	108	0	289			
		860	0	2305			
	7.2	0	1116	0	3214		
155	7.2	0	1260	0	3629		
175	7.2	0	864	0	2488		
120	7.2	0	1728	0	4977		
240	7.2	0	360	0	1037		
50	7.2	0	360	0	1037		
50	7.2	0	864	0	2488		
120	7.2	0	504	0	1452		
70	7.2	0	216	0	622		
30	7.2	0	280.8	0	809		
65	4.32	0	21.6	0	62		
5	4.32	0	280.8	0	809		
65	4.32	0	172.8	0	498		
40	4.32	0	0	4097	0		
	12.76	1528.8	0	2305	0		
		860	0	0	0		
	5.4	0	0	0	0		
	500	0	0	0	0		
	5.4	0	0	0	0		
	34.21	0	0	0	0		
	7.2	0	0	0	0		
	7.2	0	0	0	0		
	7.2	0	0	984	0		
	7.2	367	0	0	0		
	7.2	0	0	0	0		
	7.2	0	0	0	0		
	7.2	0	0	0	0		
	7.2	0	0	2305	0		
		800					

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4.2.2.6 Stope wise Production

S.N	Year	Level (mRL)	Stope ID	Estimated Reserve in Stope (t)	Proposed ROM production from Stope (t)	Planned Recovery (%)	Planned Dilution (%)	Grade Range (%)	Remarks
1	2022-23	5 Level to 11 level	B-13, B-42,B-29,B-28,B-43/43A, B-58 B-45,BI-20 BI-59 & BL-64	2242128	287000	70	10	0.90	Ref: 4.2.1.3
2	2023-24	6 Level to 11 level	B-13, B-42,B-29,B-28,B-43/43A, B-58 B-45,BI-20 BI-59 & BL-64	2620000	362000	70	10	0.90	Ref: 4.2.1.3
3	2024-25	7 Level to 11 level	B-13, B-42,B-29,B-28,B-43/43A, B-58 B-45,BI-20 BI-59 & BL-64	5082960	425000	70	10	0.90	Ref: 4.2.1.3

4.2.3: Machine Details

4.2.3.1: Loading/Hauling Equipment

S.N	Type	Function	Make	Capacity	Unit	Motive Power	Number of Equipments
1	Electric LHD	Loading	EIMCO ELKOON	1	Cubic meter	Electric	4
2	Battery Locomotive	Hauling	Orio Opel	4	Tonnes	Battery	2
3	Battery Locomotive	Hauling	SEM	8	Cubic meter	Battery	1

4.2.3.2: Drilling Equipment

S.N	Type	Make	Rate of Drilling	Diameter of Hole (mm)
1	Pneumatic JACK Hammer	Silver 3	18	31 MM

4.2.4: Supervision

S.N	Particulars	Qualification	Requirement / Proposed	In Position / Existing Strength	(-) Shortage / (+) Excess	Remarks
1	Mines Manager	B.E Mining having 1st Class	1	1	0	
2	Assistant Manager	B.E Mining having 1st Class/2nd class	5	5	0	
3	Mining Engineer	B.E (ELC. & Mech)	2	2	0	
4	Mine Foreman	Foreman competency certificate	18	0	18	
5	Mining Mate	Mining Mate certificate	24	0	24	
6	Geologist	MSC- Geology	2	1	1	
7	Specify if Other	Surveyor	2	1	1	

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4.3: Material Handling Summary

4.3.1: Studies Undertaken

Blast Vibration Study Report	No	(If yes attach study report in pdf)
Slope Stability Study Report	Yes	Annexure 9c
Recovery Study Report	No	(If yes attach study report in pdf)
Hydrological Study Report	Yes	Annexure 9a
Mineral Beneficiation Study Report	No	(If yes attach study report in pdf)
Underground Rock Displacement Study Report	No	(If yes attach study report in pdf)
Subsidence Study Report	Yes	Annexure 9b
Underground Geotechnical Study Report	Yes	Annexure 9d
Surface strain prediction by 3-D subsidence model study conducted by IIT-ISM, Dhanbad.	Yes	Annexure 9e
Bulk Density Study Report	No	(If yes attach study report in pdf)

4.3.2: Insitu Mining: Underground

S.N.	Year	Total Handling (t)	Waste Quantity (t)	From Stopes (A)	From Development (B)	Total ROM (A+B)	Saleable/Usable Mineral (t)	Mineral Reject (t)	Grade Range (%)	Grade Range (%)
1	2022-23	336335	25343	287000	23992	310992	310992	25343	0.84	
2	2023-24	445744	59026	362000	24717	386717	386717	59026	0.84	
3	2024-25	457812	9691	425000	23121	448121	448121	9691	0.84	

4.3.3: Dump workings

S.N.	Year	Dump Id	Location Latitude	Location Longitude	Area (m^2)	Avg Height of Dump (m)	Volume (m^3)	Total Dump Quantity (t)
	N/A	NIL	NIL	NIL	NIL	NIL	NIL	NIL

Table continued..

S.N.	Proposed Dump Handling Quantity (t) (A)	Proposed Recovery of Saleable Mineral (t)(B)	Proposed Waste Quantity (t) (A-B)	Grade Range (%)	Justification
	NIL	NIL	NIL	NIL	NIL

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4.3.4: Calculation Summary

	Year	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Insitu Mining	Handling Quantity (A) (t)	Lapse year	Lapse year	396935	445744	417912	1259590
	Saleable Mineral (B) (t)	Lapse year	Lapse year	319992	386717	440121	1145830
Dump Re-handling	Proposed Dump Handling Quantity (C) (t)	Lapse year	Lapse year	0	0	0	0
	Recovery of Saleable Mineral (D) (t)	Lapse year	Lapse year	0	0	0	0

Total Production Quantity (t) (A+C)	1145830
Total Handling Quantity (t) (B+D)	1259890

4.4: Machine Calculation

4.4.1: Machine Requirement Summary

Number of Average Working Days in One Year (A)		300
Number of Shifts per Day (B)		3
Material Handling Required per Day (t) (D)=Largest of (Q1,Q5)/(A))		1656
Material to be Handled per Shift (t) ((E)=(D)/(B))		552
Handling Required per Hour (t) ((F)=(E)/8 hours)		66
Effective Shift Time	6 Hours	00 Mins

4.4.2: Loading Requirement

Effective Shift Time:	6 Hours	00 Mins

S.N.	Type	Bucket Capacity (m^3)(A)	Fill Factor (B)	Swell Factor (C)	Tonnage Factor (m^3/t) (D)	Efficiency (%) (E)	Cycle time (sec) (F)
1	LHD	0.84	0.9	1.7	0.347	80	150
2	Core Loader	0.15	0.9	1.7	0.347	80	600

Table continued..

S.N.	(G) TPH =TPH (G) =((3600 x A x B x C x D x E) / F)/1000	Total Hours (H) =Number of working days x Number of shifts/day x Effective shift hours	Yearly handling by one LHD/Loader (t) (I)=(G x H)	Maximum handling of the material by this machine during the block period (t) (J)	Number of LHD/loaders required (K) = (J / I)	Standby LHD/Loader (L)
1	0.856	5940	5086.134789		0	0
2	0.093	5940	196.754977		0	0

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4.4.3: Dumper/LPDT/Truck Requirement

Effective Shift Time	6 Hr	0 Mins

S.N.	Total Hours=Number of working days (W)x number of shifts/day x Effective shift hours (Machine Requirement Summary) (A)	Capacity of Dumpers (t) (B)	Speed of the dumper (KMPH) (i)	Lead Distance (KM) (ii)	Time taken to cover distance in minutes(iii) =(ii/i) x 60	Queuing, Loading Time at Loading equipment (min) (iv)	Queuing, Unloading Time during unloading (min) (v)
1	NIL	NIL	NIL	NIL	NIL	NIL	NIL

Table continued...

S.N.	Total Time to complete one trip(vi) = (iii + iv + v)	No. of Trips / hr = (60 / vi)	Total transportation per hour =(B X vii)	Yearly handling by one dumper (ix) = A x TPH	Maximum handling of the material by this machine during the block period (t) (x)	Number of dumpers will be (xi) =(x / ix)	Plus Standby dumper (xii)
1	NIL	NIL	NIL	NIL	NIL	NIL	NIL

4.4.4: Drill Machine Requirement

Effective Shift Time:	0	0

S.N.	Type of Drill	Depth of Hole(including Sub-grade Drilling (m)	Spacing (m)	Burden (m)	Bulk Density of Waste (t/m³)	Bulk Density of Mineral (t/m³)	Yield per Hole (t)	Yield per Meter (t/m)
1	Jack Hammar (Pheumatic)	2	1	0.8	2.88	2.88	2	1

Table continued...

S.N.	Annual Target Known (t)	Drilling Requirement per Day (m)	Drilling Requirement per Shif t(m)	Rate of Drilling per Hours (m/hr)	Required Number of Drills (m/c)	Stand by Drill
1	300000	1000	500	80	30	10

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4.5 Blasting Requirement

4.5.1: Blasting & Explosive Requirement in Waste/Development

S.N.	Drill Pattern / Spacing of Holes (m)	Burden of Holes (m)	Number of Rows / Rings	Yield per Holes in Waste (m^3)	Frequency of Blasting in a Week	Maximum Number of Holes Blasted in a Round	Charge per Hole (kg)
1	Wedge Cut/Burn cut	0.66	4	NIL	12	48	0.75

Table continued...

S.N.	Charge per Round (kg)	Explosive Requirement Per Month in Development (kg)	Powder Factor in Development / Waste (kg/t)	Depth Of Hole
1	40	2000	0.55-0.70	1.5 m

4.5.2: Blasting & Explosive Requirement in Mineral / Ore

Type of Explosive	Type of Explosives used / to be Used
Slurry Explosives	

S.N.	Total ROM proposed to be handled in CUM/annum	Total ROM proposed to be handled in CUM/ day	Spacing of Holes (m)	Burden of Holes (m)	Number of Rows	Yield per Holes in ROM Zone (m^3)	Frequency of Blasting in a Week	Maximum Number of Holes Blasted in a Round	No of Holes Required to be Blasted per Round	Charge per Hole (kg)
1	133650	441	1	0.8	4	Nil	daily in two shifts	80	80	0.75

Table continued...

S.N.	Charge per Round (kg)	Explosive Requirement Per Month for ROM Zone Blasting (kg)	Powder Factor in Ore (kg/t)	Pop Shooting (no of Boulders)	Plaster Shooting (no of Boulders)	Use of Rockbreaker	Capacity	Secondary Blasting Requirements	Depth Of Hole
1	40	12000	0.4 to 0.6	40/day	Nil	2 Nos	40 HP	yes	2Mts in stope

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4.6 Man Power Deployment

4.6.1 Managerial

S.N.	Particulars	Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
1	1st Class Manager	0	0	0	1	1
2	2nd Class Manager	2	2	1	0	5
3	Mining Engineer	0	0	0	1	1
4	Geologist	0	0	0	2	2
5	Others	0	0	0	2	2
6	Mechanical Engineer	0	0	0	1	1

4.6.2 Supervisory

S.N.	Particulars	Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
1	Foremas	5	5	5	3	18
2	Mine-mate	10	7	7	1	25
3	Blaster	6	6	0	0	12

4.6.3 Skilled Workers / Operators

S.N.	Particulars	Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
1	Skilled Worker	150	140	17	0	307

4.6.4 Semi-skilled Workers

Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
275	225	176		676

4.6.5 Unskilled Workers

Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
60	40	13	0	113
				0

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4.6.4: Others, specify

S.N.	Particulars	Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
1	Nil	Nil	Nil	Nil	Nil	Nil

4.6.6: No of Persons Engaged Per Day

Number of Persons in Shift 1	Number of Persons in Shift 2	Number of Persons in Shift 3	Number of Persons in General Shift	Total No. of Persons per day
492	298	137	0	927
				0

No of Shifts per Day ((A) = Machine Requirement Summary (D))	3
Average Daily Employment per Shift ((B) = (Total Number of Person per Day) / (A))	309
Material to be Handled per Shift ((C) = Machine Requirement Summary (E))	1036

4.7: Waste Management

4.7.1: Existing Dump

S.N.	Year	Dump Id	Type of Dump	Proposed Area (ha)	Height (m)	Total Dump Quantity (m^3)	Existing Dump Location
1	NA	NIL	NIL	NIL	NIL	NIL	NIL

4.7.2: New Dump

S.N.	Year	Dump Id	Type of Dump	Proposed Area (ha)	Height (m)	Total Dump Quantity (m^3)	New Dump Location
1	NA	NIL	NIL	NIL	NIL	NIL	NIL

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4.7.3 Existing Stack

S.N.	Year	Stack ID	Type of Stack	Proposed Area (ha)	Height (m)	Total Stack Quantity (m^3)	Existing Stack Location
	NA	NIL	NIL	NIL	NIL	NIL	NIL

4.7.4 New Stack

S.N.	Year	Stack ID	Type of Stack	Proposed Area (ha)	Height (m)	Total Stack Quantity (m^3)	New Stack Location
1	NA	NIL	NIL	NIL	NIL	NIL	NIL

4.8 Mineral Waste Handling To Utilize As Minor Mineral

S.N.	Year	Dump Id	Type of Dump	Proposed Area (ha)	Quantity Handled (t)	Quantity Recovered (t)	Name Of Minor Mineral	Alternative Waste Utilization (m^3)
1	NA	NIL	NIL	NIL	NIL	NIL	NIL	NIL

4.9: Use of Minerals

S.N.	Proposed Use Of Mineral *	Name Of Mineral	Relevant Use Of Mineral	Physical Specifications	Chemical Specifications
1	Captive use in Own Industry / Selling Post-Beneficiation / Up-gradation	Chalcopyrite	For preparation of Copper cathod / copper concentrate	brassy yellow color, metallic luster, and high specific gravity.	CuFeS2

* Choose among these:
1) Captive use in Own Industry
2) Direct Selling
3) Selling Post-Beneficiation / Up-gradation
*Select more than one, if applicable

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Chapter 5: Sustainable Mining

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5.1: Sustainable Mining and SDF Implementations in Compliance of Rule 35 of MCDR'2017

HCL/Indian Copper Complex (ICC) under its CSR Program has spent Rs. 226.86 lakhs in last three years towards education & skill development, creating infrastructure for safe water, sanitation, health and hygiene programs for the poor to be readily and conveniently accessible to the community. A 'proactive CSR' practice is a Sustainable Development Framework at HCL/ICC resulted in the provision of significant additional resources and for the development of infrastructure for the successful operation of drinking water supply and sanitation, & health in rural area.
The proposed expenditure for current FY 2021-22 shall be approximately Rs.30.00 lakhs and HCL/ICC is strive towards empowering surrounding communities through Skill development, livelihood, education, health and sanitation through CSR program of the Company

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Compliance of Vishakha Committee Guidelines for prevention of women harassment at workplace.	Implemented

5.2: CSR INITIATIVES

5.2.1: YEAR 1

2022-23

Details of Work Proposed during the Year / Measures Planned for the Affected Segment	Cumulative Work done / Measures Taken

5.2.1.1: Area to be Developed for Recreation

Area (Ha)	Nil	Area (Ha)	Nil

5.2.1.2: Area for Water Storage & Recharge Facility

Area (Ha)	Nil	Area (Ha)	Nil

5.2.1.3: Efforts Made towards Housing for Local Communities

Number of Houses	Nil	Number of Houses	Nil

5.2.1.4: Efforts Made towards Providing Transport to Local Communities

Number of Beneficiaries	Nil	Number of Beneficiaries	Nil

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5.2.1.5: Efforts Made towards Providing Healthcare to Local Communities

Number of Beneficiaries	• 15 nos. Rural Medical Camps shall benefit 750 persons Budget: 0.60 lakhs • Purchase and supply of medical equipment at Sub-divisional Hospital at Ghatshila or Community Health Center, Kandadih. Budget: 7.00 lakhs	Number of Beneficiaries	750

5.2.1.6: Efforts Made towards Providing Hygiene & Sanitation to Local Communities

Number of Beneficiaries	Nil	Number of Beneficiaries	Nil

5.2.1.7: Efforts Made towards Skill Development Programs to Local Communities

Number of Beneficiaries	Nil	Number of Beneficiaries	Nil

5.2.1.8: Efforts Made to Promote Education & Knowledge Based Initiatives

Number of Beneficiaries	Nil	Number of Beneficiaries	Nil

5.2.1.9: Communication Facilities Provided to Local Communities

Number of Beneficiaries	Nil	Number of Beneficiaries	Nil

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5.2.1.10: Any Other Steps Taken for Improving the Socio-Economic Standard of Local Communities

Number of Beneficiaries	• Providing Support & training to 5 women Self Help groups which shall benefit around 70 persons. • Nutrition Project shall benefit around 50 women beneficiaries by providing alternative farm based livelihood. • Improved Vegetable Cultivation Project shall benefit around 10 women beneficiaries by providing alternative farm-based livelihood. • Improved Pulses and oilseed Cultivation Project shall benefit around 2 women farmers by providing alternative farm-based livelihood. • Mushroom Project shall benefit 10 women farmers. Budget: 4.73 lakhs	Number of Beneficiaries	

5.2.1.11: Adoption of ODF

Number of Toilets Built inside the Lease	Nil	Number of Toilets Built outside the Lease Area:	Nil	Number of Beneficiaries	Nil

5.2.1.12: Awareness Program among Mine Workers for Swatchata

Number of Swatchata Programmes proposed:	4	Number of Swatchata Programmes Held:	4

5.2.1.13: Efforts for green energy

Total energy consumption (KWh)	5157060		22700

5.2.1.14: Water & recycled use

Total water consumption (KLD)	1400/day	Water recycled (% of total)	100

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5.2.2: YEAR 2

2023-24

Details of Work Proposed during the Year / Measures Planned for the Affected Segment	Cumulative Work done / Measures Taken

5.2.2.1: Area to be Developed for Recreation

Area (Ha)	Nil	Area (Ha)	Nil

5.2.2.2: Area for Water Storage & Recharge Facility

Area (Ha)	Rainwater Harvesting structures in nearby villages in consultation with district administration. Budget: 4.00 lakhs	Area (Ha)	

5.2.2.3: Efforts Made towards Housing for Local Communities

Number of Houses	Nil	Number of Houses	Nil

5.2.2.4: Efforts Made towards Providing Transport to Local Communities

Number of Beneficiaries	Nil	Number of Beneficiaries	Nil

5.2.2.5: Efforts Made towards Providing Healthcare to Local Communities

Number of Beneficiaries	• 20 nos. Rural Medical Camps shall be organized which shall benefit 750 persons Budget: 0.80 lakhs	Number of Beneficiaries	

5.2.2.6: Efforts Made towards Providing Hygiene & Sanitation to Local Communities

Number of Beneficiaries	• Cleanliness drive for promoting the use of paper bags and cloth bags and avoiding usage of plastic. • Awareness drive for use of household toilets and handwashing. Budget: 1.00 lakh	Number of Beneficiaries	

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5.2.2.7: Efforts Made towards Skill Development Programs to Local Communities

Number of Beneficiaries	• Organising Skill Development Programs i.e., BPL and Fresh Skilling under Kaushal Vikas Yojana Scheme of Government of India, which shall benefit around 100 local youths. Budget: 2.00 lakhs.	Number of Beneficiaries	

5.2.2.8: Efforts Made to Promote Education & Knowledge Based Initiatives

Number of Beneficiaries	• Providing furniture/modern teaching aids/laboratory instruments to Schools in consultation with District Administration Budget: 2.00 lakhs	Number of Beneficiaries	

5.2.2.9: Communication Facilities Provided to Local Communities

Number of Beneficiaries	nil	Number of Beneficiaries	Nil

5.2.2.10: Any Other Steps Taken for Improving the Socio-Economic Standard of Local Communities

Number of Beneficiaries	• Providing Support & training to 5 women Self Help groups for making Muri (Puffed Rice), Wooden craft items, artificial jewelry items, etc. which shall benefit around 70 persons. • Nutrition Project shall benefit around 50 women beneficiaries by providing alternative farm-based livelihood. • Improved Vegetable Cultivation Project shall benefit around 10 women beneficiaries by providing alternative farm-based livelihood. • Mushroom Project shall benefit 15 women farmers. Budget: 4.50 lakhs	Number of Beneficiaries	

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5.2.2.11: Adoption of ODF

Number of Toilets Built inside the Lease Area:	20	Number of Toilets Built outside the Lease Area:	20	Number of Beneficiaries	10

5.2.2.12: Awareness Program among Mine Workers for Swatchata

Number of Swatchata Programmes proposed:	06 programs	Number of Swatchata Programmes Held:	

5.2.2.13: Efforts for green energy

Total energy consumption (KWh)	3117060	Green energy consumption (% of total)	22700

• Solar Drinking water structure (Bore well with Motor fitting) including Soak Pit for Water Rechanging in villages /schools/ hospital in consultation with local authorities.
Budget: 10.00 lakhs

• Plantation of the locally growing variety of trees which provide fruits and other Non-Timber Forest Produce (NTFP) in consultation with District administration & local panchayats
Budget: 1.00 lakhs

5.2.2.14: Water & recycled use

Total water consumption (KLD)	1220/day	Water recycled (% of total)	100

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5.2.3: YEAR 3

2024-25

Details of Work Proposed during the Year / Measures Planned for the Affected Segment	Cumulative Work done / Measures Taken

5.2.3.1: Area to be Developed for Recreation

Area (Ha): Nil

Area (Ha): Nil

5.2.3.2: Area for Water Storage & Recharge Facility

Area (Ha): Nil

Area (Ha): Nil

5.2.3.3: Efforts Made towards Housing for Local Communities

Number of Houses: Nil

Number of Houses: Nil

5.2.3.4: Efforts Made towards Providing Transport to Local Communities

Number of Beneficiaries: Nil

Number of Beneficiaries: Nil

5.2.3.5: Efforts Made towards Providing Healthcare to Local Communities

Number of Beneficiaries:

- 20 nos. Rural Medical Camps shall be organized which shall benefit 750 persons
  Budget: 0.80 lakhs
- Purchase and supply of medical equipment at Sub-divisional Hospital at Ghatshila or Community Health Center, Kendadih.
  Budget: 10.00 lakhs

Number of Beneficiaries:

5.2.3.6: Efforts Made towards Providing Hygiene & Sanitation to Local Communities

Number of Beneficiaries:

- Cleanliness drive for promoting the use of paper bags and cloth bags and avoiding usage of plastic.
- Awareness drive for use of household toilets and handwashing.

Budget: 1.00 lakh

Number of Beneficiaries:

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5.2.3.7: Efforts Made towards Skill Development Programs to Local Communities

Number of Beneficiaries	• Organising Skill Development Programs i.e., RPL and Fresh Skilling under Kaushal Vikas Yojana Scheme of Government of India, which shall benefit around 100 local youths. Budget: 2.00 lakhs	Number of Beneficiaries	

5.2.3.8: Efforts Made to Promote Education & Knowledge Based Initiatives

Number of Beneficiaries	• Providing furniture/modern teaching aids/laboratory instruments to Schools in consultation with District Administration. Budget: 2.00 lakhs	Number of Beneficiaries	

5.2.3.9: Communication Facilities Provided to Local Communities

Number of Beneficiaries	Nil	Number of Beneficiaries	Nil

5.2.3.10: Any Other Steps Taken for Improving the Socio-Economic Standard of Local Communities

Number of Beneficiaries	• Providing Support & training to 5 women Self Help groups for making Muri (Puffed Rice), Wooden craft items, artificial jewelry items, etc. which shall benefit around 70 persons. • Nutrition Project shall benefit around 50 women beneficiaries by providing alternative farm-based livelihood. • Improved Vegetable Cultivation Project shall benefit around 10 women beneficiaries by providing alternative farm-based livelihood. • Mushroom Project shall benefit 15 women farmers. Budget: 4.90 lakhs	Number of Beneficiaries	

5.2.3.11: Adoption of ODF

Number of Toilets Built inside the Lease Area:	Nil	Number of Toilets Built outside the Lease Area	30	Number of Beneficiaries	30

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5.2.3.12: Awareness Program among Mine Workers for Swatchata

Number of Swatchata Programmes proposed:	04 programs	Number of Swatchata Programmes Held:	

5.2.3.13: Efforts for green energy

Total energy consumption (KWh)	3117060		22700

• Plantation of the locally growing variety of trees which provide fruits and other Non-Timber Forest Produce (NTFP) in consultation with District administration & local panchayats
Budget: 1.00 lakhs

5.2.3.14: Water & recycled use

Total water consumption (KLD)	1220/day	Water recycled (% of total)	100

5.2.4: YEAR 4

Details of Work Proposed during the Year / Measures Planned for the Affected Segment	Cumulative Work done / Measures Taken

5.2.4.1: Area to be Developed for Recreation

Area (Ha)	NA	Area (Ha)	

5.2.4.2: Area for Water Storage & Recharge Facility

Area (Ha)	NA	Area (Ha)	

5.2.4.3: Efforts Made towards Housing for Local Communities

Number of Houses	NA	Number of Houses	

5.2.4.4: Efforts Made towards Providing Transport to Local Communities

Number of Beneficiaries	NA	Number of Beneficiaries	

5.2.4.5: Efforts Made towards Providing Healthcare to Local Communities

Number of Beneficiaries	NA	Number of Beneficiaries	

5.2.4.6: Efforts Made towards Providing Hygiene & Sanitation to Local Communities

Number of Beneficiaries	NA	Number of Beneficiaries	

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5.2.4.7: Efforts Made towards Skill Development Programs to Local Communities

Number of Beneficiaries: NA

Number of Beneficiaries:

5.2.4.8: Efforts Made to Promote Education & Knowledge Based Initiatives

Number of Beneficiaries: NA

Number of Beneficiaries:

5.2.4.9: Communication Facilities Provided to Local Communities

Number of Beneficiaries: NA

Number of Beneficiaries:

5.2.4.10: Any Other Steps Taken for Improving the Socio-Economic Standard of Local Communities

Number of Beneficiaries: NA

Number of Beneficiaries:

5.2.4.11: Adoption of ODF

Number of Toilets Built inside the Lease Area: NA

Number of Toilets Built outside the Lease Area:

Number of Beneficiaries:

5.2.4.12: Awareness Program among Mine Workers for Swatchata

Number of Swatchata Programmes proposed: NA

Number of Swatchata Programmes Held:

5.2.4.13: Efforts for green energy

Total energy consumption (KWH): NA

Green energy consumption (% of total):

5.2.4.14: Water & recycled use

Total water consumption (KLD): NA

Water recycled (% of total):

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5.2.5: YEAR 5

Details of Work Proposed during the Year / Measures Planned for the Affected Segment	Cumulative Work done / Measures Taken

5.2.5.1: Area to be Developed for Recreation

Area (Ha): NA | Area (Ha):

5.2.5.2: Area for Water Storage & Recharge Facility

Area (Ha): NA | Area (Ha):

5.2.5.3: Efforts Made towards Housing for Local Communities

Number of Houses: NA | Number of Houses:

5.2.5.4: Efforts Made towards Providing Transport to Local Communities

Number of Beneficiaries: NA | Number of Beneficiaries:

5.2.5.5: Efforts Made towards Providing Healthcare to Local Communities

Number of Beneficiaries: NA | Number of Beneficiaries:

5.2.5.6: Efforts Made towards Providing Hygiene & Sanitation to Local Communities

Number of Beneficiaries: NA | Number of Beneficiaries:

5.2.5.7: Efforts Made towards Skill Development Programs to Local Communities

Number of Beneficiaries: NA | Number of Beneficiaries:

5.2.5.8: Efforts Made to Promote Education & Knowledge Based Initiatives

Number of Beneficiaries: NA | Number of Beneficiaries:

5.2.5.9: Communication Facilities Provided to Local Communities

Number of Beneficiaries: NA | Number of Beneficiaries:

5.2.5.10: Any Other Steps Taken for Improving the Socio-Economic Standard of Local Communities

Number of Beneficiaries: NA | Number of Beneficiaries:

5.2.5.11: Adoption of UUI

Number of Toilets Built inside the Lease Area: NA | Number of Toilets Built outside the Lease Area: | Number of Beneficiaries:

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5.2.5.12: Awareness Program among Mine Workers for Swatchata

Number of Swatchata Programmes proposed: NA

Number of Swatchata Programmes Held:

5.2.5.13: Efforts for green energy

Total energy consumption (kWh): NA

Green energy consumption (% of total):

5.2.5.14: Water & recycled use

Total water consumption (KLD): NA

Water recycled (% of total):

5.3: Rehabilitation & Resettlement of Affected Persons

Particular	Year 1	Year 2	year 3 (2022-23)	Year 4 (2023-24)	Year 5 (2024-25)
Proposed Number of Project Affected Persons(PAP)	Lapse year	Lapse year	NA	NA	NA
Proposed Number of Person for Alternate Arrangement for Sustainable Livelihood	Lapse year	Lapse year	NA	NA	NA
Proposed Number of Person for Skill Training	Lapse year	Lapse year	NA	NA	NA
Proposed Number of Person Likely to get Direct Employment	Lapse year	Lapse year	NA	NA	NA
Proposed Number of Person Likely to get Indirect Employment	Lapse year	Lapse year	NA	NA	NA
Proposed Project Affected Families Skilled and Absorbed	Lapse year	Lapse year	NA	NA	NA
Proposed Number of Project Affected Families	Lapse year	Lapse year	NA	NA	NA

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Chapter 6: Progressive Mine Closure Plan

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6.1: Status of Land

Total Area Degraded					Total mined out area Reclaimed and Rehabilitated			Other Areas Reclaimed and Rehabilitated	
Total area under excavation in the lease		Area under Dumps(in hect)	Area under utility services(in hect)	Area under Stack yards(in hect)	Mined out Area Reclaimed but not rehabilitated(in hect)	Mined outArea fully Rehabilitated from Reclaimed area(in hect)	Area under Water Reservoir considered Rehabilitate	Stabilized Waste dump Rehabilitated (in hect)	Virgin area under Green Belt (in hect)
Area under mining operation	Mined Out area in the lease								
No fresh area is preposed to be degraded as the mine is an underground mine.									
13.28		8.43	20.98	4.85	0	0	0	0	18.79

6.2: Progressive Reclamation and Rehabilitation Plan

6.2.1: Backfilling

Quantity of Waste / Fill Material Available at Site (m^3)	Nil
Availability of Top Soil for Spreading (m^3)	Nil
Spread Area (m^2)	Nil

6.2.1.1: Year Wise Proposal

S. N.	Year	Pit ID	Area (m^2)	Top RL	Bottom RL	Expenditure (INR)
1	Year 1	Lapse year				
2	Year 2	Lapse year				
3	Year 3	Nil	Nil	Nil	Nil	Nil
4	Year 4	Nil	Nil	Nil	Nil	Nil
5	Year 5	Nil	Nil	Nil	Nil	Nil

6.2.2: Water Reservoir

Average Rainfall of The Area (mm)	1278 mm
Proposed Area under Water Storage	Nil

6.2.2.1: Preparations For Ground Water Recharging

6.2.2.1.1: Drilling Holes	
Year	Proposed no of Holes to be Drilled
Year 1	Lapse year
Year 2	Lapse year
Year 3	Nil
Year 4	Nil
Year 5	Nil

6.2.2.1.2:Preparation of Course Gravel Bed	
Year	Proposed Area of Bed (LxW)
Year 1	Lapse year
Year 2	Lapse year
Year 3	Nil
Year 4	Nil
Year 5	Nil

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Please specify, if others
20 No. of Rechange pond will be constructed

6.2.2.2: Protective measures (Please specify running meter)

6.2.2.2.1: Fencing

Year	Proposed Fencing Length (m)	Co-ordinates from	Co-ordinates to
Year 1	Lapse year		
Year 2	Lapse year		
Year 3	Nil		
Year 4	Nil		
Year 5	Nil		

6.2.2.2.2: Retaining Wall

Year	Proposed Wall Length (m)	Co-ordinates from	Co-ordinates to
Year 1	Lapse year		
Year 2	Lapse year		
Year 3	Nil		
Year 4	Nil		
Year 5	Nil		

6.2.2.2.3: Garland Drains

Year	Proposed Bund Length (m)	Co-ordinates from	Co-ordinates to
Year 1	Nil		
Year 2	Nil		
Year 3	Nil		
Year 4	Nil		
Year 5	Nil		

6.2.3: Green Belt Development

6.2.3.1: Cumulative work done (upto end of previous block of five years)

S. N.	Total Expenditure Incurred up to Last Year (INR)	Area Covered (Ha)	Number of Plants	Survival Rate (%)
1	1600000	18.79	3200	50

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6.2.3.2: Year Wise Proposal

S. N.	Year	Green Belt Location (s)	Area Proposed to be Covered (Ha)	Number of Plants Proposed	Expected Survival Rate (%)	Estimated Expenditure (INR)	Column1
1	Year 1	Lapse year				0	
2	Year 2	Lapse year				0	
3	Year 3	ML area	18.79 (Area proposed to be covered Gap plantation of existing greenbelt over 18.79 ha for each year.)	500	60	250000	
4	Year 4	ML area	18.79 (Area proposed to be covered Gap plantation of existing greenbelt over 18.79 ha for each year.)	500	60	250000	
5	Year 5	ML area	18.79 (Area proposed to be covered Gap plantation of existing greenbelt over 18.79 ha for each year.)	500	60	250000	

6.2.4: Use of shallow pits

6.2.4.1: Cumulative work done (upto end of previous block of five years)

S. N.	Pit ID	Work Done	Area covered (m^2)	Total Expenditure Incurred (up to last five year block) (INR)
1	NA			

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6.2.4.2: Year Wise Proposal

S. N.	Year	Pit ID	Total Area (Ha)	Area Proposed for Crops (Ha)	Suitable Crops	Area Proposed for Grass (Ha)	Total Proposed Expenditure (INR)	Location (s)	Remarks
1	Year 1	Lapse year							
2	Year 2	Lapse year							
3	Year 3	Nil							
4	Year 4	Nil							
5	Year 5	Nil							

6.2.5: PISCICULTURE

6.2.5.1: Total Expenditure incurred as on Date (INR) NA

6.2.5.2: Cumulative work done as on Date

S. N.	Pit ID	Area (m^2)	Expenditure (INR)
1	NA	NA	NA

6.2.5.3: Year Wise Proposal

S. N.	Year	Pit ID	Area (m^2)	Estimated Expenditure (INR)
1	NA	NA	NA	NA

6.2.5.4: Source of Water for Pisciculture NA

6.2.5.5: Whether the quality of water has been assessed & found to be suitable for Pisciculture NA

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6.2.6: Recreational Facility

6.2.6.1: Total Expenditure Incurred (up to last five year block) (INR) Nil

6.2.6.2: Cumulative work done as on Date

S. N.	Pit ID	Area (m^2)	Expenditure (INR)
1	Nil	Nil	Nil

6.2.6.3: Year Wise Proposal

S. N.	Year	Type of Recreational Facility	Area Covered (Ha)	Location	Estimated Expenditure (INR)
1	Year 1	Lapse year	NA	NA	NA
2	Year 2	Lapse year	NA	NA	NA
3	Year 3	Nil	NA	NA	NA
4	Year 4	Nil	NA	NA	NA
5	Year 5	Nil	NA	NA	NA

6.2.7: Dump Area Stabilization & Development

S. N.	Year	Dump ID	No of Terraces	Average Height of Terraces (m)	Length of Toe Wall (m)	Length of Garland Drain (m)	Area Stabilized (Ha)	Method of Stabilizati	Estimated Expenditure (INR)	No of Check Dams
3	Year 1	Lapse year	NA	NA	NA	NA	NA	NA	NA	NA
2	Year 2	Lapse year	NA	NA	NA	NA	NA	NA	NA	NA
1	Year 3	Nil	NA	NA	NA	NA	NA	NA	NA	NA
4	Year 4	Nil	NA	NA	NA	NA	NA	NA	NA	NA
5	Year 5	Nil	NA	NA	NA	NA	NA	NA	NA	NA

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6.2.8: Other Form of Reclaiming the Area

6.2.8.1: Cumulative work done as on Date

S. N.	Total Expenditure incurred as on Date (INR)	Work Done
1	Nil	Nil

6.2.8.2: Year Wise Proposal

S. N.	Year	Work Proposals	Estimated Expenditure (INR)
1	Year 1	Lapse year	
2	Year 2	Lapse year	
3	Year 3	Nil	NA
4	Year 4	Nil	NA
5	Year 5	Nil	NA

6.2.9: TOPSOIL MANAGEMENT

6.2.9.1: Cummulative Work Done as on

S. N.	Top Soil Generated (m^3)	Top Soil Utilized (m^3)	Topsoil Stored (m^3)	Total expenditure incurred as on date (₹)
1	Nil	Nil	Nil	Nil

6.2.9.2: Year Wise Proposal

Year	Topsoil Generated (m^3) (A)	Topsoil Utilized (m^3) (B)	Topsoil Stored (m^3) (A-B)	Estimated Expenditure (INR)
Year 1	Lapse year	NA	NA	NA
Year 2	Lapse year	NA	NA	NA
Year 3	Nil	NA	NA	NA
Year 4	Nil	NA	NA	NA
Year 5	Nil	NA	NA	NA

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6.2.10: Tailings Dam Management

Year	Yearly generation of Tailing (m^3) (A)	Total capacity of Tailing Pond (m^3)	Measures Proposed for Periodic Desilting	Yearly Utilization of Tailing (m^3) (B)	Disposal of Tailing to Tailing Pond (m^3) (A-B)	Tailing Dam Design	Structural Stability Studies
Year 1	Lapse year	NA	NA	NA	#VALUE!	NA	NA
Year 2	Lapse year	NA	NA	NA	#VALUE!	NA	NA
Year 3	0	NA	NA	NA	#VALUE!	NA	NA
Year 4	0	NA	NA	NA	#VALUE!	NA	NA
Year 5	0	NA	NA	NA	#VALUE!	NA	NA

6.2.11: LAND USE OF LEASE AREA AT THE EXPIRY OF LEASE PERIOD (CONCEPTUAL STAGE)

Total Area Degraded				Non Degraded area	Total mined out area Reclaimed and Rehabilitated			Other Areas Reclaimed and Rehabilitated			
Mined Out area in the lease	Area under Dumps(in hect)	Area under the Tailing Dam	Area under utility services(in hect)	Area undisturbed/virgin	Mined out Area Reclaimed but not rehabilitated(in hect)	Mined outArea fully Rehabilitated from Reclaimed area(in hect)	under Water Reservoir considered Rehabilita	Stabiliiaed Waste dump Rehabilitated (in hect)	Virgin area under Green Belt (in hect)	Rehabilitated Area under utility services(in hect)	Rehabilitated Area under Tailing dam (in hect)
13.28	13.28	0.00	20.96	322.35	0	18.79	0.00	0.00	18.79	0.00	0.00

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Chapter 7: Financial Assurance/ Performance Surety (AREA PUT TO USE)

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YEAR 1

YEAR 1

Consolidated View of Financial Assurance

Sl. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B)
1	Area under Mining	13.28	0	13.28
2	Topsoil stacking	2.94	0	2.94
3	Overburden/Waste Dumping	5.49	0	5.49
4	Mineral Storage	4.85	0	4.85
5	Infrastructure (Workshop, Administrative Building etc.)	8.41	0	8.41
6	Roads	1.88	0	1.88
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0	0	0
10	Mineral Separation Plant	0	0	0
11	Township Area	10.69	0	10.69
12	Others to Specify	18.79	0	18.79
	Total	66.33	0	66.33

YEAR 2

Consolidated View of Financial Assurance

Sl. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B)
1	Area under Mining	13.28	0	13.28
2	Topsoil stacking	2.94	0	2.94
3	Overburden/Waste Dumping	5.49	0	5.49
4	Mineral Storage	4.85	0	4.85
5	Infrastructure (Workshop, Administrative Building etc.)	8.41	0	8.41
6	Roads	1.88	0	1.88
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0	0	0
10	Mineral Separation Plant	0	0	0
11	Township Area	10.69	0	10.69
12	Others to Specify	18.79	0	18.79
	Total	66.33	0	66.33

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YEAR 3

Consolidated View of Financial Assurance

Sl. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B)
1	Area under Mining	13.28	0	13.28
2	Topsoil stacking	2.94	0	2.94
3	Overburden/Waste Dumping	5.49	0	5.49
4	Mineral Storage	4.85	0	4.85
5	Infrastructure (Workshop, Administrative Building etc.)	8.41	0	8.41
6	Roads	1.88	0	1.88
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0	0	0
10	Mineral Separation Plant	0	0	0
11	Township Area	10.69	0	10.69
12	Others to Specify	18.79	0	18.79
	Total	66.33	0	66.33

YEAR 4

Consolidated View of Financial Assurance

Sl. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B)
1	Area under Mining	13.28	0	13.28
2	Topsoil stacking	2.94	0	2.94
3	Overburden/Waste Dumping	5.49	0	5.49
4	Mineral Storage	4.85	0	4.85
5	Infrastructure (Workshop, Administrative Building etc.)	8.41	0	8.41
6	Roads	1.88	0	1.88
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0	0	0
10	Mineral Separation Plant	0	0	0
11	Township Area	10.69	0	10.69
12	Others to Specify	18.79	0	18.79
	Total	66.33	0	66.33

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YEAR 5

Consolidated View of Financial Assurance

Sl. No.	Particular	Area put to use at Start of Year (ha) (A)*	Additional Requirement (ha) (B)*	Total (ha) (C = A + B)
1	Area under Mining	13.28	0	13.28
2	Topsoil stacking	2.94	0	2.94
3	Overburden/Waste Dumping	5.49	0	5.49
4	Mineral Storage	4.85	0	4.85
5	Infrastructure (Workshop, Administrative Building etc.)	8.41	0	8.41
6	Roads	1.88	0	1.88
7	Railways	0	0	0
8	Tailing Pond	0	0	0
9	Effluent Treatment Plant	0	0	0
10	Mineral Separation Plant	0	0	0
11	Township Area	10.69	0	10.69
12	Others to Specify	18.79	0	18.79
	Total	66.33	0	66.33
	Grand Total			

Financial Assurance

Performance surety

Financial Assurance

Category A Mining Lease

Total Area Proposed to be put to use in hect(Year 1 to 5)	Amount of Bank Gurantee (Lac INR)	Valid till (dd/mm/yyyy)	Upload copy of Bank Gurantee as attachment	
66.33	16.5825	31.03.2025	BG No : 11640100001911	Annexure 16a
	182.4075	31.03.2025	BG No. 0999817BG0000800	Annexure 16b
	132.66	31.03.2025	BG no 0999822BG0000872	Annexure 16c
	331.65			

Category B Mining Lease

Total Area Proposed to be put to use in hect(Year 1 to 5)	Amount of Bank Gurantee (Lac INR)	Valid till (dd/mm/yyyy)	Upload copy of Bank Gurantee as attachment
	NA	NA	NA

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Regional Controller of Mines
भारतीय खान ब्यूरो
Indian Bureau of Mines

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Chapter 8: Review of Previous Proposals (Not applicable for fresh grant)

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8.1: General

8.1.1: Lease Area Utilization

Sl. No.	Type of land use (in ha)	Area at the beginning of the proposal period	Area proposed under activity	Actual Area utilized in the proposal period	Deviation	Reasons for deviation
1	Mining	13.28	-	13.28	-	-
2	Mineral storage	4.85	-	4.85	-	-
3	Mineral Beneficiation plant	0	-	0	-	-
4	Township	10.69	-	10.69	-	-
5	Tailing Pond	0	-	0	-	-
6	Railways	0	-	0	-	-
7	Roads	1.88	-	1.88	-	-
8	Infrastructure (Workshop, administrative building etc.)	8.41	-	8.41	-	-
9	OB/waste dump	5.49	-	5.49	-	-
10	Top soil preservation	2.94	-	2.94	-	-
11	Others	18.79	-	18.79	-	-
12	Total area put to use	66.33	-	66.33	-	-
13	Excavated area reclaimed		-		-	-
14	Waste dump area reclaimed		-		-	-
15	Undisturbed Area	322.35	-	322.35	-	-
	Total	388.68	-	388.68		

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8.1.2: SDF and CSR Expenditures

Activity	Proposals		Achievement	Deviation	Reasons for deviation
Total expenditure incurred for implementation of SDF at mine level including Environment Protection CSR & other welfare activities in peripheral area (Explanation: Expenditure is not over and above the statutory levies imposed by the Government. However, this EXCLUDES CONTRIBUTION TO DMF & NMET and is over and above the statutory levies imposed by the Government.)	10% of Royalty (a)	Total Expenditure for SDF implementation (b)			
CSR (Corporate Social Responsibility) spending at the mine level in Proposal Period (as per Companies Act, 2013 or otherwise)		516000	516000		

8.2: Technical Details

8.2.1: Exploration

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Number of Boreholes/ Pits/ Trenches	0	0	0	NA
Boreholes Meterage (If Boreholes selected in first one) (m)	0	0	0	NA
Total	0	0	0	NA
G Axis upgradation during Proposal Period as per guidelines of MEMC Rule 2015) Area converted under G1 from G2/G3				

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8.2.2: Mine Development (Opencast/ Underground/ Both/ Dump Mining)

Particulars	Proposed	Actual	Deviation	Reasons for deviation
8.2.2.1: Generation of Ore/Waste While Development				
Ore	717825	0		
Waste		Nil		
Generated Waste while ROM recovery		Nil		
Dumping Site (For Surface)		Nil		
Removal of waste/ over burden in cubic meters		Nil		
Generated Waste while ROM recovery		Nil		
Dumping site of waste/ overburden		Nil		
Note: Mining operation could not be started (2020-21 to 2021-22)due to non-extension of Mining Lease by State Govt.				
8.2.2.2: Excavation				
Lateral extent	1365	Nil		
Vertical extent	1585	Nil		

8.2.3: Mining operation: Dump Mining

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Handling of Material	Nil	Nil	Nil	NA
Waste Generated post recovery	Nil	Nil	Nil	NA
Dumping site for waste	Nil	Nil	Nil	NA

8.2.4: Zero Waste Mining

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Alternative use / Disposal of Waste Generated (excluding top soil)	Nil	NA	NA	NA

8.2.5: Backfilling

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Site (Co-ordinates)	Nil	NA	NA	NA
Area	Nil	NA	NA	NA
Depth	Nil	NA	NA	NA
Volume Backfilled (CuM)	Nil	NA	NA	NA
Backfilled Area available for Reclamation and Rehabilitation	Nil	NA	NA	NA

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Backfilled Area Reclaimed and Rehabilitated	Nil	NA	NA	NA
Balance Backfilled Area	Nil	NA	NA	NA

8.2.6: Production of Mineral(s):

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
8.2.6.1: ROM				
Opencast	NA	NA	NA	NA
8.2.6.2: Cleaned Ore				
Opencast	NA	NA	NA	NA
Dump Mining	NA	NA	NA	NA
Recovery from Mineral Rejects or Tailings	NA	NA	NA	NA
Total	NA	NA	NA	NA

8.2.7: Handling of Mineral Rejects/ Sub-Grade

Particulars	Proposals	Achievement	Deviation	Reasons for deviation
Generation of mineral rejects				
Opencast	NA	NA	NA	NA
Dump mining	NA	NA	NA	NA
Other recovery	NA	NA	NA	NA
Stacking of mineral rejects/ sub-grade mineral (Select Dump Id)	NA	NA	NA	NA
Blending of mineral reject / sub-grade	NA	NA	NA	NA

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8.3.3: Welfare and socio-economic development programs for local communities

8.3.3.1: Support for Drinking Water & Agriculture

No. of Water Storage Tanks constructed	Year 1	Year 2	Year 3	Year 4	Year 5
Drinking Water Facilities provided (Bore wells/ Pumps etc.) Repair & Maintenance of Jalminar	3	Year 2	Year 3	Year 4	Year 5
Irrigation Support provided (Canals/ Pumps etc.)	Year 1	Year 2	Year 3	Year 4	Year 5
No. of Water tanks De-silted	Year 1	Year 2	Year 3	Year 4	Year 5
Water Treatment facilities provided (A/NA)	Year 1	Year 2	Year 3	Year 4	Year 5
Amount of Water treated (in kL) (if selected A in above)	Year 1	Year 2	Year 3	Year 4	Year 5

8.3.3.2: Support to Health & Medical Services

No. of persons identified from Occupational health diseases	Year 1	Year 2	Year 3	Year 4	Year 5
No. of Health Camps/ Medicine Camps Organized	10	10	Year 3	Year 4	Year 5

8.3.3.3: Support to Skill development & Education

Vocational Training Provided/ Support Provided					
No. of employees undergone Vocational training	Year 1	Year 2	Year 3	Year 4	Year 5
No. of other persons undergone Vocational training	142	97	Year 3	Year 4	Year 5
Number of Literacy & Education Camps held/ Supported	Year 1	Year 2	Year 3	Year 4	Year 5

8.3.3.4: Support to Transportation Services & Infrastructure

Expenditure on Transportation Services & Infrastructure	Nil	Nil	Year 3	Year 4	Year 5
Road development (m) in the peripheral area (not lease area)	Nil	Nil	Year 3	Year 4	Year 5
No. of Public transport support provided (Ambulance/Buses/ School Vans etc)	Nil	Nil	Year 3	Year 4	Year 5

8.3.3.5: Swatchata Programs: Creating/providing sanitation and healthy condition in and around the mine area

Adoption of ODF within mining lease area					
No. of Toilets built in the Lease Area	Nil	Nil	NA	NA	NA
Adoption of ODF in nearby villages					
No. Of Toilets built in the villages	Nil	Nil	NA	NA	NA
Provision for greenage recreational facility (Within Lease Area/ Outside)					
Recreational Area Type (Picnic Spot/ tracks/Park etc)	Year 1	Year 2	NA	NA	NA
Area covered (for within Lease Area only)	Year 1	Year 2	NA	NA	NA
Awareness program among Mine workers for Swatchata					
No. of Swatchchta Programmes held	1	2	NA	NA	NA

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List of Annexures (in pdf format):

1		Letter of Intent /Letter of lease grant
	a	Application to State Govt. for extension of Surda mining lease : **Annexure 1a**
	b	Copy of LOI from Secretary , Mines and Geology - Govt. of Jharkhand : **Annexure 1b**
	c	Copy of letter from State Govt. for extension of lease period of 20 year from dated 01.04.2020 to 31.03.2040 letter no 50/04/52/M. Ranchi, dated 06.01.2022 **Annexure 1c**
2		Copy of lease deed executed
	a	Copy of Lease deed (16.06.1939 to 15.06.1984) : **Annexure 2a**
	b	Copy of Lease deedof 1st renewal from 16.06.1984 to 15.06.2004 : **Annexure 2b**
	c	Copy of Lease deed of 2nd renewal granted from 16.06.2004 to 15.06.2014 : **Annexure 2c**
	d	Copy of letter from State Govt. for extension of lease period up to 31.03.2020 : **Annexure 2d**
	e	Copy of Supplementary Lease Deed : **Annexure 2e**
3		Copy of Environment and Forest Clearence, Consent to Establish, Consent to Operate
	a	Copy of Inprinciple approval granted by MoEF&CC Letter No. F.No.J-11015/80/2012-IA.II(M) : **Annexure 3a**
	b	Copy of Forest Clearance letter : **Annexure 3b**
	c	NPV payment details (**Annexure 3c**)
	d	Mines wise break up of forest area : **Annexure 3d**
	e	PCCF-Cum-ED / Nodal Officer, Ranchi- Jharkhand, letter regarding extension FC up to the lease extension period : **Annexure 3e**
	f	Copy of consent to operate (CTO): **Annexure 3f**
	g	Copy of MoEF&CC, Govt. of India letter dtd. 08.03.2022: **Annexure 3g**
4		Copy of Declaration of Owner/Nominated Owner in case of Company/partnership firm
	a	List of Board of Directors : **Annexure 4a**
	b	Board resolution regarding appointment of Nominated Owner : **Annexure 4b**
5		Copy of Registration of Company (RoC)/Partnership firm (Registration) & Deed : **Annexure 5a**
6		ID & Address Proof of Owner/Nominated Owner : **Annexure 6a**
		Form H Appointment of owner : **Annexure 6b**
7		Consent letter for Qualfied Person : **Annexure 7a**
8		Experience & Qualification Details of Qualfied Person : **Annexure 8a & Annexure 8b**
9		Copy of Study reportt conducted as per Para 4.3.1
	a	Hydrogeological report : **Annexure 9a**
	b	Copy of Report for Subsidence study of Surda mining area by IIT Kharagpur : **Annexure 9b**
	c	Copy of the systematic support rules (SSR): **Annexure 9c**
	d	Underground Geotechnical Study Report : **Annexure 9d**
	e	Surface strain prediction by 3-D subsidence model study : **Annexure 9e**
	d	Geophysical Exploration Report : **Annexure 9f**
10		Copy of feasibility Report : **Annexure 10a**
11		Copy of Scale relaxation approval granted : **Annexure 11**
12		Exploration details
	a	Borehole logs : **Annexure 12a**
13		Chemical and Mineralogical analysis report **Annexure 13a (PETROGRAPHIC STUDY RESULTS and MINERAGRAPHIC STUDY RESULTS)**
14		Any other Report or Certification as required in the submitted Document.
15		Mineral processing flowsheet with stage wise recovery
	a	Disposal method for tailing and detail chemical / mineral analysis of tailing : **Annexure 15a**
	b	Details of Tailing Ponds : **Annexure 15b**
	c	Detils of Water Requirement and Sourcelor Mineral processing : **Annexure 15C**
	d	Material balance chart of mineral processing plant : **Annexure 15d**
	e	flow sheet of beneficiation of plant : **Annexure 15e**
16		Copy of Bank Guarantee : **Annexure 16a and Annexure 16b (extended BG)**
		Copy of Bank guarantees (difference amount as per MCDR (Amendment) Rules-21 : **Annexure 16c**
17		CSV file as per foot note under item 2.2.1.9 in Soft Copy : **Annexure 17**
17		Resource calculation data in Excel sheet in Soft Copy : **Annexure 18**

AMIT NARAYAN DIGWEKAR

(Qualified Person)

Modification & Review of Mining Plan
Surda Mining Lease (388.68 Ha.)
Mining Area (323.16 Ha)
Lessee: Hindustan Copper Ltd. (HCL)

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List of Plates (Geometry type: Polygon, Datum: WGS 84, <<Title

1	Cadastral Plan	The Scanned copy shall be of the original lease map issued by State Government along with other details **Drawing No: HCL/ICC/SRD/2021-22/01**
2	Surface Plan	A statutory plan as per MCDR, 2017. The Plan should be submitted showing different color codes for:(1) Active Pits & Excavation area(2) Excavated area reclaimed & rehabilitated (3)Active dumps (4) Stabilized & rehabilitated dump area , (5) Green belt (6) Mineral Stacks (7) Utilities such as plant, buildings etc (8) Lease boundary **Drawing No: HCL/ICC/SRD/2021-22/02**
3	Surface Geological Plan of the lease	The Plan should be submitted showing different color codes for : (1) Lithological/Geological Occurance (2) Area under G1,G2,G3 & G4 (3) Active pits & Excavation area (4) Dump Area (5) Mineral Stacks (6) Lease boundary **Drawing No: HCL/ICC/SRD/2021-22/03**
4	Surface Geological sections	Geological sections with different color coding depicting all the features shown in Surface Geological Plan. **Drawing No: HCL/ICC/SRD/2021-22/04A, 04B & 04C**
5	Five year Production and Development plan	The Plan should be submitted showing different color coding for: (1) Active Pit and Excavation area , (2) Year wise excavation proposal for year I to V ((3) Active dump and yearwise dump proposal for year I to V (4) Year wise Dump working proposal for year I to V (6) Lease boundary (with reference to chapter 4) **Drawing No: HCL/ICC/SRD/2021-22/05**
6	Progressive Mine Clouser Plan	The Plan should be submitted showing different color coding for : (1) Yearwise excavated area Reclaimed & rehabilitated for year I to V (2) Year wise dump area to be stabilized and dump area to be rehabilitated for year I to V (3) Year wise Green area proposed from year I to V.(4) Any other reclamation and rehabilitation measures proposed.(5) Lease boundary (with reference to chapter 6) **Drawing No: HCL/ICC/SRD/2021-22/06**
7	Conceptual Plan and section	The Plan should depict the staus of lease area as envisaged at the end of life of Mine. Status of land use shall be depicted by different color coding. **Drawing No: HCL/ICC/SRD/2021-22/07**
8	Geo referenced Cadastral Plan	Duly certified by the State Government **Drawing No: HCL/ICC/SRD/2021-22/08**
9	Environmental Plan	As per MCDR, 2017 Rule 32(5)(b) **Drawing No: HCL/ICC/SRD/2021-22/09**
10	Level wise working Plan & sections	Plan & section showing all the working, exausted stopes along with all underground openings related to Men/Material Transportation. **Drawing No: HCL/ICC/SRD/2021-22/10**
11	Underground plan	Underground plan as per MCDR 2017 Rule 32(1)(c **Drawing No: HCL/ICC/SRD/2021-22/11**
12	Jxy Section	**Drawing No: HCL/ICC/SRD/2021-22/12**

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