PROPOSAL FOR PRELIMINARY EXPLORATION (G-3 STAGE) FOR COAL

NORTH OF PARBELIA

NMET FUNDED PROJECT

RANIGANJ COALFIELD

DISTRICT– PURULIA,

WEST BENGAL

JUNE - 2021

PROPOSAL FOR PRELIMINARY EXPLORATION FOR COAL (G-3 STAGE) IN NORTH OF PARBELIA, RANIGANJ COALFIELD DISTRICT-PURULIA, WEST BENGAL

1.0 INTRODUCTION

Raniganj coalfield is the easternmost member of the Damodar-Koel valley basin belt. It has the distinction of being the birth place of the Indian coal mining industry. Official record on occurrence and extraction of coal in Raniganj Coalfield dates back to 1774. Geological survey, mapping, exploration and exploitation over the last 200 years or so have well defined the northern, western and southern boundaries of this coalfield. The eastern boundary, which is concealed below younger rocks, remains a matter of conjecture till late eighties of the last century when sub-surface exploration, aided by geophysical survey, led to the delineation of eastern limit of the coalfield along E $87^0$30' i.e. to east of Panagarh-Domra area. The earlier known limit was up to E $87^0$20' longitudes.

1.1 The Raniganj Coalfield, as of now, has a total spread of over 1900 sq. km. and its limits are bounded by the latitudes $23^0$22' and $23^0$52'N and longitudes $86^0$36' and $87^0$30'E. Geographically, major portion (about 1882 sq. km) of the coalfield area is located in the state of West Bengal, only a small northwestern part of the area spills over to the state of Jharkhand. In West Bengal, Raniganj coalfield covers part of Paschim Bardhaman (1454 sq. km.), Birbhum (143 sq. km.), Bankura (125 sq. km.) and Purulia (108 sq. km.) districts while in the state of Jharkhand it covers part of Dhanbad (58 sq. km.) and Santhal Parganas (12 sq. km.)

1.2 GSI during the course of their Regional Exploration is carrying out drilling in this coalfield since 1965. In 1962 IBM started prospecting in Madhukunda Block located south of this Ranipur-Puapur Block.The Ranipur-Puapur Block is located in the south-western corner of the Raniganj Coalfield. The Block is included in Saidpur area of Eastern Coalfields Ltd (ECL). In Ranipur-Puapur Block 6353.35m of drilling in 20 boreholes was carried out by MECL under technical supervision of CMPDI.

1.3 During 2014-2018 CMPDI undertook detailed exploration in the southern adjoining blocks i.e. Dhangajore and Madhukunda etc where complete coal sequence has been identified in Raniganj Formation in the drilled boreholes establishing significant coal resources. The North of Parbellia Block has been identified for Preliminary (G-3) stage of exploration on the basis of findings in Dhangajore, Madhukunda & Ranipur/Parbelia blocks.

1.4 The North of Parbellia blockis located in the south-western corner of the Raniganj Coalfield in the district of Purulia. The area is covered in the topo-sheet (Open Series Map) F45C14 (RF 1:50,000).

1.5 CMPDI has drawn proposal for G3 stage of exploration for coal in the North of Parbellia Block having area 2.61 sq.km (approx), involving **2900m of drilling in 4 boreholes** along with integrated geophysical survey. The boreholes have been proposed at about 1600m×1600 m grid pattern.

2.0 OBJECTIVES

2.1 The G-3 stage of Exploration in the block is proposed to fulfill following objectives-

1. To establish the existence and continuity of coal seams of Barakar and Raniganj Formations occurring in the block.
2. To establish the lay, disposition and potentiality of coal seams up to basement.
3. To assess the coal resource by G-3 stage of exploration in the block.

3.0 LOCATION, COMMUNICATION ANDACCESSIBILITY

3.1 The area falls in the Neturia CD Block of Raghunathpur Subdivision of the Purulia district of West Bengal state. The Purulia district township is located at a distance of about 65 kms from this block and is connected by a State Highway road no. SH 5.

3.2 An all-weather metalled road passes south of the block in between Purulia and Neamatpur and connects with the Grand Trunk Road (NH-2) at Neamatpur. A second metalled road connects the block with the GT Road via Panchet Dam at Chirkunda.

3.3 The proposed block is covered in the topo-sheet F45C14 (Survey of India 1:50,000 OSM series toposheet). The extent of geographical co-ordinates of the block is asfollows:

Latitude : 23°38'57.7"N to 23°40'41.0"N
Longitude :86°45'9.3"E to 86°4”6'47.8"E

4.0 PHYSIOGRAPHY,DRAINAGE

4.1 The block and the adjoining area display a gentle undulating topography with the elevation ranging from 100m to 140m, above mean sea level. Panchakot Hill (643m) is located about 3 km to the south-west of the proposed block. The general slope of the area is towards north. The area is drained by a few ephemeral streams flowing from south to north and ultimately discharging into the Damodar River located just north of the block.

5.0 CLIMATE ANDVEGETATION

5.1 Humid tropical climate prevails over the area. During the summer months lasting from March to May the temperature generally varies from 30°C to 40°C In the winter ' (November to February) it drops down to 10°C during the night. The average annual rainfall is about 1200 mm, the major part of which precipitates during the period from June to September.

5.2 The area under study comprises mostly barren land with small shrubs and bushes.

6.0 BROAD GEOLOGICAL SETUP

6.1 Stratigraphic Sequence

Generalized geological succession in this basin as per published report of GSI, CMPDI and MECL are as given below.

TABLE-I
STRATIGRAPHIC SUCCESSION OF RANIGANJCF

Age	Formation	Lithology
Recent and Quaternary	Alluvium/ Soil	Alluvial and residual soil; lateritic capping.
Tertiary	Tertiary sediments	Light grey mudstone and siltstone with bands of marlstone; white, soft, fine grained clayey sandstone, mottled clay and loose sand with pebbles of vein quartz; occasional lignite in the basal part.
<----------Unconformity ---------->		
Late Cretaceous	Igneous Intrusives	Basic (dolerite) and ultrabasic (micaperidotite) sills and dykes.
Late Cretaceous	Rajmahal Volcanics	Greenish grey to black, fine to medium grained vesicular porphyritic basalt and volcanic breccia; weathered aphanitic basalt at places; one to five intertrappeans consisting of grey shale, sandstone and carbonaceous shale.
Late Triassic	Supra-Panchet	Massive, very coarse to coarse quartzose sandstone, conglomeratic at places; bands of dark red silty shale.
<----------Unconformity ---------->		
Early Triassic	Panchet	Greenish yellow and greenish grey, coarse grained, soft, micaceous, cross-bedded sandstone with slump structure; khaki green, fissile, silty shale; alternate bands of yellow, coarse grained, immature sandstone and bright reddish brown claystone with calcareous concretions; conglomeratic at base.

Age	Formation	Lithology
Late Permian	Raniganj	Grey to light grey, fine and medium grained, micaceous, felspathic sandstone with calcareous clayey matrix in the upper part; siltstone, shale often interlaminated with fine grained sandstone; carbonaceous shale and coal seams.
Late Permian	Ironstone Shales	Dark grey to black micaceous or carbonaceous, fissile shales with thin bands of dense, hard, cryptocrystalline clay ironstone, rarely interbanded with fine grained sandstone.
Early Permian	Barakar	Dirty white, very coarse to medium grained arkosic sandstone, often cross-bedded; grey and carbonaceous shale, at places inter banded with fine grained sandstone; fireclay lenses and coal seams.
Early Permian	Karharbari (?)	Massive to thickly bedded, coarse grained, arkosic sandstone with fragments of feldspar; carbonaceous sandstone with coal.
Early Permian	Talchir	Tillite or Diamictite with sandy or clayey matrix at the base; medium to fine grained, khaki or yellowish green, felspathic sandstone; siltstone, silty shale, needle shale and rhythmite with dropstones.
<----------Unconformity ---------->		
Precambrian	Metamorphics	Granite gneiss with migmatite gneiss, hornblende schist, hornblende gneiss, meta-basic rocks, pegmatite and quartz veins etc.

7.0 Geology of the block

7.1 On the basis of Surface and Subsurface data of exploratory boreholes drilled by GSI/CMPDI/MECL nearby blocks around North of Parbelia, the generalized sequence of the different formations in the area under study is given below in Table II.

TABLE-II
STRATIGRAPHIC SUCCESSION OF THE BLOCK/AREA

Age	Formation	Lithology (thickness)
Recent		Soil (65m)
<…….Unconformity…….>		
	Intrusives	Mica peridotite (0.61 m.)
<…….Unconformity…….>		

Early Triassic	Panchet	Greenish sandstone, greenish grey shale with chocolate brown shales. (145.20 m.)
Late Permian	Raniganj	Micaceous, kaoli-nised sandstones, grey to dark grey black & carbonaceous shale & coal seams/bands. (682.65 m.)
Late Permian	Barren Measures	Dark grey shales with sandstone bands (14.35 m.).
Early Permian	Barakar	Coarse to medium grained arkosic sandstone, often cross-bedded; grey and carbonaceous shale with coal seams (400-500)
Early Permian	Talchir	Tillite or Diamictite with sandy or clayey matrix at the base; medium to fine grained, khaki or yellowish green, felspathic sandstone; siltstone, silty shale, needle shale and rhythmite with dropstones.
<----------Unconformity ---------->		
Precambrian	Metamorphics	Granite gneiss with migmatite gneiss, hornblende schist, hornblende gneiss, meta-basic rocks, pegmatite and quartz veins etc.

8.0 Regional Structure

8.1 The general attitude of the bedding in the North of Parbelia block is North-East to South-West with minor swings and with South-easterly dip, however the amount of dip and change in direction cannot be ruled out due to occurrence of large fault (approx. 180m throw) in North-eastern part.

8.2 The interpretation of geological structure in North of Parbelia block is based on the sub-surface data obtained from the boreholes drilled in the block coupled with regional structure interpreted in adjacent Blocks.

8.3 Based on the data obtained from boreholes drilled in the surrounding blocks by MECL, GSI and CMPDI and regional structure in blocks, tentative floor contour plans have been attempted to decipher the geological structure of North of Parbelia block.

8.4 It is observed from the floor contour plans that the general strike of the beds trends North-East to South-West with low dip (6degree to 8 degree) in South Easterly direction. The southern boundary is marked by the incrop line of seam

R-IV. Seam R-III and R-II incrops within the area of study. Seam R-III generally thins out towards the western part of the block as per available data and seam R-II is generally in 0.50cm thickness range.

8.5 The geological structure deciphered in the block is highly tentative in nature and occurrence of additional Fault in the area under investigation cannot be ruled out completely which may increase or decrease the depths of the boreholes.

9.0 Sequence and quality of coal seams:

9.1 Out of the standard ten coal horizons of Raniganj Formation four seams i.e. R-II, R-III, R-IV and R-VIII have attained potential thickness in Ranipur-Puapur Block which lies to the south of present area of investigation.

9.2 The sequence of coal seams likely to occur in the proposed block on the basis of boreholes drilled in adjoining blocks mainly comprises of two lowermost coal seams of Raniganj Formation i.e. R-III and R-II, locally known as Hatnal and Sanctoria seams respectively.

9.3 As per regional geological map of the area both the coal bearing Formations Raniganj & Barakar occur in the proposed block and presence of coal seams of Barakar Formation below the Raniganj Formation and Barren Measure Formation are expected. Tentative sequence of coal and parting in the proposed area is as follows: (The details of coal seam given here are based on data of surrounding blocks/area & general seam sequence of Raniganj Coalfield).

9.4 Coal Seams of Raniganj and Barakar seams are likely to be Coking in nature

Table III : Expected Coal Seam Sequence in the Proposed Block

Seam No*	Depth Range (M)		Thickness Range (M)	Average Thickness Expected (M)	Expected Overall Quality Of TheSeam	Formation
	FROM	TO				
R-IV	50	530	1.25-4.50	2.9	G6	Raniganj Formation
Parting			54.07-118.44			
R-III	10	400	0.19-1.55	0.9	G10	
Parting			35.48-47.03			
R-II	45	640	0.06-2.03	1	G10	
Parting			400-450			Lower Raniganj, Barren

						measure & Upper Barakar
Khudia	150	300	0.5-3.0	1.8	G10/ Semicoking to weakly coking	Barakar Formation
Parting			10-25			
Gopinathpur Top	160	325	0.5-2.5	1.5	G12/ Semicoking to weakly coking	
Parting			2-22			
Singhpur Top	180	340	1-4.	2.5	G10/ Semicoking to weakly coking	
Parting			15-35			
Singhpur Bottom	200	410	0.5-2.0	1.3	G12/ Semicoking to weakly coking	
Parting			3-10			
Local-1	210	450	0.5-2.0	1.3	G10/ Semicoking to weakly coking	
Parting			2.0-8.5			
Brindabanpur Top Top	220	500	1.5-8.0	4.8	G8/ Semicoking to weakly coking	
Parting			1-7			
Brindabanpur Top Bottom	230	550	0.5-2.0	1.3	G10/ Semicoking to weakly coking	
Parting			7-15			
Brindabanpur Bottom	240	600	0.5-4.5	2.5	G14/ Semicoking to weakly coking	
Parting			5-40			
Kalimati	270	650	0.5-13.0	6.8	G10/ Semicoking to weakly coking	
Parting			1-22			
Metadih	290	710	0.5-8.0	4.3	G8/ Semicoking to weakly coking	

**. Seam, parting & quality details of Barakar Formation are highly tentative and inferred from available data in and around /distant blocks.*

10.0 EXPLORATION SCHEME

A G-3 stage exploration activities are proposed in the block.

10.1 Drilling:

Drilling of 2900 m in 4boreholes (Table IV) has been proposed in about 1600x1600 m grid for the North of Parbelia block. Boreholes have been proposed to drill till Basement/Metamorphic in order to ascertain the complete sedimentary/statigraphic sequence in the block.

TABLE-IV

Depth of Proposed Boreholes in North of Parbelia block, Raniganj Coalfield

Sl NO	***Proposed BH***	***Projected depth till Talcher***
1	PBH-01	750
2	PBH-02	450
3	PBH-03	920
4	PBH-04	780
	Total	**2900**

The likely resource to establish through G3 stage of Exploration is 100 MT.

10.2 Geophysical Investigation:

The proposed area is located at basin margin. In order to delineate metamorphic contact, lay, disposition and continuity of coal seams and the structural setup of the block, integrated Surface Geophysical survey (Resistivity, Magnetic & Gravity) is proposed in the block.

Resistivity imaging survey and Magnetic Survey are proposed over 200X200 meters grid interval. In 200m X 200m grid layout total 9 Nos. of Dip lines and 4 Nos. of strike lines (total about 18 LKM) have been proposed for resistivity imaging & Magnetic survey. For Gravity survey 49 stations are proposed over the area under investigation.

All the boreholes are proposed for borehole geophysical logging with standard parameters like Sonic, Dual density, Natural Gamma, caliper, SPR, deviation etc.

10.3 Laboratory Studies:

Band by Band Analysis, overall analysis, special tests will be carried out on coal samples. Details of laboratory studies to be carried out are given in Table-V.

10.4 Quantum of Work Proposed: Details of proposed work for G3 stage exploration for coal in North of Parbelia block is given below in Table-V

TABLE-V
QUANTUM OF WORK

S.No.	Activity	Quantity
1.	Geological Mapping	2.61 sq. km
2.	Drilling:	
	i) Boreholes	4 BHs.
	ii) Meterage	2900m
3.	i) Levelling and Triangulation	As per requirement
	ii) RL and Co-ordinates	4 BHs.
	III) DGPS Survey	Boundary Cardinals & Boreholes
4.	Drill Core Logging	2900m
5.	Geophysical Logging:	4 boreholes 2900m
	i) Borehole logging standard parameters	4 boreholes 2900m
	ii) Borehole Deviation Survey	3 boreholes 2450m
6	Geophysical survey :	
	i) Resistivity Survey:	Electrode spacing of 10m, along Dip -09 profile line 9.602 km, along strike-4 profile line 8.374 km. (total- 18LKM)
	ii) Magnetic Survey:	Along Dip 09 profile line 9.602 km, along strike 4 profile line 8.374 km.((total-18LKM)
	iii) Gravity survey:	49 stations
7.	Chemical Analysis:	
	i) Band by Band	4 BHs (about 350 samples)
	ii) Overall (for I100,I30,BCS)	All boreholes i.e 4 Bh (about 42 samples)
	iii) Calorific Value	All boreholes i.e 4Bh (about 42 samples)
8.	Special Tests (Ultimate analysis, Sulphur, phosphorous content, coking properties tests& Petrography)	1 bh for all seams i.e 12 seams
9	Time period of Completion	1 Year

11.0 LIMITATIONS

11.1 Depth of the proposed boreholes were inferred from the adjacent block (Ranipur- Puapur and Parbelia block) as only 1 boreholes upto R-II seam has been drilled inside the block. None of the available boreholes in and around the blocks have been drilled up to to base of Barakar Formation. Hence, proposed depth up to basement is tentative and may vary during course of investigation.

11.2 Boreholes may require some shifting due to non-approachability due to hills / gullies / villages/ forest cover, geological structure etc.

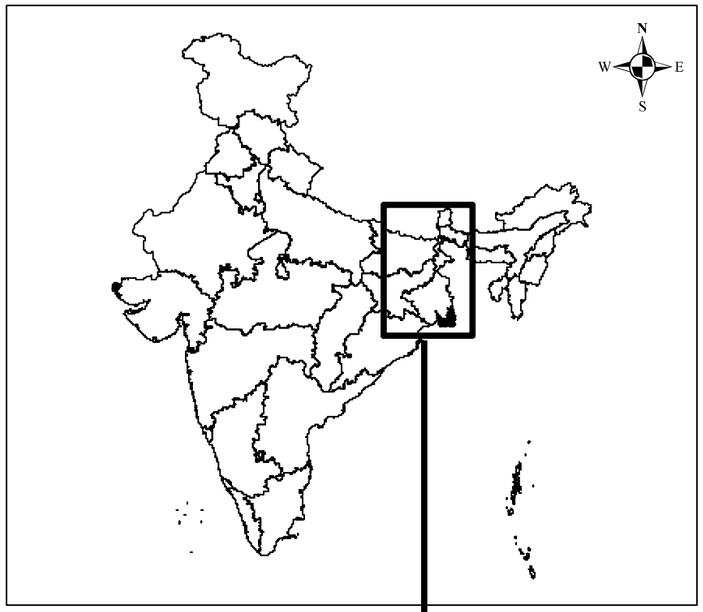
11.3 As the proposed meterage is based on the tentative structure as per surrounding reports and data of adjoining blocks, actual meterage may vary during course of exploration.

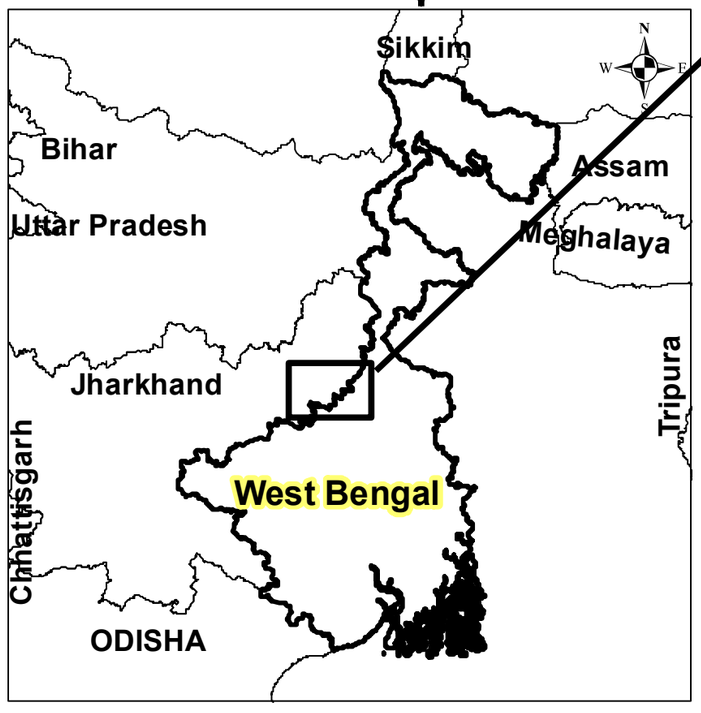
12.0 LIST OFPLATES

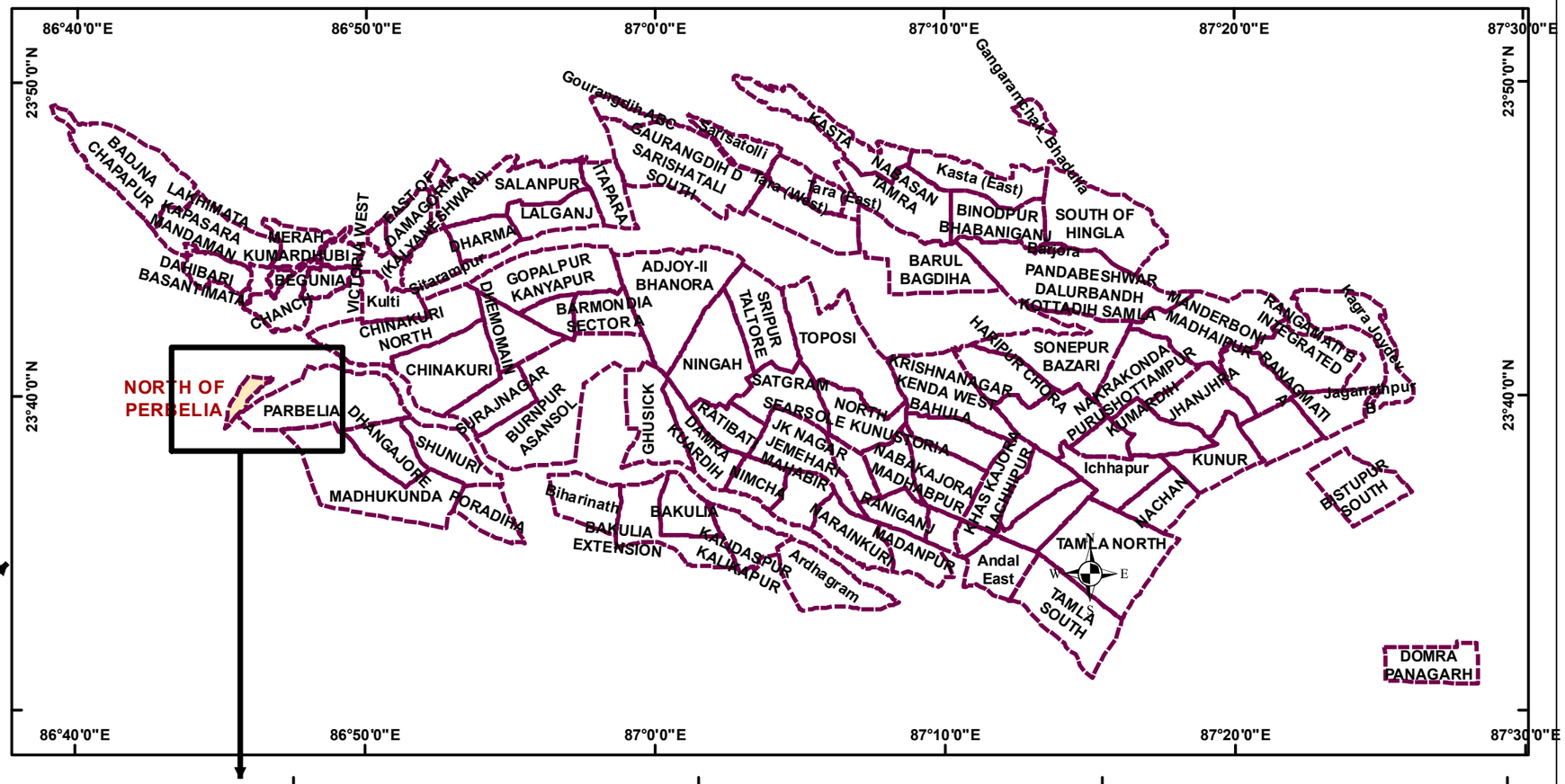
12.1 Following plates are enclosed with the proposal:

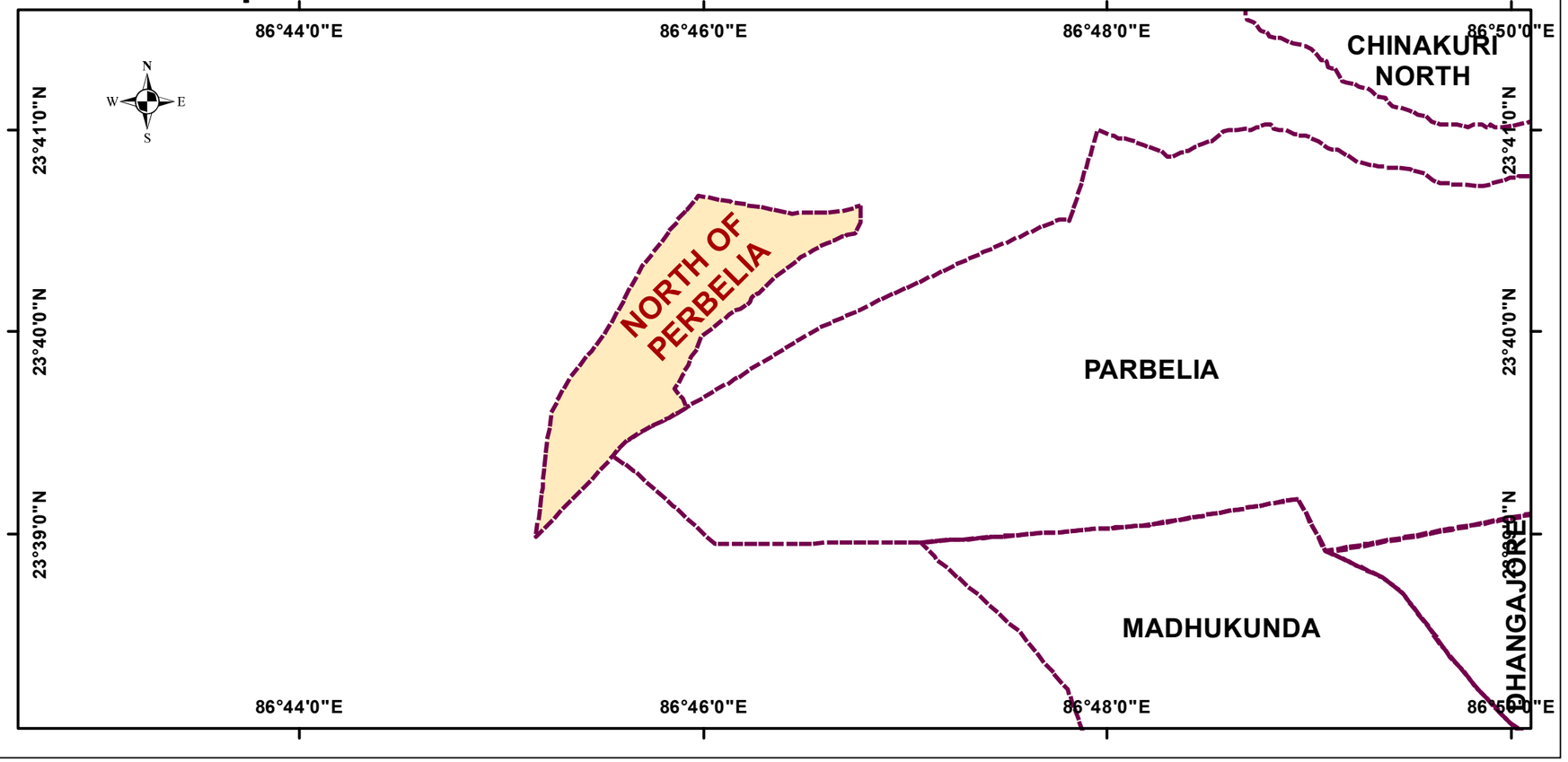
I. Block Location Map
II. Borehole Location Plan along with Floor contour plan (tentative) of R-II seam in North of Parbelia block,Raniganj coalfield.
III. Geological plan of Parbelia block, Raniganj coalfield
IV. Graphic logs of boreholes drilled at Ranipur Puapur and parbelia Block.
V. Proposed profile lines& stations for integrated geophysical survey in the block.

LOCATION OF NORTH OF PARBELIA BLOCK, IN RANIGANJ COALFIELD, WEST BENGAL





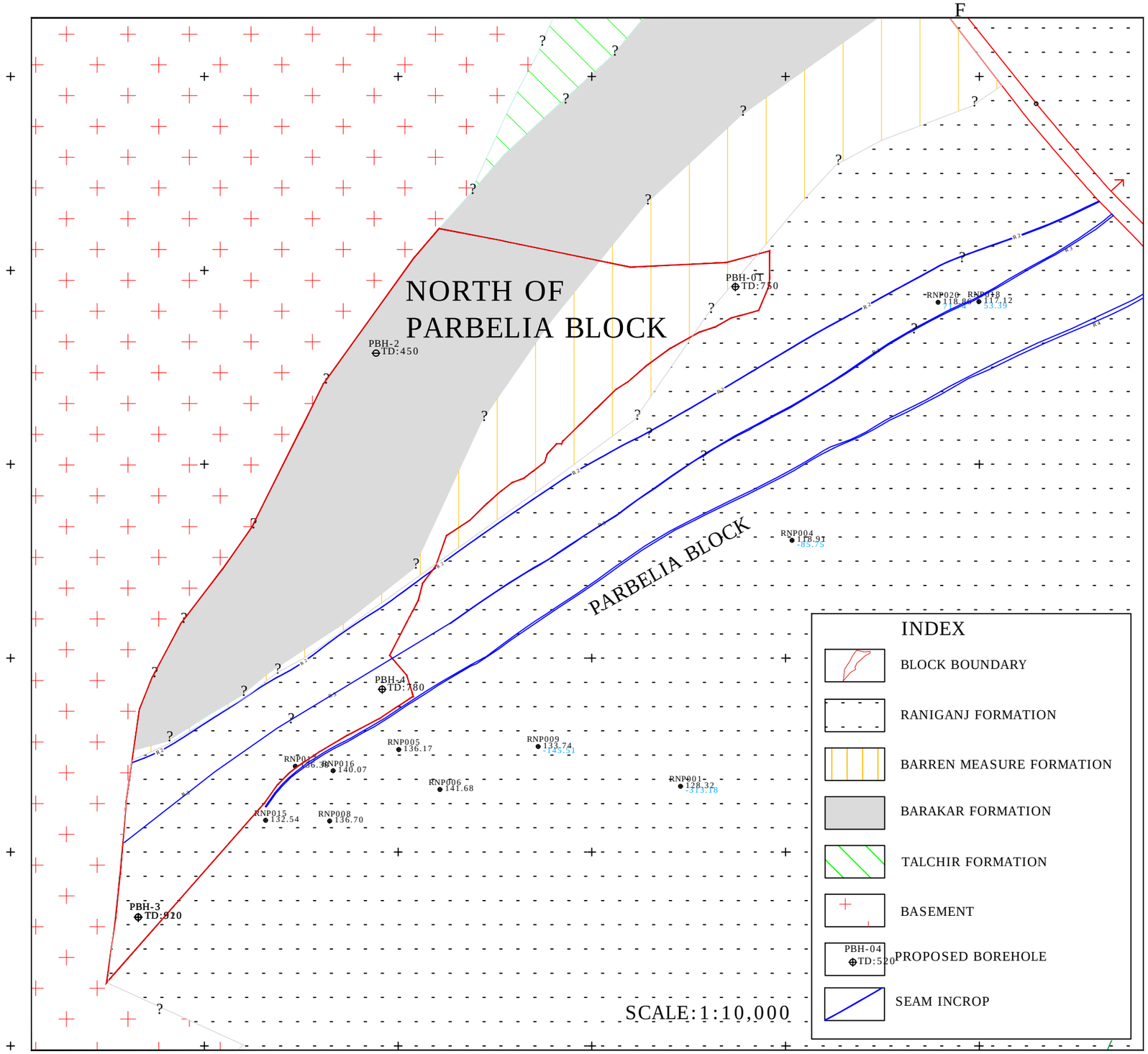




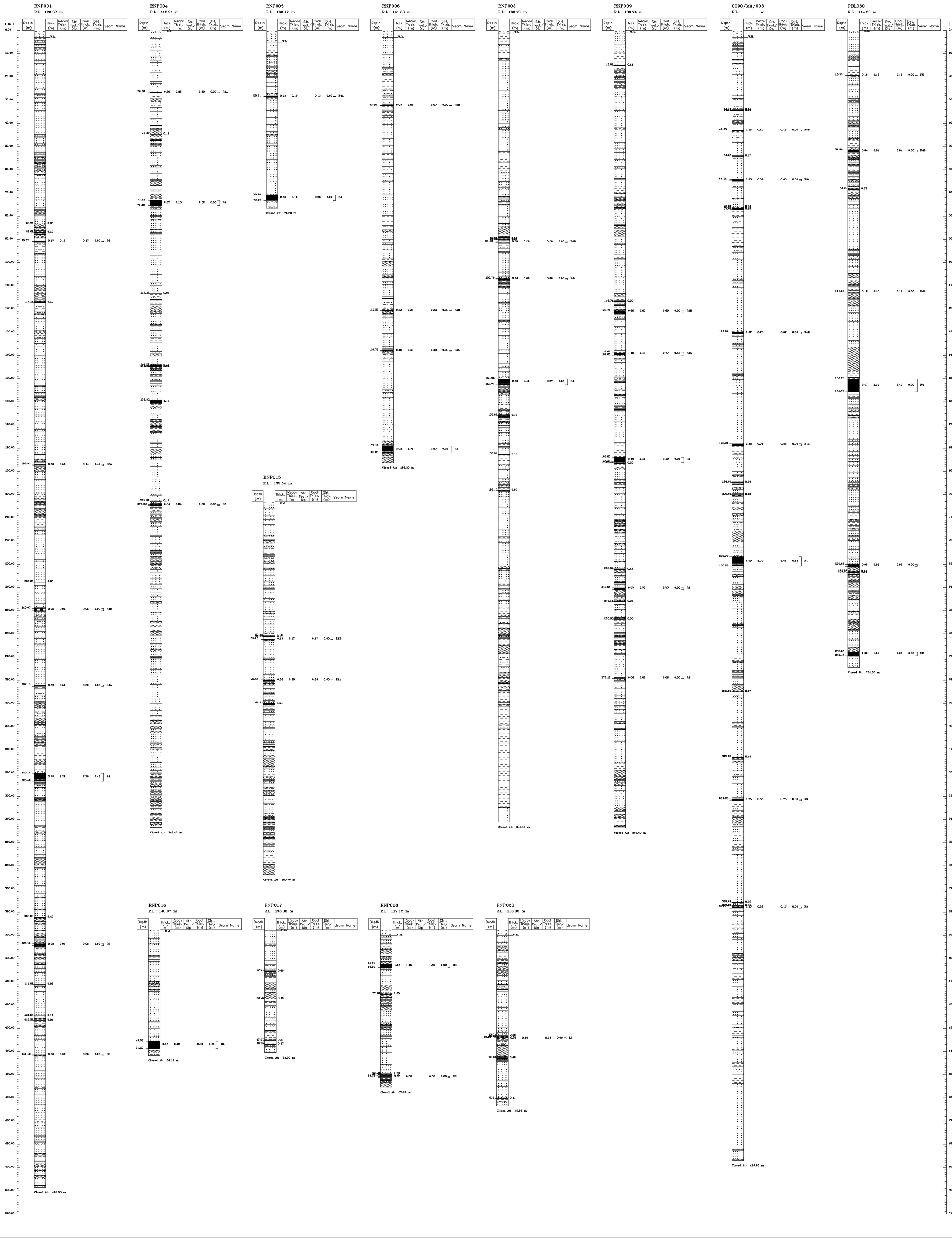
Legend

- NORTH OF PERBELIA BLOCK
- BLOCK BOUNDARY

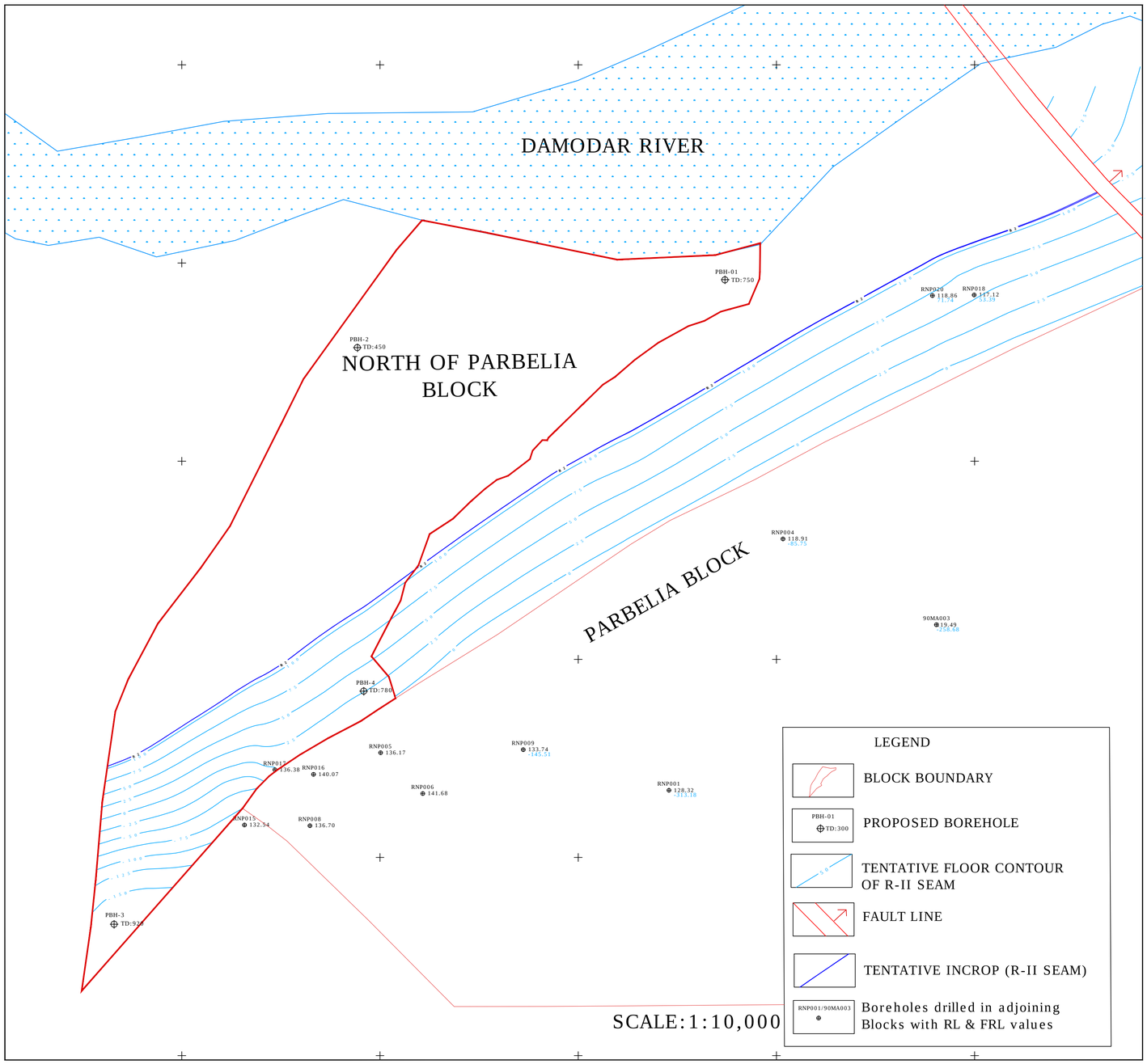
GEOLOGICAL PLAN OF NORTH OF PARBELIA BLOCK, RANIGANJ COALFIELD, WEST BENGAL



GRAPHIC LITHOLOGS OF BOREHOLES DRILLED IN AJOINING BLOCKS OF NORTH OF PERBELIA BLOCK, RANIGANJ COALFIELD

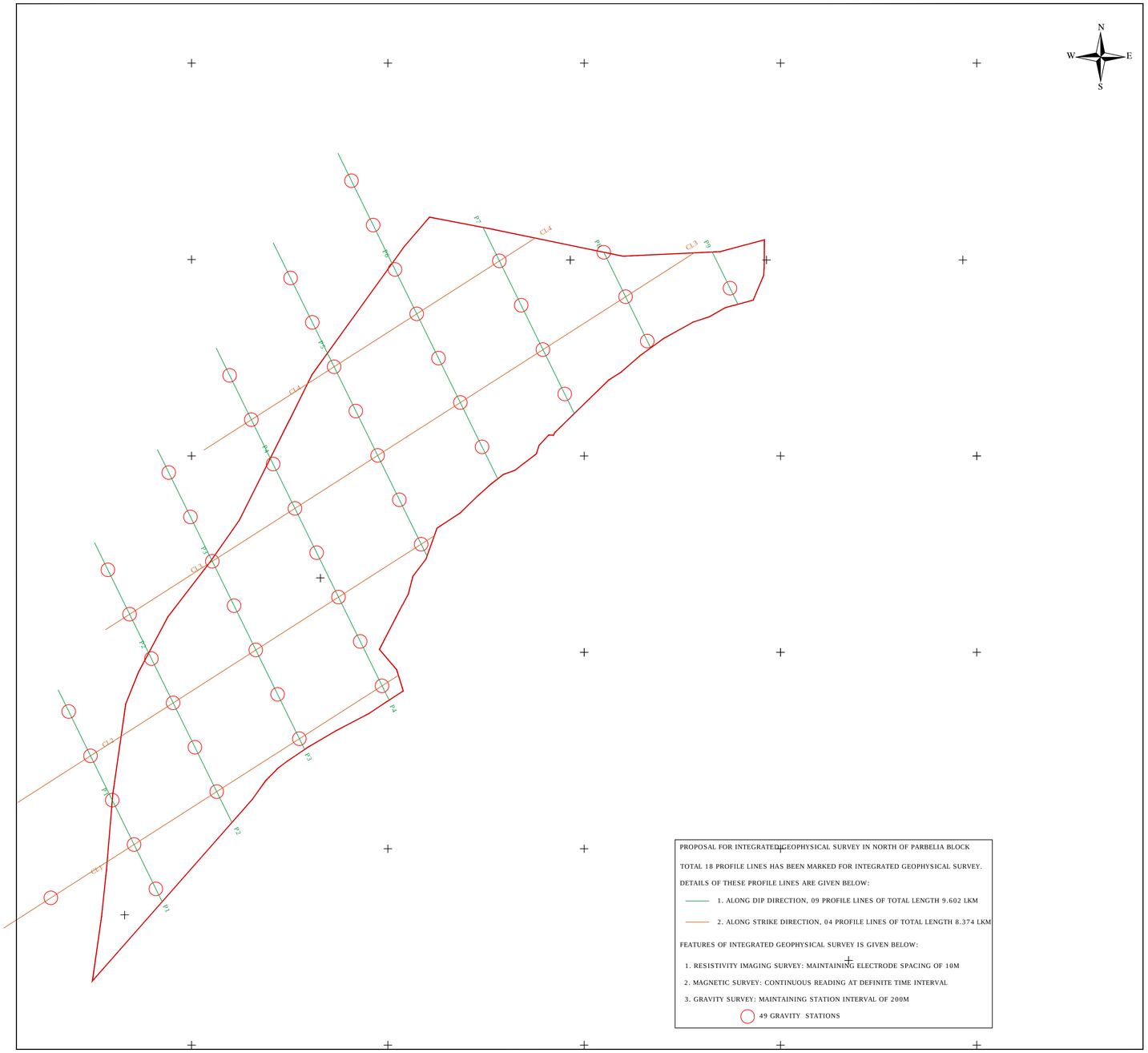


PROPOSED BOREHOLE LOCATION PLAN WITH FLOOR CONTOUR OF R-II SEAM, NORTH OF PARBELIA BLOCK, RANIGANJ COALFIELD, WEST BENGAL



NOTE:
1. FLOOR CONTOUR PLAN OF SEAM R-II IS GIVEN
2. PROPOSED DEPTH OF BOREHOLES IS ESTIMATED UPTO BASEMENT

PROPOSED PLAN FOR GEOPHYSICAL SURVEY, NORTH OF PARBELIA BLOCK, RANIGANJ COALFIELD, WEST BENGAL



PROPOSAL FOR INTEGRATED GEOPHYSICAL SURVEY IN NORTH OF PARBELIA BLOCK

TOTAL 18 PROFILE LINES HAS BEEN MARKED FOR INTEGRATED GEOPHYSICAL SURVEY.

DETAILS OF THESE PROFILE LINES ARE GIVEN BELOW:

1. ALONG DIP DIRECTION, 09 PROFILE LINES OF TOTAL LENGTH 9.602 LKM
2. ALONG STRIKE DIRECTION, 04 PROFILE LINES OF TOTAL LENGTH 8.374 LKM

FEATURES OF INTEGRATED GEOPHYSICAL SURVEY IS GIVEN BELOW:

1. RESISTIVITY IMAGING SURVEY: MAINTAINING ELECTRODE SPACING OF 10M
2. MAGNETIC SURVEY: CONTINUOUS READING AT DEFINITE TIME INTERVAL
3. GRAVITY SURVEY: MAINTAINING STATION INTERVAL OF 200M

49 GRAVITY STATIONS

474400E 475200E 476000E 476800E 477600E 478400E 479200E

2620000N 2619200N 2618400N 2617600N 2616800N 2616000N 2615200N

Project Cost Estimate for General Exploration (G3 Stage) of Coal in North of Parbelia Block, Raniganj Coalfield (Area-2.61 sq.km)

Sl. No	Item Work	Item no in Soc	Unit	Rates as per SoC of NMET	Rate (Rs)	Qty.	Amount (Rs)	
	I- Field operations							
A	**DRILLING**							
1	Drilling (As per MoC Rate 2020-21)	2.2.1.1b	m	5619	5619	2900	16295100	
B	**GEOPHYSICAL STUDIES**							
1	Borehole Geophysical logging (As per MoC Rate 2020-21)	3.11	m	656	697	2900	2021300	
	Field operations Total (A+B)						**18316400**	
	II- Field Studies							
A	**GEOLOGICAL WORK**							
1	Survey Work-1 surveyor	1.6.1b	Day	8300	8300	90	747000	
2a	Geological Party days-Field (Mapping, Field work)- 1 Geologist	1.5.1b	Day	11000	11000	60	660000	
2b	Geological Party days-HQ 1 Geologist	1.5.1b	Day	9000	9000	30	270000	
	Sub Total A						**1677000**	
B	**GEOPHYSICAL STUDIES**							
1a	Resistivity Imaging	3.6c	line km	34759	34759	18	625662	
1b	Magnetic Survey	3.2a	Linekm	72000	38200	18	687600	
1c	Gravity Survey	3.1a	per station	1589	1589	49	77861	
2a	Geophysicst Party days-Field - (Resistivity+ Mag+ Grv+ Bh Loggong)- 1 Geophysict	3.19	Day	11000	11000	60	660000	
2b	Geophysicst l Party days-HQ - 1 Geophysict	3.19	Day	9000	9000	25	225000	
	Sub Total B						**2276123**	
	Field Work Total (A+B)						**3953123**	
	III-Laboratory Studies							
1	***Band By Band Analysis***							
a	Ash+Moisture	4.2.6	per sample	700	700	350	245000	
b	House Keeping	4.2.1	per sample	115	115	350	40250	
2	***Overall analysis***							
a	Proximate analysis	4.2.7	per sample	935	935	42	39270	
b	Moisture at 60% RH & 40C	4.2.8	per sample	1010	1010	42	42420	
c	GCV	4.2.11	per sample	1505	1505	42	63210	
d	Sample preparation & House Keeping	4.2.3	per sample	795	795	42	33390	
3	***Special Test***							
a	Ultimate analysis	4.2.17	per sample	9945	9945	12	119340	
b	Total Sulphur	4.2.14	per sample	1900	1900	12	22800	
c	Distribution of Sulpher	4.2.15	per sample	3695	3695	12	44340	
d	Phosphorus	4.2.21	per sample	2480	2480	12	29760	
e	HGI including sample preparation	4.2.18	per sample	3805	3805	12	45660	
f	AFT (Ash Fusion Temperature)	4.2.20	per sample	2745	2745	12	32940	
g	Ash analysis	4.2.25	per sample	325	325	12	3900	
h	Ash sample preparation 800^{o}C from coke for analysis	4.2.5	per sample	875	875	12	10500	
i	Roga Index(Instead of caking Index)	4.2.22	per sample	5365	5365	12	64380	
j	Swelling Index	4.2.23	per sample	2745	2745	12	32940	
k	LTGK coke type	4.2.24		4550	4550	12	54600	
4	**Petrographic analysis**							
a	Pellet preparation	4.3.14a	per sample	1160	1160	12	13920	
b	Quantification of Maceral composition	4.3.14b	per sample	10060	10060	12	120720	
c	Quantification of Microlithotype composition	4.3.14c	per sample	20000	20000	12	240000	
d	Maceral Analysis (with photomicrography)	4.3.14e	per sample	25000	25000	12	300000	
e	Microlithotype Analysis (with photomicrography)	4.3.14g	per sample	25000	25000	12	300000	
f	Determination of Rank (VRO random %)	4.3.14i	per sample	16345	16345	12	196140	
g	Determination of Rank (VRO Min % and Max)	4.3.14h	per sample	21025	21025	12	252300	
	Laboratory Studies Total						**2347780**	
	IV. Miscellaneous Charges							
a	Preparation of Exploration Proposal	5.1	lump sum	380000	380000		380000	
b	Core Preservation (1 borehole)	5.3	Per m	1590	1590	900	1431000	
c	Geological Report preparation (3% of work value)	5.2					876885	
d	Land crop compensation	5.6	Per bh	20000	20000	4	80000	
e	DGPS Survey of bundary, borehole points (4 boreholes & 7 boundary point)	1.6.2	per point	19200	19200	11	211200	
f	3 D ore body modelling using Minex software	5.4		2500000	2500000		2500000	
i	Peer review			10000	10000		10000	
	Miscellaneous Charges Total						**5489085**	
	Total (I- Field op +II .Foeld Study+III Lab+ IV Misc)						30106388	903191.6
	GST (@18%)						5419149.84	
	Grand Total						35525538	

Note- 1) Above rate of drilling, GPL, Chemical are budgeted rates.

2) There are numerous items in chemical anlysis.The CIMFR rates will be applied for actual payment.

3)For Drilling & Geophysical the approved rates of MoC for FY 2020-21 has been taken other rates are as per approved SoC rates.

4) GPL rates is Rs 697/- per meter of minimum 8 parameters, the break up is as follow

	Probe	SoC item No	Rate 2020-21 (in Rs)
1	Base Log	3.11a	162
2	Dual Density	3.11d	110
3	Natural Gamma	3.11h	96
4	Caliper	3.11g	20
5	SPR	3.11i	41
6	Sonic	3.11k	131
7	Deviation	3.11m	96
8	Resistivity	3.11c	41
	Total		**697**

5) Lumpsum rate of Rs. 25.00 Lakh has been considered for 3D Ore Body Modeling.

6) Lumpsum amount of Rs. 10,000 has been considered for Peer Review.

7) Rate of Magnetic Survey- 100 points in a line km , 382 per staion , Hence 382x 100 i. e. Rs.38,200 per line km

Time Schedule/Action Plan for Norh of Parbelia Block, Raniganj Coalfield														
S. No	**Activities**													**Remarks**
		Months	1	2	3	4	5	6	7	8	9	10	11	12	
1	Mobilising	Months	↔												1 months
2	Surface Geophyscal Investigation (Gravity+Mag+Resistivity)	Months		<------>											2 months
3	Geophysical Report Preparation					↔									1 months
2	Drilling (Nos of rigs-2 rigs)	Months					<------>								2900 in 4 Bh
3	Borehole Geophysical logging	Days					<------>								2900 in 4 Bh
4	Survey Party days (1 Party)	Days		<---------->											90 Days
5	Geologist Party days, Field (1 Party)	Days					<------>								60 Days
6	Geophysict Party days, Field (1 Party)	Days		<------>			<------>								60 Days
7	Laboratory Studies (Band By Band)	Nos.						<---------->							350 sample
8	Laboratory Studies (Overall)	Nos.							<------->						42 Sample
9	Laboratory Studies (Special & Petrography)	Nos.								<------>					12 Sample
10	Geologist Party days, HQ (1 Party)	Days							<---------->						30 Days
11	Geophysict Party days, HQ (1 Party)	Days							<---------->						30 Days
12	3 D Modiliing	Months							<---------->						4 Months
13	Report Writing & Peer Review	Months							<---------->						6 Months

Note: Please add activities accordingly and timelime (months)

Total Time Period of Completion of Project- *12 months from Sanction of Project*