

**PROPOSAL FOR PRELIMINARY REGIONAL
EXPLORATION
(G-3 STAGE ALONGWITH 2D SEISMIC SURVEY) FOR
COAL**

**ULIA –
GAMHARDIH**

**NMET FUNDED PROJECT
EAST OF BISRAMPUR COALFIELD
DISTRICT– SURGUJA CHATTISGARH
OCTOBER - 2021**

**PROPOSAL FOR PRELIMINARY EXPLORATION FOR COAL (G-3 STAGE
ALONGWITH 2D SEISMIC SURVEY) IN ULIA – GAMHARDIH BLOCK, EAST
OF BISRAMPUR COALFIELD**

DISTRICT– SURGUJA, CHHATTISGARH

1.0 INTRODUCTION

- 1.1** The Bisrampur Coalfield lies in the eastern part of the Son- Mahanadi Valley Basin. This coalfield is separated from the Tatapani – Ramkola Coalfield to the north by large intervening tract covered by metamorphics. The Ulia- Gamhardih area, lying to the east of the confines of Bisrampur Coalfield is a small and detached sub-basin located east and north east of the Bisrampur Coalfield and to the south east of the Tatapani- Ramkola Coalfield. The vast tracts between these coalfields are occupied by Surguja crystalline complex.
- 1.2** Ulia-Gamhardih area lies to the north of Shankargarh on Rajpur- Shankargarh road to the east of Bisrampur Coalfield in Surguja district, Chhattisgarh. Consequent upon new find of coal around Ulia-Gamhardih area, published in the Geological Society of India, vol.- 66, Aug, 2005, an additional programme was undertaken by Coal Wing, GSI for the exploration of coal in and around Ulia – Gamhardih area to the east of the confines of Bisrampur Coalfield, Surguja district, Chhattisgarh vide code no: 2005-2006/MIE/CW/CW/2005/014 of the field season programme of Geological Survey of India. The main objective of the investigation was to examine the development of coal bearing Lower Gondwana sequence vis-à-vis deciphering the stratigraphy and structural setup of the area.
- 1.3** The investigation commenced in the area with large scale mapping on 1:25000 scale and surface geophysical investigation in January, 2006 followed by drilling and completed in July, 2007. A total of 1510.45 m were drilled in eight boreholes and an area of about 80 sq km was geologically mapped on 1:25,000 scale during the period.
- 1.4** The Ulia- Gamhardih area, is actually a NW-SE trending sub- basin located in the east central part of Surguja district of Chhattisgarh. It is situated about 55 km north east of district headquarter Ambikapur. The Bisrampur coalfield lies south west of this area. Rajpur to the west and Shankargarh, Dipadih & Kusmi to the east are important places around this area. In this area the sediments of Lower Gondwana directly overlies the Surguja crystalline complex with a faulted contact.
- 1.5** The area is bounded by latitudes 23°18'00" N and 23°25'30" N and longitudes 83°30'00" E and 83°43'00" E and falls in Survey of India Toposheet No. 64M/11.

It covers an area of about 39.14 sq. km. Forest area within the block is 29.01 sq. km (as per FSI map).

1.6 In the area, the Lower Gondwana Group of rocks belonging to Talchir and Barakar formation rest directly over the Precambrian metamorphics by E-W and NW-SE to NNW-SSE trending faults. The rocks of Talchir Formation were exposed in the north-western and western part of the area and are characterized by greenish to light bluish, thinly laminated shale/silty shale and siltstone with light greenish, fine grained, thin bands of sandstone.

1.7 The Ulia- Gamhardih Block has been identified for G-3 stage of exploration on the basis of findings of GSI reported in “Final Report On Exploration For Coal By Scout Drilling In And Around Ulia – Gamhardih Area To The East Of The Confines Of Bistrampur Coalfield, Surguja District, Chhattisgarh, 2010”. CMPDI has drawn proposal for exploration for coal in the Block having area of about 39.14 sq.km and involving 1300 m in 8 no. of boreholes along with integrated geophysical survey. The boreholes have been proposed at about 1600 X 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 Formation occurring in the block.
2. To establish the lay, disposition and potentiality of coal seams upto basement.
3. To appraise the resource potentiality of Barakar coal seams.

3.0 LOCATION, COMMUNICATION AND ACCESSIBILITY

3.1 The Ulia-Gamhardih area is located in the east central part of Surguja district of Chhattisgarh. It is situated about 55 km north east of district headquarter Ambikapur. The Bistrampur coalfield lies south west of this area. Rajpur to the west and Shankargarh, Dipadih & Kusmi to the east are important places around this area. The area is bounded by latitudes 23°18'00" N and 23°25'30" N and longitudes 83°30'00" E and 83°43'00" E and falls in Survey of India Topo-sheet No. 64M/11.

3.2 The Ulia-Gamhardih area is well connected by Ambikapur-Rajpur-Ramanujan state highway which passes through the western part of the

area. This area is also approachable from southern side from Shankargarh, which falls on Rajpur- Shankargarh-Kusmi metalled road. Interior parts of the area are well connected through all-weather unmetalled road and forest tracks. Nearest railhead is the newly constructed railway station at Ambikapur. Earlier nearest railhead was at Bistrampur on Bilaspur- Annupur section of South Eastern Railway. Another railway station, 'Renukut' on Singrauli – Garhwa section of Eastern Railway is approximately 180 km away from this area. This area can also be approached from various important localities such as Wadrafnagar, Pratappur, Daltenganj, Garhwa and Kusmi.

3.3 Block falls within the Survey of India Toposheet Nos. Survey of India Toposheet No. 64M/11 (RF 1:50000) and the extent of geographical co-ordinates of the block is as follows:

- Latitude 23° 18' 00" N to 23° 25' 30" N
- Longitude 83° 30' 00" E to 83° 43' 00" E

4.0 TOPOGRAPHY AND DRAINAGE

4.1 The southern part of the area is occupied by small hillocks and plain land as well. In this part, the ground elevation varies from about 600 m to 720 m. From south to north direction, gradual increase in ground elevation is observed. The north and northeastern edge of the coalfield is flanked by hills of Barakar Formation that are capped by laterite. Arjungarh Pahar in the north and Kandadara Pahar lying to the north east part are prominent topographical features. The peak of the Arjungarh Pahar is 1094m high whereas peak of Kandadara Pahar is 1147 m above mean sea level.

4.2 Mahan River to the west is the principal drainage of this area. In western and central parts of the area numerous unnamed tributaries nala run either north to south or north- east to south- west feeding Mahan River that flows towards northwest. In the eastern part few tributaries flows in north direction.

5.0 CLIMATE AND VEGETATION

5.1 The entire area falls under 'Protected Forest' which constitutes dense mixed jungle mainly of Sal, Bija, Saja, Dhaura, Mahua, Haldu, Bahera Kusum, Kendua, Palash, Amla etc. along with many medicinal plants. The area is infested with wild animals like bear, wild pig, anteater, fox, wolf etc. and many endangered species of birds and snakes as well.

5.2 The area experiences a tropical humid climate. Though winter is very cold with mercury dipping as low as 5° - 10° C, summer is oppressive with temperature

often soaring up to 46° C. However, even day temperature is high, night is pleasant. Monsoon in the area enjoy a rather heavy rainfall.

6.0 BROAD GEOLOGICAL SET UP

6.1 Stratigraphic Sequence

Generalized geological succession in this basin as per GSI

**TABLE-II
STRATIGRAPHIC SUCCESSION OF BISRAMPUR CF**

Age	Formation	Thickness	Lithology
Recent	Alluvium	--	Soil, Sand, clay
Cretaceous (?)	Dykes	--	Dolerite
Upper Permian to Lower Triassic	Kamthi (?)	100 m	Ferruginous conglomeratic sandstone.
Lower Permian	Barakar	45 - 304 m	Sandstone with pebbly bands, carbonaceous and grey shale and coal seams.
	Karharbari	5 - 105 m	Coarse-grained sandstone with reworked Talchir clasts and conglomerate lenses, shale and thin coal seams.
Upper Carboniferous (?)	Talchir	1.5 - 269 m	Fine grained sandstone, siltstone, shale and Diamictite.
	-----	--Unconformity--	-----
Pre-Cambrian	Surguja Crystalline Complex	-	Granite, gneisses slate, quartzite, schist , Amphibolite, etc.

7.0 Geology of the block

The Ulia – Gamhardih block, East of Bisrampur Coalfield is NW-SE trending sub-basin bounded by Pondi, Bharatpur villages in the east and Mahan River in the North West & west and covers approximately 80 sq km area.

Rocks of Barakar Formation except the western part cover most of the area under investigation where patches of Talchir Formation are exposed. In the area, Barakar Formation abuts against the Surguja crystalline complex mostly along two sets of east west and North West – south east trending step like faults. Such step like pattern of faults also corroborated with geophysical investigation. In the area, rocks of Talchir and Barakar formations directly overlie the Surguja crystalline complex with a faulted contact.

Based on the surface and sub-surface data, the general stratigraphic sequence of Ulia - Gamhardih block, East of Bistrampur coalfield is as follows:

TABLE-III
STRATIGRAPHIC SUCCESSION OF THE BLOCK

Age	Formation	Thickness	Lithology
Recent	Alluvium	5-10m	Soil, sand, clay, gritty materials.
Upper Tertiary to Pleistocene (?)	Laterite	10-15m	Greyish brown to reddish brown, variegated and mottled Colored, hard, compact and ferruginous showing pisolitic and botroidal texture. Whitish grey to grey, medium to coarse grained, at places very coarse grained to gritty, micaceous, arkosic to sub-arkosic,
Early Permian	Barakar	85-250m+	massive, occasionally cross bedded, moderately sorted, sandstone associated with subordinate horizons of dark grey shale, silty shale, carbonaceous shale along with thin bands of conglomerate and coal seams/ bands
Early Permian to Late Carbo- -neferous	Talchir	2-75m+	Greenish to light bluish ,thinly laminated shale /silty shale and siltstone, at places dark grey to black shale with grey to light greenish, fine grained, micaceous, massive , occasionally Crudely bedded, thin bands of sandstone.
----- Faulted contact -----			
Pre-Cambrian	Surguja Crystalline Complex		Gneiss, Granite, Biotite granite gneiss, Quartzite, Pegmatite etc.

8.0 Regional Structure:

- 8.1** The Bistrampur Coalfield lies in the eastern part of the Son- Mahanadi Valley Basin. This coalfield is separated from the Tatapani – Ramkola Coalfield to the north by large intervening tract covered by metamorphics. The Ulia- Gamhardih area, lying to the east of the confines of Bistrampur Coalfield is a small and detached sub-basin located east and north east of the Bistrampur Coalfield and to the south east of the Tatapani- Ramkola Coalfield. The vast tracts between these coalfields are occupied by Surguja crystalline complex.
- 8.2** As per GSI report, most of the area of block is covered by rocks of Barakar Formation except the western part where patches of Talchir Formation are exposed. In the area, Barakar Formation abuts against the Surguja crystalline complex mostly along two sets of east-west and north west – south east

trending step like faults. Such step like pattern of faults also corroborated with geophysical investigation.

8.3 During large scale mapping (1:25,000) in and around Ulia- Gamhardih area, a number of coal outcrops (cumulative thickness varying from 1.00 m to 13.35 m) has been recorded in the area along nala sections as well as scarp faces of hills at different levels over a 3 km to 5 km stretch between Ulia and Patna. Similar coal outcrops, thickness varying from 1.00 m to 4.60m, have also been noted around northern and northeastern part of Ghugri areas.

8.4 The sedimentary strata, in general, have a N35°W-S35°E strike with 2° to 4° northwesterly dip in the western and central parts of the area around Ulia and Patna village. However, rolling nature of dip characterize the area.

8.5 Based on the GSI report, the entire area is crisscrossed by a number of transverse E-W faults and conjugate cross faults trending NW-SE and NE-SW. At places, the E-W faults vary ENE - WSW to ESE-WNW. The cross faults are mostly aligned along N50°W-S50°E and N40°E –S40°W directions. Majority of the faults are syn- sedimentary in nature which resulted in omission and offsetting of sedimentary strata as well as coal seams and coal bands over a short distance

9.0 Sequence and quality of coal seams:

9.1 In Ulia-Gamhardih area, Barakar formation is the only coal bearing sequence. A number of coal outcrops, thickness varying from less than a meter to 13.35m (cumulative) are exposed in the area along nala section as well as scrap faces of hills at different levels over 3 Km to 5 Km long stretch between Ulia and Patna.

9.2 Sub-surface data reveals the occurrence of two distinct coal seam zone (I and II in ascending order) along with one local seam and few thin coal bands occur within the Barakar Formation. The local coal seam (L) occurs beneath coal seam zone- II (encountered in B.H. EBUG-1 & EBUG-2) 151.81m to 156.50m above the Barakar/Talchir contact.

9.3 The overall thickness of coal in different exposures is between 1.00 m and 13.35 m (cumulative thickness) have been recorded in different horizons. A coal seam having cumulative thickness of 13.35 m was marked at up stream of Ubka nala section (Lat. 23°24'56" N: Long. 83°34'47" E), about 3 km north east of Patna village. This coal seam could be traced for about 500m along the strike.

9.4 Barakar coal seams are Non-Coking. Quality wise, the coal of seam zone-I is mostly of G4 to G10 grade while of seam zone-2 belong to G1 to G12 grade.

The generalized sequence of all the coal seams recorded in the area is also tabulated and represented in Table- IV.

TABLE-IV
Thickness-Range, Depth Range and Quality of Seams encountered in
boreholes drilled in Ulia – Gamhardih Block, East of Bisrampur
Coalfield

SEAM NO	COAL THICKNESS RANGE (m)		DEPTH RANGE (m)		EXPECTED OVERALL QUALITY OF THE SEAM	FORMATION
	FROM	TO	FROM	TO		
Seam zone- II	1.11	23.74	10.40	115.10	G1 to G12	Barakar Formation
IIT	1.47	4.78	12.75	98.23		
IIT TOP	3.73	3.73	26.41	26.41		
Parting	1.17	1.45				
IIT BOT	2.8	2.8	30.66	30.66		
Parting b/w IIT/IIT BOT and II M/II M TOP	1.26	1.69				
II M	7.23	7.23	39.15	39.15		
IIM TOP	2.92		102.84			
Parting	1.34					
IIM BOT	1.62		105.8			
Parting b/w IIM/IIM BOT and II B/II B TOP	1.86	5.28				
II B	0.64	11.17	21.48	52.18		
IIB TOP	0.67	1.62	11.17	112.7		
Parting	0.98	1.17				
IIB BOT	0.77	1.23	12.82	115.1		
<i>Parting b/w Seam Zone-II & Local</i>	7.59	16.36				
Local Seam(L)	0.71	0.72	29.07	91.96		
<i>Parting b/w seam zone-II & I</i>	40.28	53.20				
Seam zone- I	1.27	3.48	40.23	173.00	G4 to G10	
I	1.68	1.76	41.91	94.02		

IT	1.88	1.88	170.18	170.18	
IB	1.6	1.6	173	173	
<i>Parting b/w Seam Zone-I and Talchir</i>	45.84	158.84			
Talchir	2.32	75.54	87.75	324.00	

10.0 Coal Resource

- 10.1** In and around the block a total of 164.82 million tonne of indicated resource has been assessed. The total resources assessed are available within 0 to 300m depth.
- 10.2** In Ulia – Gamhardih area the Seam Zone-II constitute bulk of the resource (93.1%), followed by Seam Zone-I (6.8%).
- 10.3** Bulk of the coal resources in this area belongs to Grade G7-G8 (77.54 million tonne). Coal belonging to Grade G9-G10 contributes resources of 38.57 million tonne. However, coal belonging to Grade G1-G3 contributes 14.95 million tonne followed by coal of Grade G4-G5 (5.59 million tonne).
- 10.4** Details of the resources are provided in the Appendix-VI and seam wise and grade wise breakup of the total coal resource of 'indicated' category for all the seams are summerised in Table-V :-

Table-V

**Seamwise-Gradewise resource of seam encountered in Ulia –
Gamhardih Block, East of Bistrampur Coalfield**

Seam No.	Resource in million tonne						
	Indicated Grade wise						
	G1-G3	G4-G5	G6	G7-G8	G9-	G11-G12	Total
Seam Zone-II	14.95	5.59	28.17	71.56	19.06	14.25	153.58
Local							
Seam Zone-I				5.98	5.26		11.24
Total	14.95	5.59	28.17	77.54	24.32	14.25	164.82

Table-VI**Depth-wise, seam-wise, grade-wise and borehole-wise categorized resource of coal in and around Ulia-Gamhardih ,East of Bisrampur Coalfield**

(Seam thickness 0.90m and above for seam grade G1-G5 and 1.20m and above for grade G6-G16)									
(Resources in million tonne) (Depth Range : 0-300m)									
Borehole No.	Seam thickness (m)	Indicated Resource							
		Area (sq. km)	G1-G3	G4-G5	G6	G7-G8	G9-G10	G11-G12	Grand Total
EBUG-2	1.47	1.825				3.74			3.74
	1.27	1.825					3.34		3.34
	3.18	1.825					8.36		8.36
EBUG-4	2.21	2.281	6.44						6.44
	2.92	2.281	8.51						8.51
	1.62	2.281		5.59					5.59
	1.30	2.281						4.14	4.14
	1.23	2.281				3.91			3.91
	1.88	2.281				5.98			5.98
	1.60	2.281					5.26		5.26
EBUG-6	3.73	2.906				15.12			15.12
	2.80	2.906				11.35			11.35
	7.23	2.906				29.31			29.31
	2.30	2.906						10.11	10.11
	7.18	2.906			28.17				28.17
	1.76	2.906					7.36		7.36
EBUG-	2.48	2.350				8.13			8.13
(Depth Range: 0-300m) Total			14.95	5.59	28.17	77.54	24.32	14.25	164.82

11.0 EXPLORATION SCHEME**11.1 Drilling:**

Drilling of 1300 m(+/- 30%) in 8 boreholes (Table V) has been proposed in about 1600X1600 m grid for the Ulia – Gamhardih Block.

TABLE-V

Depth of Proposed Boreholes in Ulia – Gamhardih Block, East of Bisrampur Coalfield

Sl. No.	Proposed BH No.	Projected Depth for Talchir (m)
1	PBH-1	265
2	PBH-2	235
3	PBH-3	90
4	PBH-4	170
5	PBH-5	140
6	PBH-6	120
7	PBH-7	120
8	PBH-8	160
Total		1300 m

11.2 Laboratory Studies :

Band by Band Analysis, overall analysis, special tests, petrography, coking property & Geotechnical studies will be carried out on coal samples.

11.3 Quantum of Work Proposed: Details of proposed work for detailed exploration for coal in Ulia – Gamhardih Block is given below in Table-VI.

**TABLE-VI
QUANTUM OF WORK**

S. No.	Activity	Quantity
1.	Geological Mapping	39.14. sq. km
2.	<u>Drilling:</u>	
	i) Boreholes	8 BHs.
	ii) Meterage	1300 m
3.	i) Levelling and Triangulation	As per requirement
	ii) RL and Co-ordinates	8 BHs.
4.	Drill Core Logging	1300 m
5.	Geophysical Logging	8 boreholes 1300 m

6.	Geophysical survey	2D Seismic survey and resistivity imaging has been proposed in this block along dip and strike lines with line intervals of 400m and 800m respectively. Total line km along dip direction is 106.50 km and along strike direction is 54.50km
7.	<u>Chemical Analysis:</u>	
	i) Band by Band (ash, moisture, volatile matter)	8 BHs (about 450 samples)
	ii) Proximate Analysis at 40 °C and 60% RH (for I100,I30,BCS)	All boreholes i.e 8 bh (about 210 samples)
	iii) Gross Calorific Value	All boreholes i.e 8 bh (about 210 samples)
8.	Special Tests (Ultimate analysis, Sulphur, phosphorous content, coking properties tests), petrography test	1 borehole

(Note: 3 samples per 1 m of coal has been assumed for band by band analysis)

11.4.0 2D SEISMIC SURVEY

11.4.1 2D Seismic survey has been proposed in this block along dip and strike lines with line intervals of 400m and 800m respectively.

The total estimated quantum of survey proposed in the area including dip and strike lines in the block is 161.00 LKMs, the details of which has been described below:

Proposed Strike lines		Proposed Dip lines	
PROFILE NAME	LENGTH (LKM)	PROFILE NAME	LENGTH (LKM)
S1	1.98	D1	2.60
S2	6.00	D2	5.10
S3	6.50	D3	6.95
S4	6.98	D4	7.05
S5	7.29	D5	7.17
S6	6.70	D6	7.59
S7	5.97	D7	7.90
S8	5.25	D8	7.32
S9	3.55	D9	7.60
S10	2.9	D10	7.49
S11	1.38	D11	7.07
		D12	7.33
		D13	6.97
		D14	5.90

		D15	4.59
		D16	3.87
		D17	2.50
		D18	1.50
Total along strike	54.50	Total along dip	106.50
Cumulative	161. LKM		

12 LIMITATIONS

12.1 The Ulia- Gamhardih area, is actually a NW-SE trending sub- basin located in the east central part of Surguja district of Chhattisgarh. It is situated about 55 km north east of district headquarter Ambikapur. The Bistrampur coalfield lies south west of this area.

12.2 Floor contour of seam –IB, (which is the target seam for present course of exploration) has been drawn based on only 3 no. of boreholes drilled in regional area of Ulia Gamhardih . So floor contour drawn is tentative only and structure may vary with due course of exploration.

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

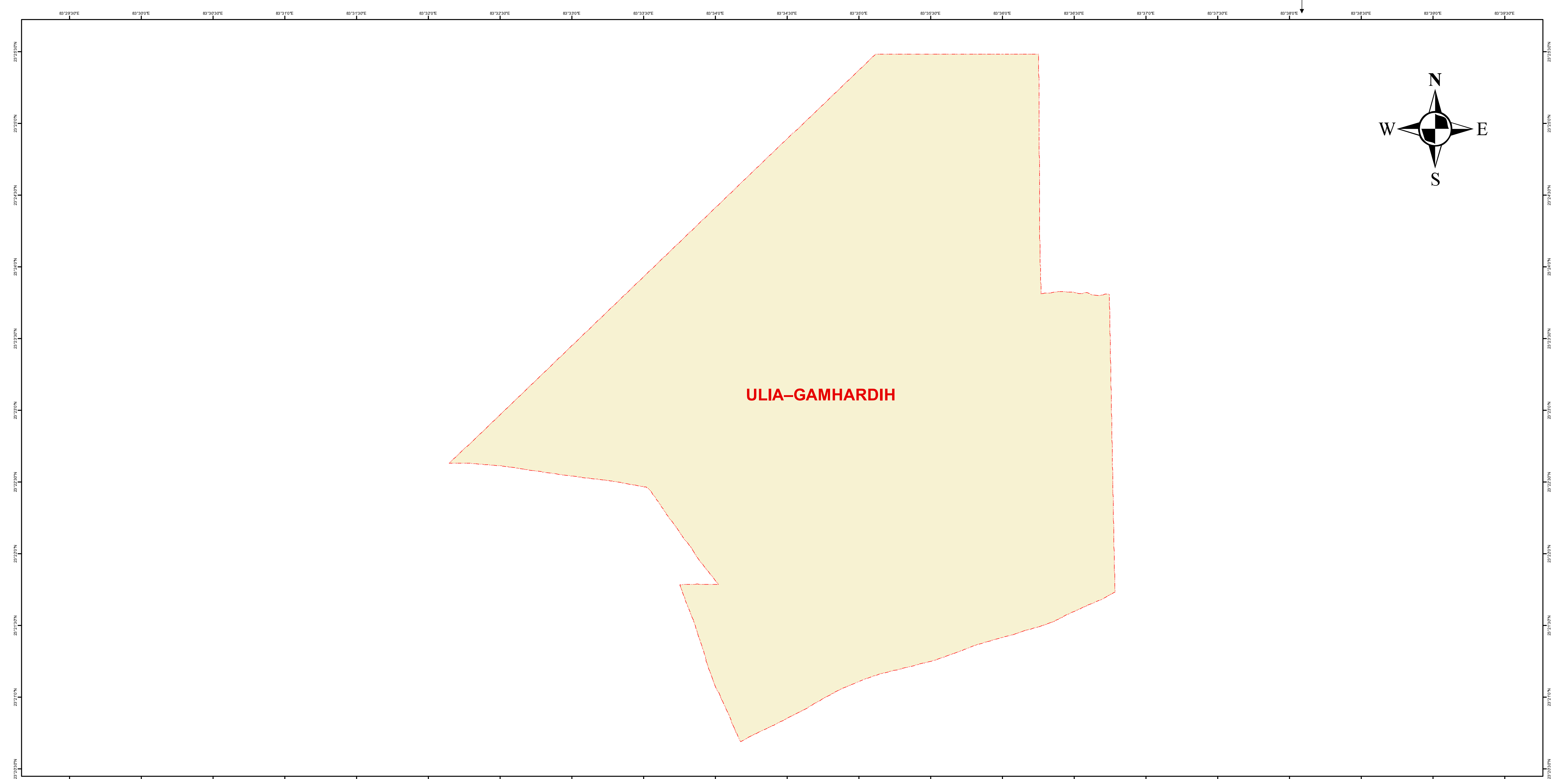
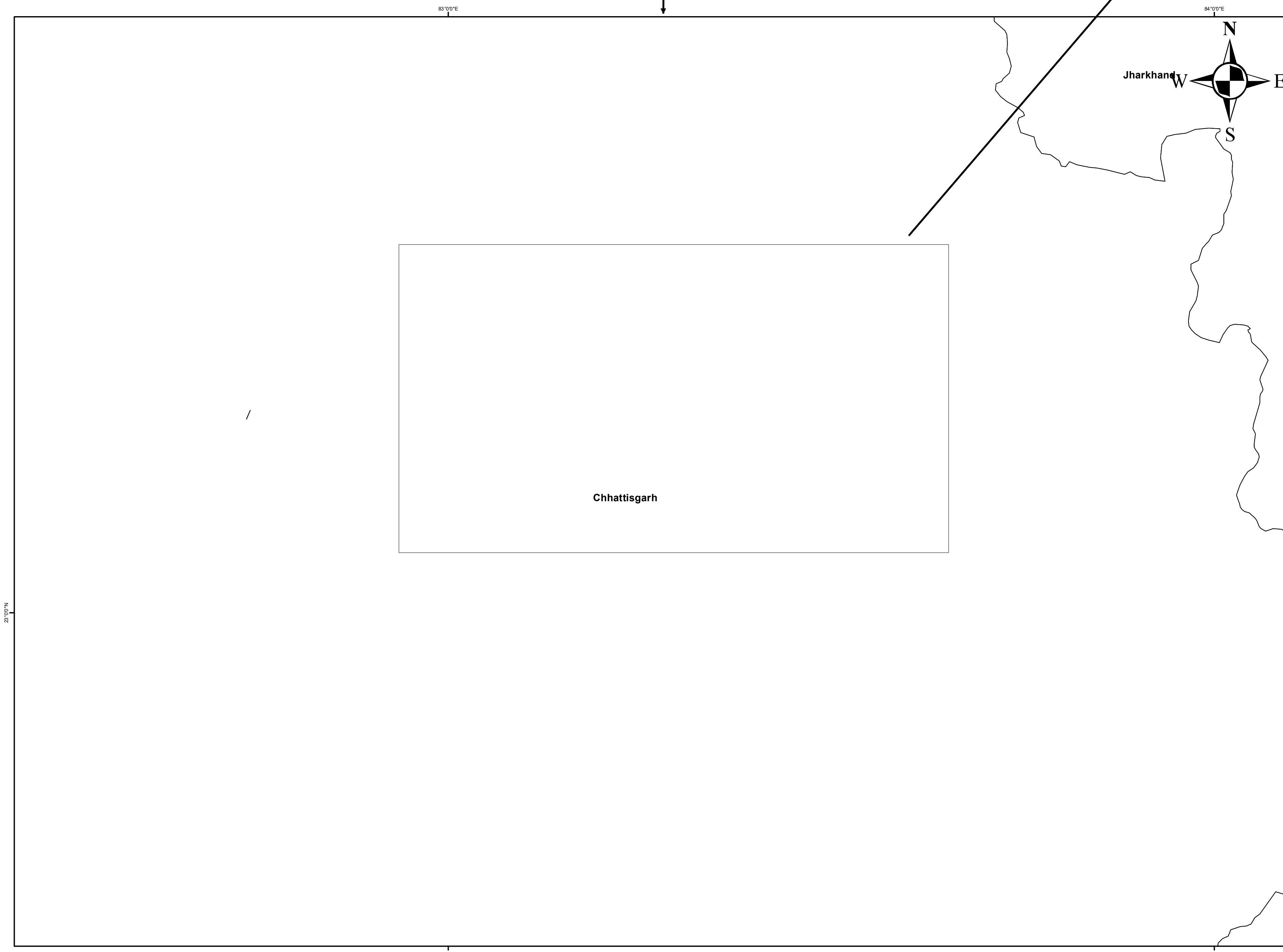
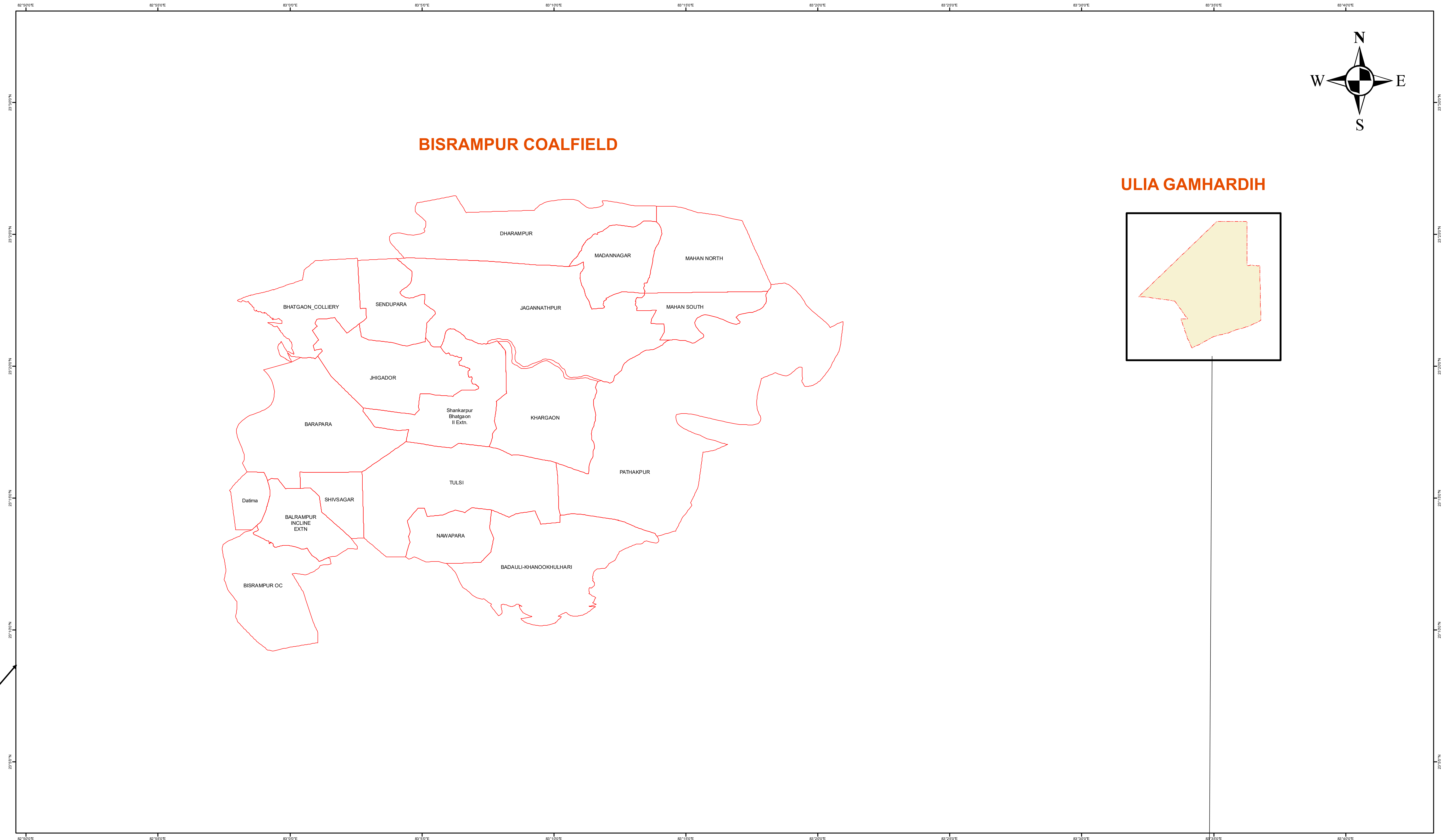
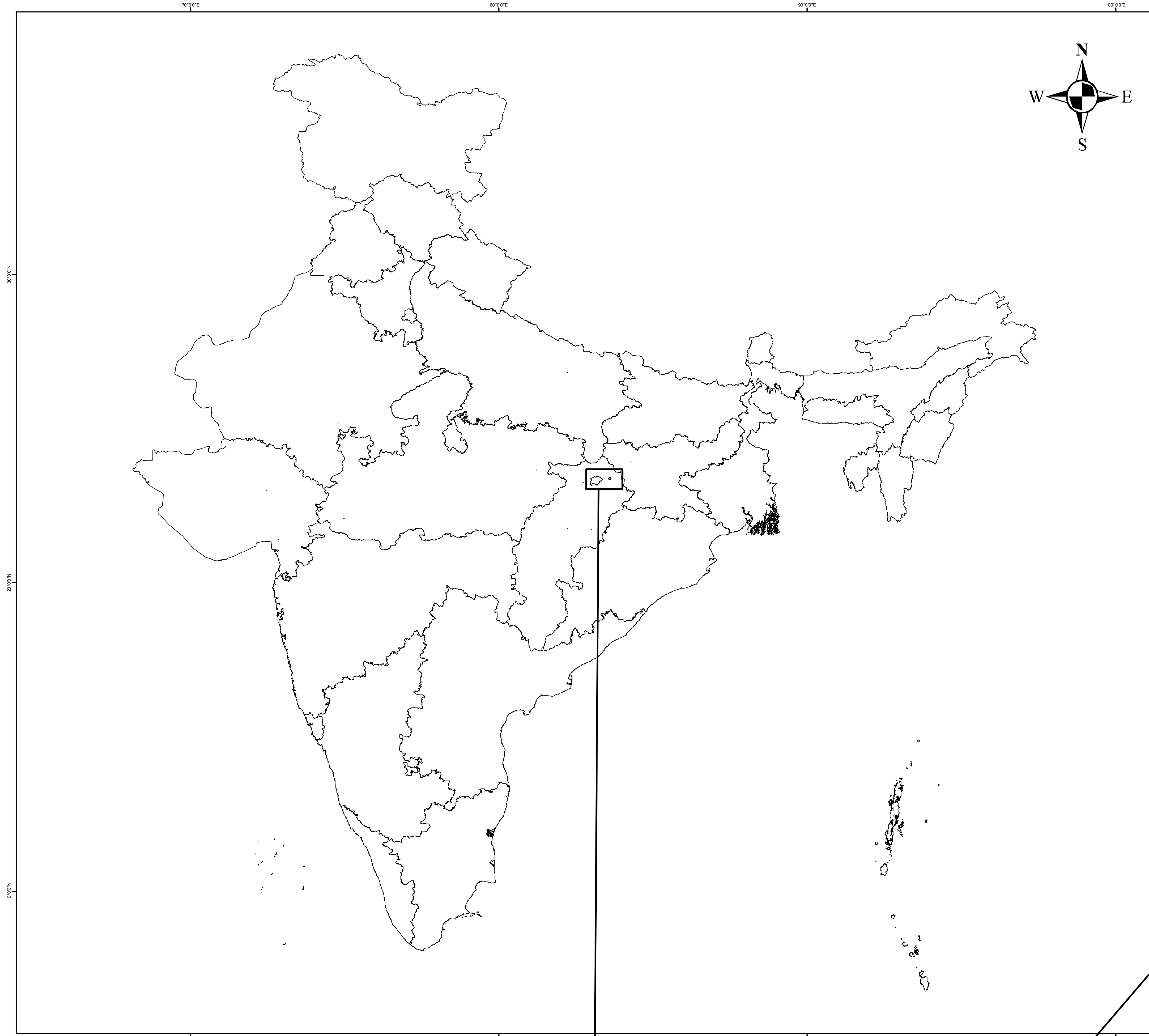
12.4 As the proposed meterage is based on the tentative structure as per preliminary reports of the area, actual meterage may vary during course of exploration.

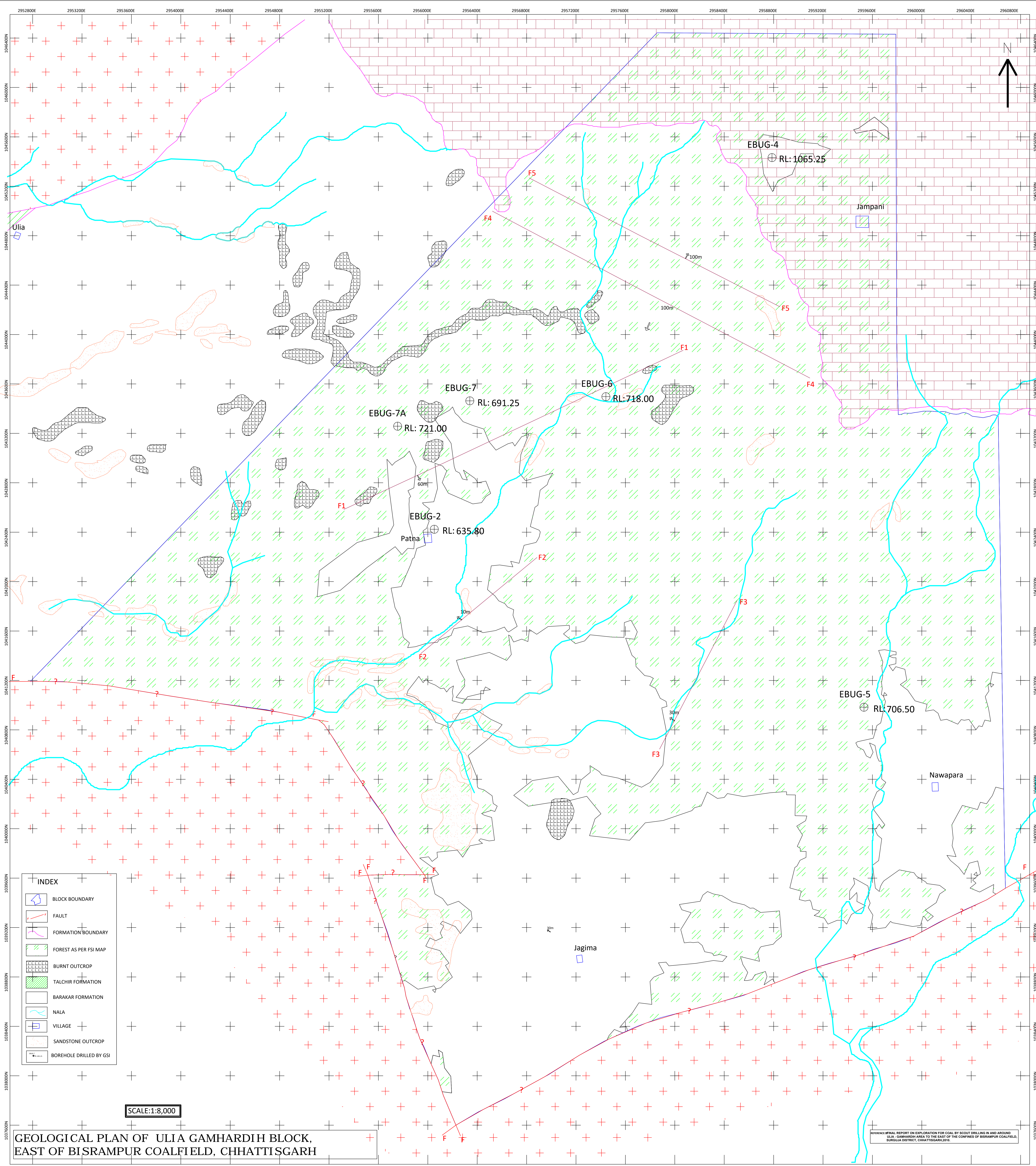
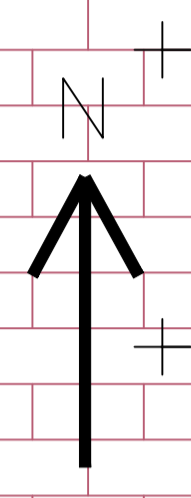
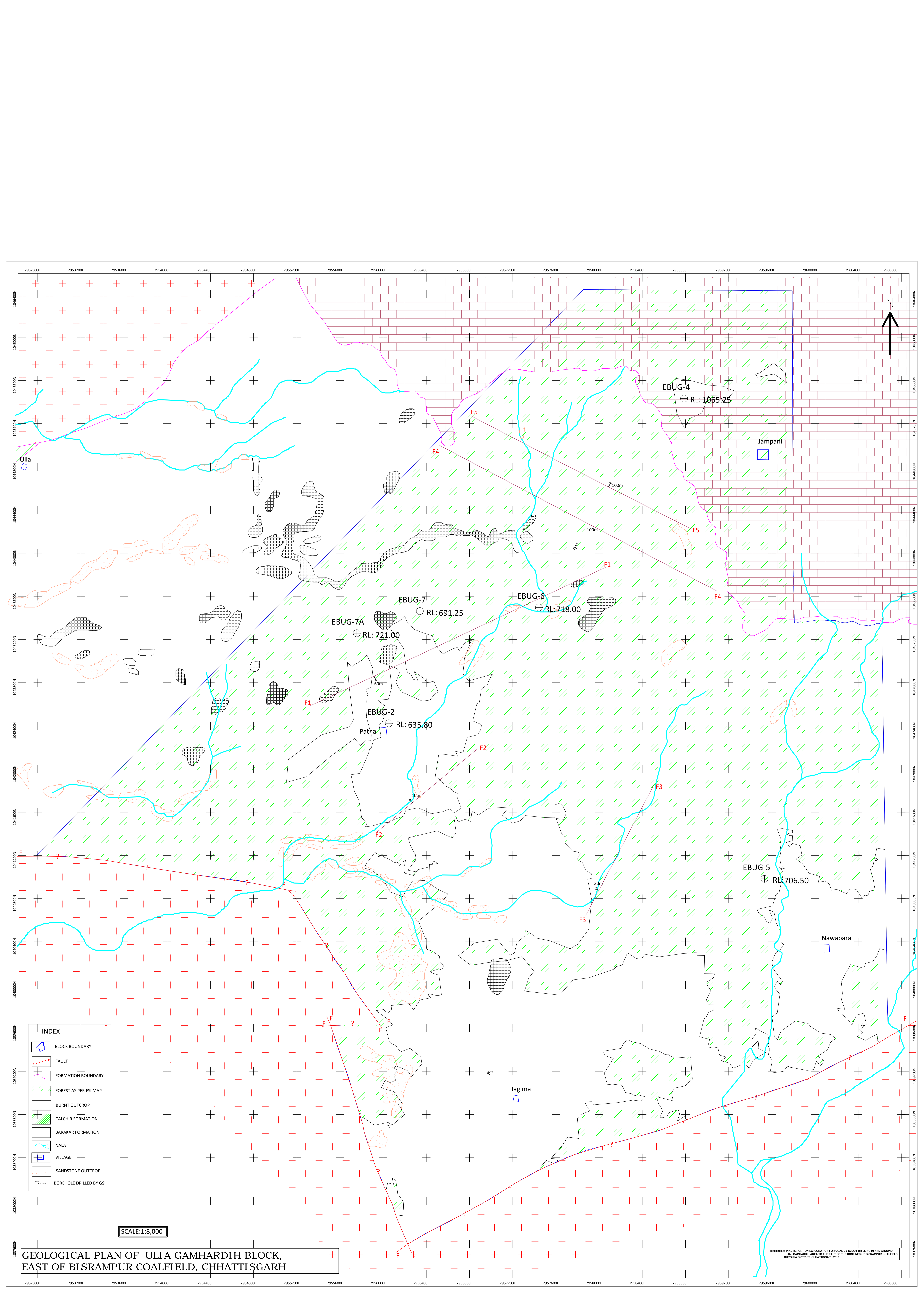
13 LIST OF PLATES

13.1 Following plates are enclosed with the proposal:

- I. Block Location Map of Ulia Gamhardih block of East of Bistrampur Coalfield
- II. Proposed Borehole Location Plan along with Floor contour plan (tentative) of seam-IB in Ulia Gamhardih block of East of Bistrampur Coalfield.
- III. Geological plan of Ulia Gamhardih block of East of Bistrampur Coalfield
- IV. Graphic logs of boreholes drilled in and around Ulia Gamhardih block of East of Bistrampur Coalfield
- V. Proposed plan for 2D seismic and Resistivity Imaging survey in Ulia Gamhardih block of East of Bistrampur Coalfield

LOCATION OF ULIA GAMHARDIH BLOCK IN EAST OF BISRAPUR COALFIELD, CHHATTISGARH





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	TALCHIR FORMATION
	BARAKAR FORMATION
	NALA
	VILLAGE
	SANDSTONE OUTCROP
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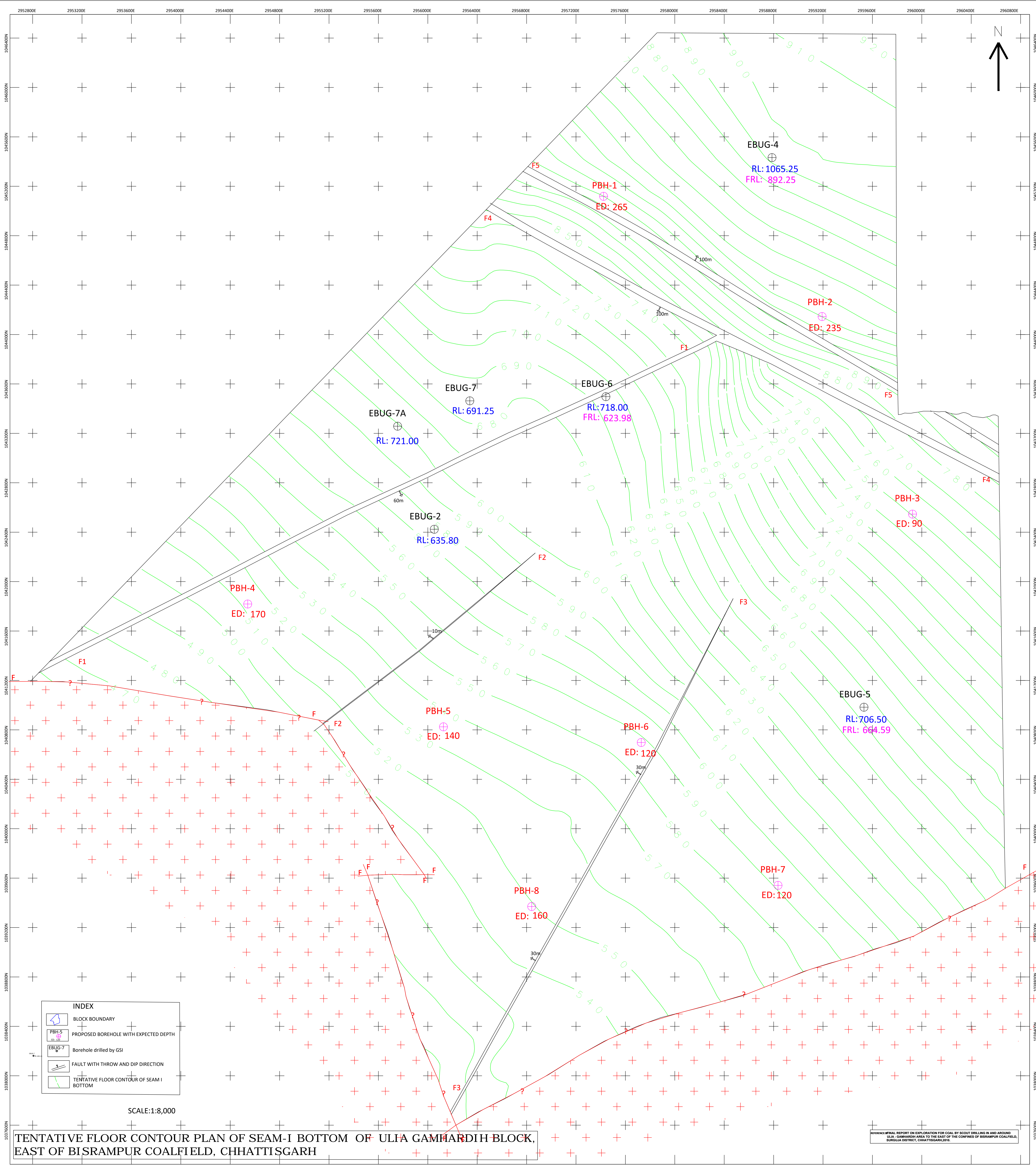
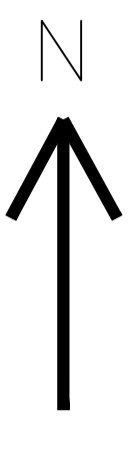
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**GEOLOGICAL PLAN OF ULIA GAMHARDIH BLOCK,
EAST OF BILSRAMPUR COALFIELD, CHHATTISGARH**

MINERALS OFFICE REPORT ON EXPLORATION FOR COAL BY SCOUT DRILLING IN AND AROUND
ULIA - GAMHARDIH AREA TO THE EAST OF THE CONFINES OF BILSRAMPUR COALFIELD,
BURDUJA DISTRICT, CHHATTISGARH.

GRAPHIC LITHOLOGS OF BOREHOLES DRILLED IN AND AROUND ULIA GAMHARDIH BLOCK, EAST OF BISRAPUR COALFIELD, CHHATTISGARH



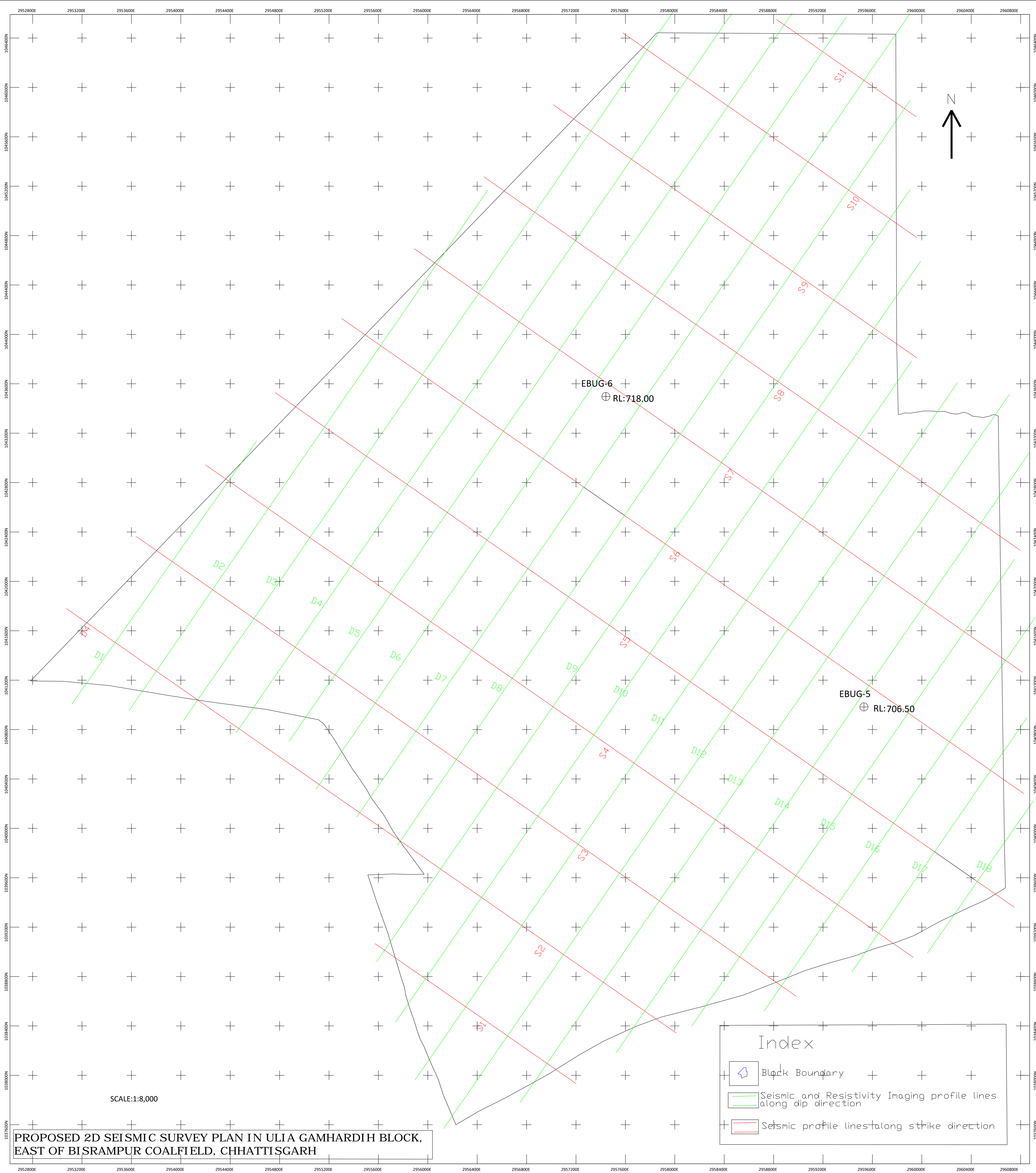


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	FAULT WITH THROW AND DIP DIRECTION
	TENTATIVE FLOOR CONTOUR OF SEAM I BOTTOM

SCALE:1:8,000

**TENTATIVE FLOOR CONTOUR PLAN OF SEAM-I BOTTOM OF ULIJA GAMHARDIH BLOCK,
EAST OF BISRAPUR COALFIELD, CHHATTISGARH**

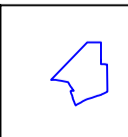
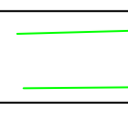
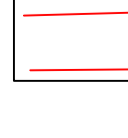
MINERALS OPINION REPORT ON EXPLORATION FOR COAL BY SCOUT DRILLING IN AND AROUND
ULIJA, GAMHARDIH AREA TO THE EAST OF THE COMPINES OF BISRAPUR COALFIELD,
BURDUA DISTRICT, CHHATTISGARH.



PROPOSED 2D SEISMIC SURVEY PLAN IN ULIA GAMHARDIH BLOCK, EAST OF BISRAMPUR COALFIELD, CHHATTISGARH

SCALE:1:8,000

Index

-  Black Boundary
-  Seismic and Resistivity Imaging profile lines along dip direction
-  Seismic profile lines along strike direction

Project Cost Estimate for Exploration (G3 Stage) in Ulia Gamhardih Block, East of Birampur Coalfield

Sl. No	Item Work	Item no in Soc	Unit	Rates as per SoC of NMET	Rate (Rs)	Qty.	Amount (Rs)
I- Field operations (Outsourcing)							
A	DRILLING						
1	Drilling (As per MoC Rate 2020-21)	2.2.1.1b	m	5619	5619	1300	7304700
B	GEOPHYSICAL STUDIES						
1	Borehole Geophysical logging (As per MoC Rate 2020-21)	3.11	m	601	601	1300	781300
2	*2D Seismic Survey (as per actulas)	3.14 a/3.14 b	Lkm		700000	161	112700000
Field operations Total (A+B)							120786000
II- Field Work (In House)							
A	GEOLOGICAL WORK						
1	Survey Work -1 Surveyor	1.6.1a	Day	8300	8300	60	498000
2a	Geological Party days-Field - 1 Geologist	1.5.1b	Day	11000	11000	60	660000
2b	Geological Party days-HQ (Data processing & Report Preparation)-1 Geologist	1.5.1b	Day	9000	9000	30	270000
Sub Total A							1428000
B	GEOPHYSICAL STUDIES						
3a	Geophysicst Party days-Field (Field Work) - 1 Geologist	3.19	Day	11000	11000	120	1320000
3b	Geophysicst Party days-HQ (Data processing & Report Preparation)-- 1 Geologist	3.19	Day	9000	9000	30	270000
Sub Total B							1590000
Field Work Total (A+B)							3018000
III-Laboratory Studies (In House)							
1	Band By Band Analysis						
a	Ash+Moisture	4.2.6	per sample	700	700	450	315000
b	House Keeping	4.2.1	per sample	115	115	450	51750
2	Overall analysis						
a	Proximate analysis	4.2.7	per sample	935	935	210	196350
b	Moisture at 60% RH & 40C	4.2.8	per sample	1010	1010	210	212100
c	GCV	4.2.11	per sample	1505	1505	210	316050
d	Sample preparation & House Keeping	4.2.3	per sample	795	795	210	166950
3	Special Test						
a	Ultimate analysis	4.2.17	per sample	9945	9945	21	208845
b	Total Sulphur	4.2.14	per sample	1900	1900	21	39900
c	Distribution of Sulpher	4.2.15	per sample	3695	3695	21	77595
d	HGI including sample preparation	4.2.18	per sample	3805	3805	21	79905
e	AFT (Ash Fusion Temperature)	4.2.20	per sample	2745	2745	21	57645
f	Ash analysis	4.2.25	per sample	325	325	21	6825

4	Petrographic analysis						
a	Pellet preparation	4.3.14a	per sample	1160	1160	5	5800
b	Maceral Analysis (with photomicrography)	4.3.14e	per sample	25000	25000	5	125000
c	Microlithotype Analysis (with photomicrography)	4.3.14g	per sample	25000	25000	5	125000
d	Mean Ro%	4.3.14j	per sample	16345	16345	5	81725
	Laboratory Studies Total						2066440
IV. Miscellaneous Charges (In House)							
a	Preparation of Exploration Proposal	5.1	lump sum	380000	380000		380000
b	Outsourcing process cost	2.3	lump sum	500000	500000		500000
c	Operational charges for CMPDI	Point 3 of SOC			1500000		1500000
d	DGPS Survey of bundary, borehole points (8 boreholes & 20 boundary point)	1.6.2	per point	19200	19200	28	537600
e	Geological Report preparation (3% or 2000000 Max)	5.2					2000000
f	Peer review			10000	10000		10000
	Miscellaneous Charges Total						4927600
Total (I- Field op +II- Field work+III- Lab+ IV -Misc)							
							130798040
GST (@18%)							23543647.2
Grand Total							154341687

15.43416872

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) The Drilling rate for coal is Rs 5619/- is as per approved rate of Promotional exploration MoC.

5) GPL rates is Rs 601/- 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
8	Resistivity	3.11c	41
	Total		601

6) Rs 10000/- for Peer review is budgeted rate.

7) *The rates for 2D seismic is Rs 7,00, 000/- per line km by explosives/vibrator, identified as per market survey & recent work awarded by CMPDI through open tendering.

Time Schedule/Action Plan for Ulia Gamhardih Block, East of Bisrampur Coalfield															
S. No	Activities														Remarks
		Months	1	2	3	4	5	6	7	8	9	10	11	12	
1	Outsourcing	Months	<----->												3 Months
2	Mobilising	Months			<=>										1 months
3	2D seismic Survey	Months				<----->									161 Line km
4	Drilling (Nos of rigs-1 rigs)	Months						<----->							1300 in 8 Bh
5	Borehole Geophysical logging	Days						<----->							1300 in 8 Bh
6	Survey Party days (1 Party)	Days					<----->								60 Days
7	Geologist Party days, Field (1 Party)	Days						<----->							60 Days
8	Geophysic Party days, Field (1 Party)	Days						<----->							120 Days
9	Laboratory Studies (Band By Band)	Nos.						<----->							450 sample
10	Laboratory Studies (Overall)	Nos.							<----->						210 sample
11	Laboratory Studies (Special) & (Petrography)	Nos.									<=>				21 Sample & 5 Sample
12	Geologist Party days, HQ (1 Party)	Days								<----->					30 Days
13	Geophysic Party days, HQ (1 Party)	Days								<----->					30 Days
14	2 D seismic Report	Months								<----->					4 Months
15	Report Writing & Peer Review	Months								<----->					4 Months

Note: Please add activities accordingly and timeline (months)

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