

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

**DHASKA NAUGAI
BLOCK**

**NMET FUNDED PROJECT
EAST OF BISRAMPUR COALFIELD
DISTRICT- SURGUJA, CHATTISGARH
DECEMBER - 2021**

**PROPOSAL FOR PRELIMINARY EXPLORATION FOR COAL (G-3 STAGE) IN
DHASKA NAUGAI BLOCK, EAST OF BISRAMPUR COALFIELD
DISTRICT– SURGUJA, CHATTISGARH**

1.0 INTRODUCTION

- 1.1** 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. Consequent upon new find of coal around Ulia-Gamhardih area, published in the Geological Society of India, vol.- 66, Aug,2005, exploration for coal by scout drilling in the aforesaid area to the east of the known confines of Bistrampur Coalfield was undertaken by GSI to examine the development of coal bearing Lower Gondwana sequence beside stratigraphy and structural set up of the area.
- 1.2** 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 in Ulia-Gamhardih area and an area of about 80 sq km was geologically mapped on 1: 25,000 scale during the period. Out of these eight boreholes only one borehole, namely, EBUG-1 falls within the present area of investigation, Dhaska-Naugai block.
- 1.3** Dhaska-Naugai block lies in the western part of the Ulia-Gamhardih area. 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. The Ulia- Gamhardih area, is actually a NW-SE trending sub- basin located in the east central part of Surguja district of Chhattisgarh.
- 1.4** The area is bounded by latitudes 23°18'7.926" N and 23°25'31.444" N and longitudes 83°36'13.038" E and 83°42'44.31" E and falls in Survey of India Toposheet No. 64M/11. It covers an area of about 52.54 sq. km. Forest area within the block is 36.81 sq. km (as per FSI map).
- 1.5** 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.

- 1.6** The Dhaska-Naugai 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 Bisrampur Coalfield, Surguja District, Chhattisgarh, 2010”. CMPDI has drawn proposal for exploration for coal in the Block having area of about 52.54 sq.km and involving 2700 m in 14 no. of boreholes along with resistivity 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 Dhaska-Naugai block 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 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. The area is bounded by latitudes 23°18'7.926" N and 23°25'31.444" N and longitudes 83°36'13.038" E and 83°42'44.31" E and falls in Survey of India Toposheet No. 64M/11.
- 3.2** The present area of investigation is well connected by Ambikapur-Rajpur-Ramanujganj 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 Bisrampur 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°18'7.926" N and 23°25'31.444" N
- Longitude 83°36'13.038" E and 83°42'44.31" E

The cardinal points of block boundary of the Block is presented in Table-I: -

Table-I

Point	Latitude	Longitude	Point	Latitude	Longitude
1	23° 25' 20.814" N	83° 38' 35.690" E	93	23° 19' 45.759" N	83° 40' 21.165" E
2	23° 22' 3.140" N	83° 40' 18.095" E	94	23° 19' 50.009" N	83° 40' 17.666" E
3	23° 21' 56.956" N	83° 40' 22.776" E	95	23° 19' 52.045" N	83° 40' 15.519" E
4	23° 21' 51.923" N	83° 40' 26.530" E	96	23° 19' 55.644" N	83° 40' 12.403" E
5	23° 21' 47.790" N	83° 40' 29.929" E	97	23° 19' 59.913" N	83° 40' 9.113" E
6	23° 21' 44.317" N	83° 40' 32.932" E	98	23° 20' 2.469" N	83° 40' 6.651" E
7	23° 21' 38.950" N	83° 40' 37.145" E	99	23° 20' 5.896" N	83° 40' 2.321" E
8	23° 21' 34.970" N	83° 40' 40.640" E	100	23° 20' 9.750" N	83° 39' 56.882" E
9	23° 21' 31.365" N	83° 40' 43.286" E	101	23° 20' 10.560" N	83° 39' 48.427" E
10	23° 21' 26.528" N	83° 40' 46.634" E	102	23° 20' 10.874" N	83° 39' 42.615" E
11	23° 21' 20.388" N	83° 40' 50.794" E	103	23° 20' 11.500" N	83° 39' 36.111" E
12	23° 21' 15.579" N	83° 40' 54.459" E	104	23° 20' 12.366" N	83° 39' 28.145" E
13	23° 21' 11.457" N	83° 40' 57.243" E	105	23° 20' 13.235" N	83° 39' 19.993" E
14	23° 21' 5.477" N	83° 41' 1.033" E	106	23° 20' 14.398" N	83° 39' 13.500" E
15	23° 20' 59.682" N	83° 41' 5.125" E	107	23° 20' 16.499" N	83° 39' 4.977" E
16	23° 20' 54.932" N	83° 41' 8.400" E	108	23° 20' 19.389" N	83° 39' 4.359" E
17	23° 20' 49.755" N	83° 41' 11.517" E	109	23° 20' 25.278" N	83° 39' 3.056" E
18	23° 20' 44.236" N	83° 41' 15.465" E	110	23° 20' 30.585" N	83° 39' 1.928" E
19	23° 20' 38.357" N	83° 41' 19.424" E	111	23° 20' 36.590" N	83° 39' 0.116" E
20	23° 20' 31.988" N	83° 41' 23.839" E	112	23° 20' 44.363" N	83° 38' 57.989" E
21	23° 20' 29.484" N	83° 41' 25.520" E	113	23° 20' 53.434" N	83° 38' 55.423" E
22	23° 20' 22.914" N	83° 41' 29.614" E	114	23° 20' 59.132" N	83° 38' 53.976" E
23	23° 20' 16.082" N	83° 41' 33.963" E	115	23° 21' 4.310" N	83° 38' 52.822" E
24	23° 20' 9.502" N	83° 41' 38.709" E	116	23° 21' 9.770" N	83° 38' 51.488" E
25	23° 20' 1.681" N	83° 41' 44.564" E	117	23° 21' 18.557" N	83° 38' 49.148" E
26	23° 20' 4.859" N	83° 41' 48.725" E	118	23° 21' 26.609" N	83° 38' 47.027" E
27	23° 20' 0.100" N	83° 41' 51.496" E	119	23° 21' 36.993" N	83° 38' 44.323" E
28	23° 19' 54.523" N	83° 41' 54.846" E	120	23° 21' 47.097" N	83° 38' 41.614" E
29	23° 19' 49.134" N	83° 41' 58.293" E	121	23° 21' 54.177" N	83° 38' 39.799" E
30	23° 19' 42.671" N	83° 42' 2.202" E	122	23° 22' 0.806" N	83° 38' 37.952" E
31	23° 19' 36.412" N	83° 42' 6.190" E	123	23° 22' 6.029" N	83° 38' 36.682" E
32	23° 19' 31.947" N	83° 42' 8.911" E	124	23° 22' 2.181" N	83° 38' 32.904" E
33	23° 19' 28.523" N	83° 42' 11.038" E	125	23° 21' 58.439" N	83° 38' 29.268" E
34	23° 19' 23.213" N	83° 42' 13.872" E	126	23° 21' 58.960" N	83° 38' 28.929" E

35	23° 19' 19.062" N	83° 42' 16.264" E
36	23° 19' 16.731" N	83° 42' 17.855" E
37	23° 19' 11.734" N	83° 42' 21.440" E
38	23° 19' 6.553" N	83° 42' 24.779" E
39	23° 19' 1.890" N	83° 42' 27.998" E
40	23° 18' 59.192" N	83° 42' 29.861" E
41	23° 18' 56.221" N	83° 42' 31.681" E
42	23° 18' 50.668" N	83° 42' 34.640" E
43	23° 18' 44.185" N	83° 42' 38.678" E
44	23° 18' 40.037" N	83° 42' 40.902" E
45	23° 18' 35.853" N	83° 42' 42.567" E
46	23° 18' 31.804" N	83° 42' 38.750" E
47	23° 18' 27.996" N	83° 42' 35.253" E
48	23° 18' 23.990" N	83° 42' 31.402" E
49	23° 18' 20.351" N	83° 42' 28.036" E
50	23° 18' 17.517" N	83° 42' 25.431" E
51	23° 18' 14.948" N	83° 42' 22.982" E
52	23° 18' 12.039" N	83° 42' 20.294" E
53	23° 18' 9.204" N	83° 42' 17.724" E
54	23° 18' 10.713" N	83° 42' 16.825" E
55	23° 18' 11.824" N	83° 42' 15.926" E
56	23° 18' 12.430" N	83° 42' 15.185" E
57	23° 18' 12.974" N	83° 42' 14.288" E
58	23° 18' 13.219" N	83° 42' 13.567" E
59	23° 18' 13.281" N	83° 42' 12.941" E
60	23° 18' 13.312" N	83° 42' 11.140" E
61	23° 18' 13.287" N	83° 42' 8.878" E
62	23° 18' 13.184" N	83° 42' 4.395" E
63	23° 18' 13.084" N	83° 42' 1.964" E
64	23° 18' 12.267" N	83° 42' 2.240" E
65	23° 18' 11.476" N	83° 42' 2.462" E
66	23° 18' 10.674" N	83° 42' 2.599" E
67	23° 18' 9.459" N	83° 42' 2.798" E
68	23° 18' 9.830" N	83° 42' 0.794" E
69	23° 18' 11.078" N	83° 41' 55.677" E
70	23° 18' 13.018" N	83° 41' 49.099" E
71	23° 18' 15.866" N	83° 41' 41.013" E
72	23° 18' 18.691" N	83° 41' 32.903" E
73	23° 18' 13.167" N	83° 41' 24.206" E
74	23° 18' 16.137" N	83° 41' 17.704" E
75	23° 18' 20.505" N	83° 41' 8.625" E
76	23° 18' 29.679" N	83° 41' 6.296" E
77	23° 18' 36.043" N	83° 41' 4.911" E
78	23° 18' 42.737" N	83° 41' 3.068" E
79	23° 18' 47.770" N	83° 41' 1.587" E
80	23° 18' 54.479" N	83° 41' 0.139" E
81	23° 18' 58.642" N	83° 40' 59.245" E
82	23° 19' 3.130" N	83° 40' 58.242" E
83	23° 19' 7.614" N	83° 40' 57.424" E
84	23° 19' 5.148" N	83° 40' 55.862" E
85	23° 19' 1.479" N	83° 40' 54.206" E

127	23° 22' 4.509" N	83° 38' 26.176" E
128	23° 22' 9.866" N	83° 38' 23.279" E
129	23° 22' 13.622" N	83° 38' 21.025" E
130	23° 22' 19.394" N	83° 38' 17.811" E
131	23° 22' 18.754" N	83° 38' 12.420" E
132	23° 22' 17.437" N	83° 38' 5.108" E
133	23° 22' 16.201" N	83° 37' 59.380" E
134	23° 22' 15.288" N	83° 37' 53.611" E
135	23° 22' 14.460" N	83° 37' 47.892" E
136	23° 22' 13.738" N	83° 37' 46.108" E
137	23° 22' 10.718" N	83° 37' 40.368" E
138	23° 22' 7.263" N	83° 37' 32.385" E
139	23° 22' 4.558" N	83° 37' 27.094" E
140	23° 22' 2.472" N	83° 37' 23.281" E
141	23° 22' 0.839" N	83° 37' 19.431" E
142	23° 21' 58.034" N	83° 37' 13.673" E
143	23° 21' 55.443" N	83° 37' 7.965" E
144	23° 21' 52.653" N	83° 37' 2.626" E
145	23° 21' 49.320" N	83° 36' 56.275" E
146	23° 21' 46.861" N	83° 36' 51.641" E
147	23° 21' 45.029" N	83° 36' 48.113" E
148	23° 21' 44.387" N	83° 36' 47.047" E
149	23° 21' 55.238" N	83° 36' 46.748" E
150	23° 23' 48.435" N	83° 36' 44.652" E
151	23° 23' 48.516" N	83° 36' 44.384" E
152	23° 23' 48.752" N	83° 36' 43.827" E
153	23° 23' 48.752" N	83° 36' 43.163" E
154	23° 23' 48.645" N	83° 36' 42.735" E
155	23° 23' 48.431" N	83° 36' 42.350" E
156	23° 23' 48.024" N	83° 36' 40.315" E
157	23° 23' 48.388" N	83° 36' 37.231" E
158	23° 23' 48.923" N	83° 36' 36.353" E
159	23° 23' 49.266" N	83° 36' 35.432" E
160	23° 23' 49.373" N	83° 36' 34.747" E
161	23° 23' 49.202" N	83° 36' 34.040" E
162	23° 23' 48.988" N	83° 36' 33.462" E
163	23° 23' 48.902" N	83° 36' 32.648" E
164	23° 23' 48.988" N	83° 36' 31.770" E
165	23° 23' 49.245" N	83° 36' 30.507" E
166	23° 23' 49.566" N	83° 36' 29.586" E
167	23° 23' 49.609" N	83° 36' 29.072" E
168	23° 23' 49.609" N	83° 36' 28.323" E
169	23° 23' 49.523" N	83° 36' 27.830" E
170	23° 23' 49.587" N	83° 36' 26.909" E
171	23° 23' 49.673" N	83° 36' 25.881" E
172	23° 23' 49.694" N	83° 36' 24.703" E
173	23° 23' 49.694" N	83° 36' 23.247" E
174	23° 23' 49.437" N	83° 36' 21.770" E
175	23° 23' 49.309" N	83° 36' 20.677" E
176	23° 23' 49.138" N	83° 36' 19.778" E
177	23° 23' 49.138" N	83° 36' 18.729" E

86	23° 19' 6.166" N	83° 40' 50.344" E	178	23° 23' 49.180" N	83° 36' 17.958" E
87	23° 19' 12.353" N	83° 40' 45.512" E	179	23° 23' 49.073" N	83° 36' 17.594" E
88	23° 19' 18.492" N	83° 40' 40.888" E	180	23° 23' 48.838" N	83° 36' 16.887" E
89	23° 19' 23.587" N	83° 40' 37.034" E	181	23° 23' 48.762" N	83° 36' 16.129" E
90	23° 19' 29.132" N	83° 40' 33.282" E	182	23° 24' 7.150" N	83° 36' 15.617" E
91	23° 19' 34.933" N	83° 40' 29.628" E	183	23° 25' 28.916" N	83° 36' 15.123" E
92	23° 19' 41.313" N	83° 40' 24.753" E			

(Cardinal points are software generated. Hence actual ground survey required for confirmation)

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 Dhaska-Naugai block, East of Bisrampur Coalfield is located in the NW-SE trending sub-basin bounded by Pondi, Bharatpur villages in the east and Ulia Gamhardih block in the west and covers approximately 52.54 sq km area.

The coal bearing Lower Gondwana sediments disposed in southeasterly trend terminating near Gamhardih against the east- west trending Boundary fault. Block's southern, south-western and eastern boundary is bounded by a unique fault pattern.

In the area, Barakar Formation which occupies most of area also 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. It is represented by whitish grey, medium to coarse grained, at places very coarse grained, micaceous, feldspathic, massive, moderately sorted, sandstone with subordinate horizons of dark grey shale, carbonaceous shale and a number of thick coal seams.

However, in the northern part, the rocks of Barakar Formation were capped by approximately 10-20m thick laterite.

The contact between Talchir and Barakar formation was demarcated at the base of about 40m to 50m thick, dark grey to black, micaceous shale/silty shale of Barakar Formation. Burnt outcrops and burnt rocks were also recorded at several places for the first time.

Based on the surface and sub-surface data, the general stratigraphic sequence of Dhaska-Naugai 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.
Early Permian	Barakar	85-250m+	Whitish grey to grey, medium to coarse grained, at places very coarse grained to gritty, micaceous, arkosic to sub-arkosic, 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 Carboniferous	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 Pre- Cambrian metamorphics which forms the basement for Gondwana sediments are exposed in the east, south east, south and south west with alternate

set of E-W and NW-SE trending faults. The foliation within the Pre- Cambrian metamorphics is E-W. In the south west, south and south east parts of the area the Barakar Formation abut directly against the metamorphics along NW-SE and E-W trending boundary faults indicating entire Ulia- Patna- Jagima area as down thrown block. These two sets of fault constitute a unique step like fault pattern in the area. However, in the northern part, the rocks of Barakar Formation are covered by about 10-15 m thick laterite.

8.2 The sedimentary strata, in general, have a N60°W-S60°E strike with low northerly dip around Gamhardih and Ghugri villages. However, due to undulating topography, the dips have rolling nature locally. Current bedding and cross trough stratification are the most common primary sedimentary structures observed in the sandstone of Barakar Formation in the area. These sandstones are mostly massive and multistoried. Apart from these, load and cast structure, flame structure, parallel & convolute laminations, slump structure are also observed in the borehole cores.

8.3 In the block two faults of around 100m throw are deciphered on the basis of structure of adjacent block of Ulia Gamhardih block. Also major boundary faults, causing Barakar formation rest directly against the Pre- Cambrian metamorphics along southwest, south and southeastern boundary of the block have been reported in regional report on Ulia Gamhardih area by GSI, 2010.

9.0 Sequence and quality of coal seams:

In the block, Barakar formation is the only coal bearing sequence. During large scale mapping (1:25,000), a number of coal outcrops (cumulative thickness varying from 1.00 m to 3.00 m in Dhaska-Naugai block) has been recorded in the area along nala sections as well as scarp faces of hills at different levels around northern and northeastern part of Ghugri areas.

9.1 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 in Ulia-Gamhardih area. 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 but in Dhaska-Naugai block, only one borehole EBUG-1 has been drilled in which Seam-I was not encountered.

9.2 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 (data has been taken from regional Ulia-Gamhardih area, as reported in GSI report).

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 regional Ulia – Gamhardih area, East of
Bisrampur Coalfield as per GSI Report,2010

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 Ulia – Gamhardih area a total of 164.82 million tonne of indicated resource has been assessed as per Regional report by GSI,2010. 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-G12 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 regional Ulia– Gamhardih area, East of Bistrampur Coalfield as per GSI report,2010

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 regional Ulia-Gamhardih area, East of Bisrampur Coalfield as per GSI report,2010.

(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-7A	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 2700m in 14 boreholes (Table V) has been proposed in about 1600X1600 m grid for the Dhaska-Naugai Block.

TABLE-V

Depth of Proposed Boreholes in Dhaska-Naugai Block,East of Bistrampur Coalfield

Sl. No.	Proposed BH No.	Projected Depth (m)	Target
1	PBH-1	190	Talchir
2	PBH-2	210	Talchir
3	PBH-3	150	Talchir
4	PBH-4	150	Talchir
5	PBH-5	300	Talchir
6	PBH-6	270	Talchir
7	PBH-7	220	Talchir
8	PBH-8	150	Talchir
9	PBH-9	120	Talchir
10	PBH-10	100	Talchir
11	PBH-11	200	Talchir
12	PBH-12	190	Talchir
13	PBH-13	170	Talchir
14	PBH-14	240	Talchir
Total		2660 m (say 2700m)	

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 Dhaska-Naugai Block is given below in Table-VI.

TABLE-VI
QUANTUM OF WORK

S. No.	Activity	Quantity
1.	Geological Mapping	52.54 sq. km
2.	<u>Drilling:</u>	
	i) Boreholes	14 BHs.
	ii) Meterage	2700 m
3.	i) Levelling and Triangulation	As per requirement
	ii) RL and Co-ordinates	14 BHs.
4.	Drill Core Logging	2700 m
5.	Geophysical Logging	14 boreholes for 1750 m
6.	Vertical Electrical Sounding (VES)	104 Nos. (AB/2 = 1000m)
7.	<u>Chemical Analysis:</u>	
	i) Band by Band (ash, moisture, volatile matter)	14 BHs (about 700 samples)
	ii) Proximate Analysis at 40 °C and 60% RH (for I100,I30,BCS)	All boreholes i.e 14 bh (about 295 samples)
	iii) Gross Calorific Value	All boreholes i.e 14 bh (about 295 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)

12.0 LIMITATIONS

- 12.1** Dhaska-Naugai block lies in the western part of Ulia-Gamhardih area which 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** Only one borehole has been drilled inside the Dhaska-Naugai block, so there is paucity of data regarding occurrence of Barakar Formation within the block. Therefore, all the boreholes have been proposed upto Talchir as it would prove presence and depth of Barakar Formation.
- 12.3** Floor contour of seam –IB, has been drawn based on data of boreholes drilled in adjacent block (Umia-Gamhardih) as there seam- IB was not encountered in

only drilled borehole inside the block, EBUG-1. So floor contour drawn are tentative only and structure may vary with due course of exploration (Bh's have been proposed upto talchir).

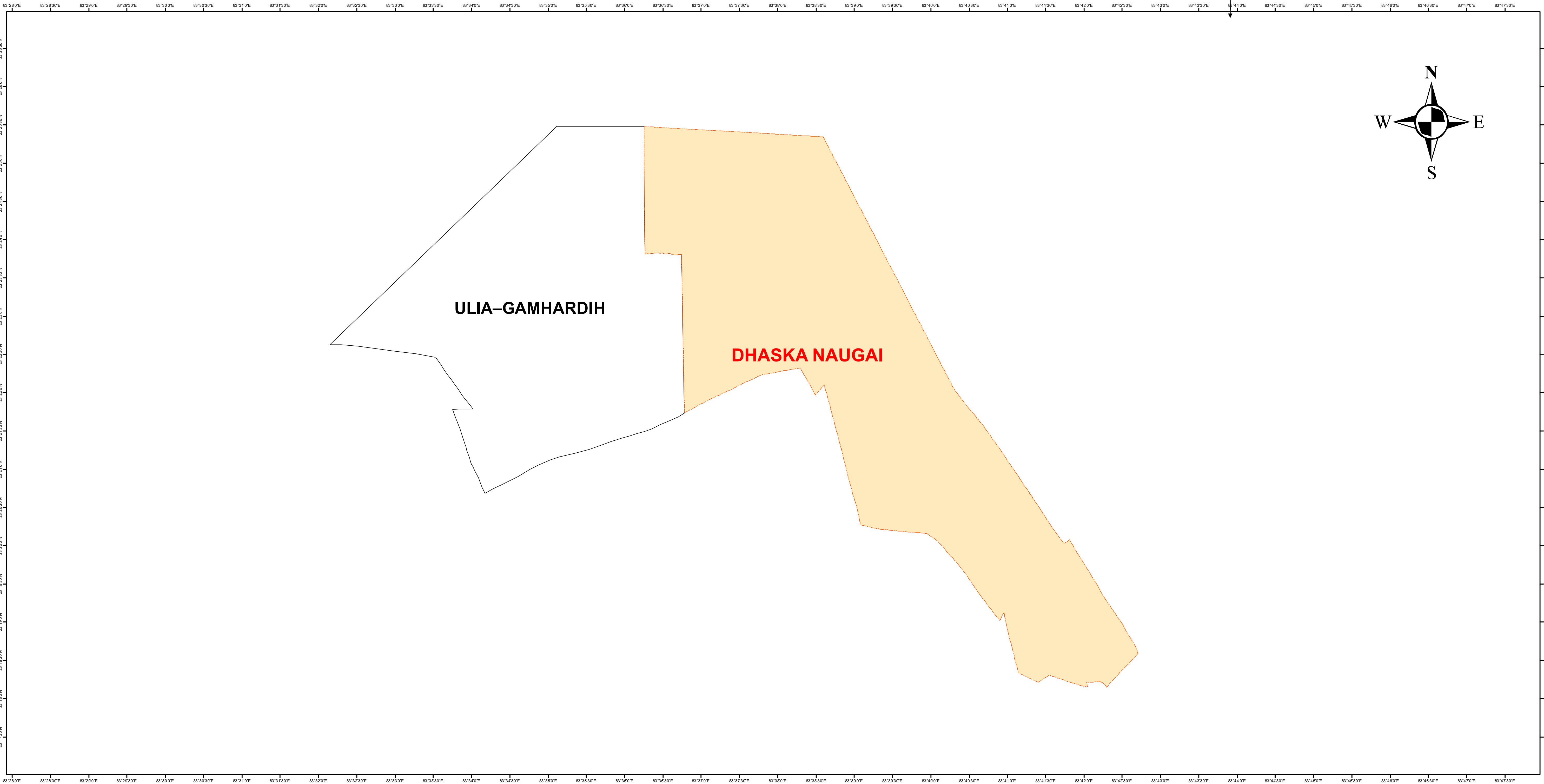
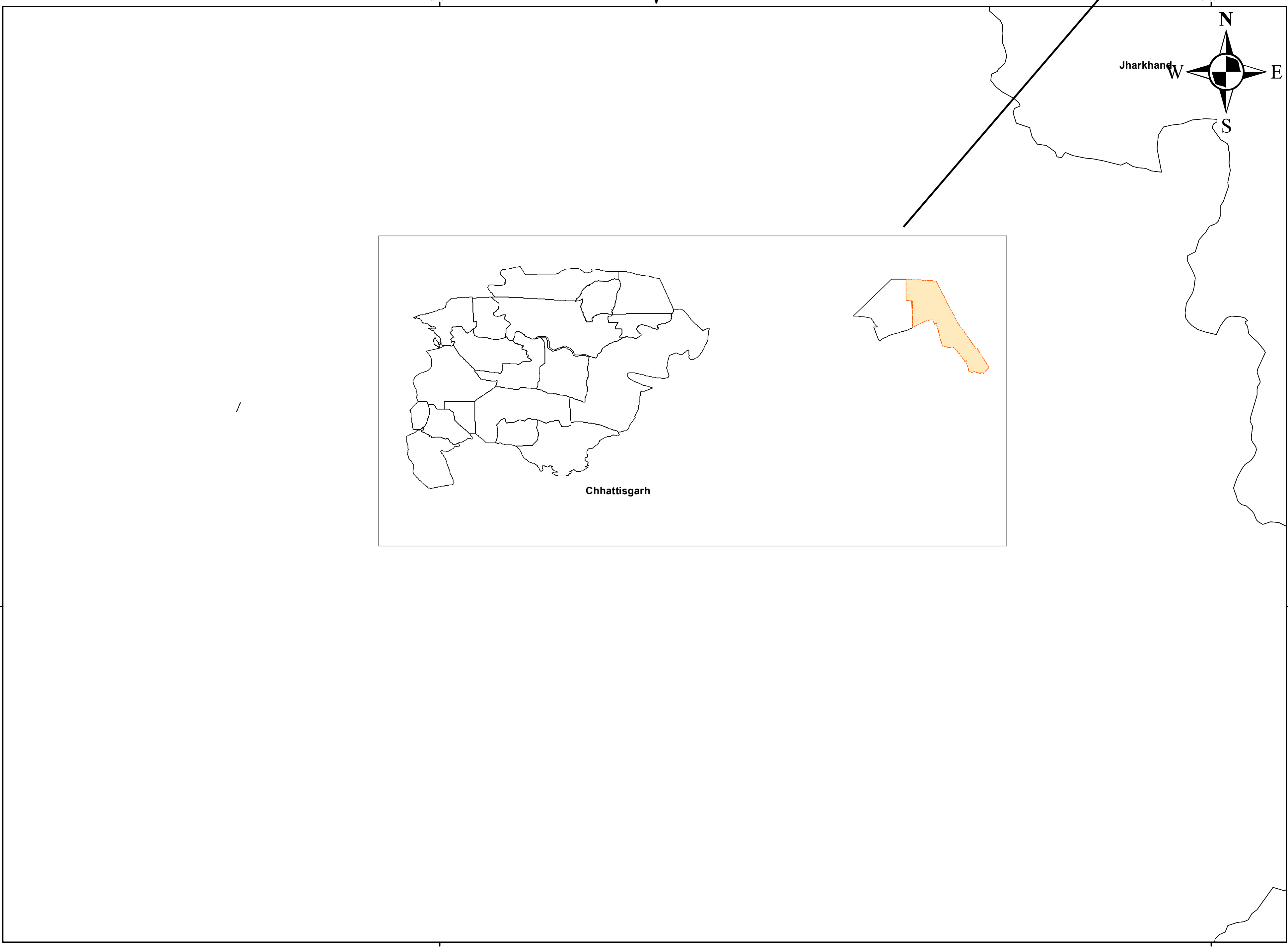
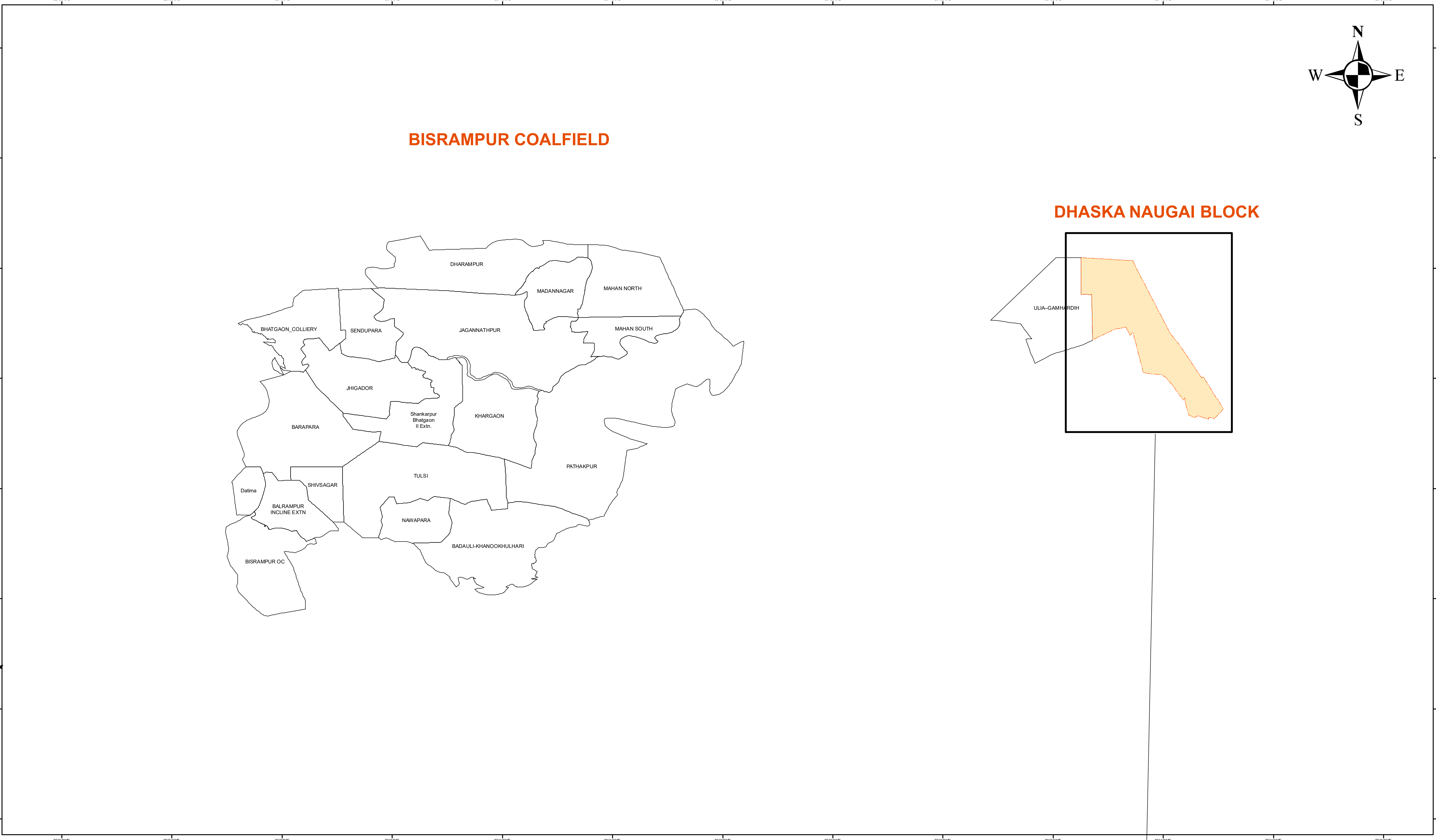
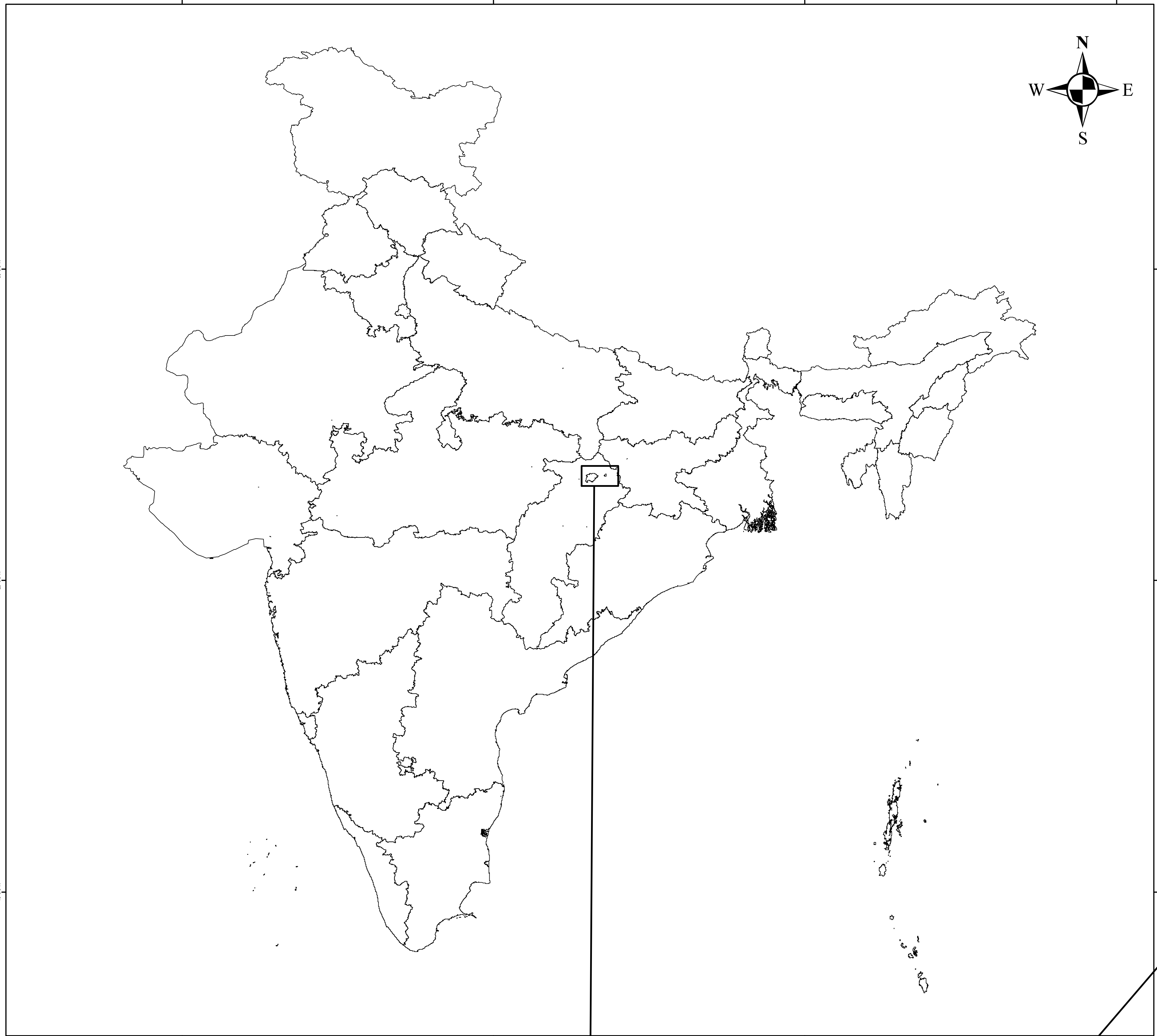
- 12.4** Proposed depth of borehole upto Talchir is tentative based on the data inferred from the Umia-Gamrdih block as Only one borehole has been drilled inside the Dhaska-Naugai block in which seam- IB was not encountered.
- 12.5** Meterage may require modification after getting proper information about seam disposition of formational contact through integrated geophysical survey.
- 12.6** Boreholes may require shifting due to non-approachability due to hills / gullies / villages/ forest cover, geological structure etc.
- 12.7** 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.

13.0 LIST OF PLATES

13.1 Following plates are enclosed with the proposal:

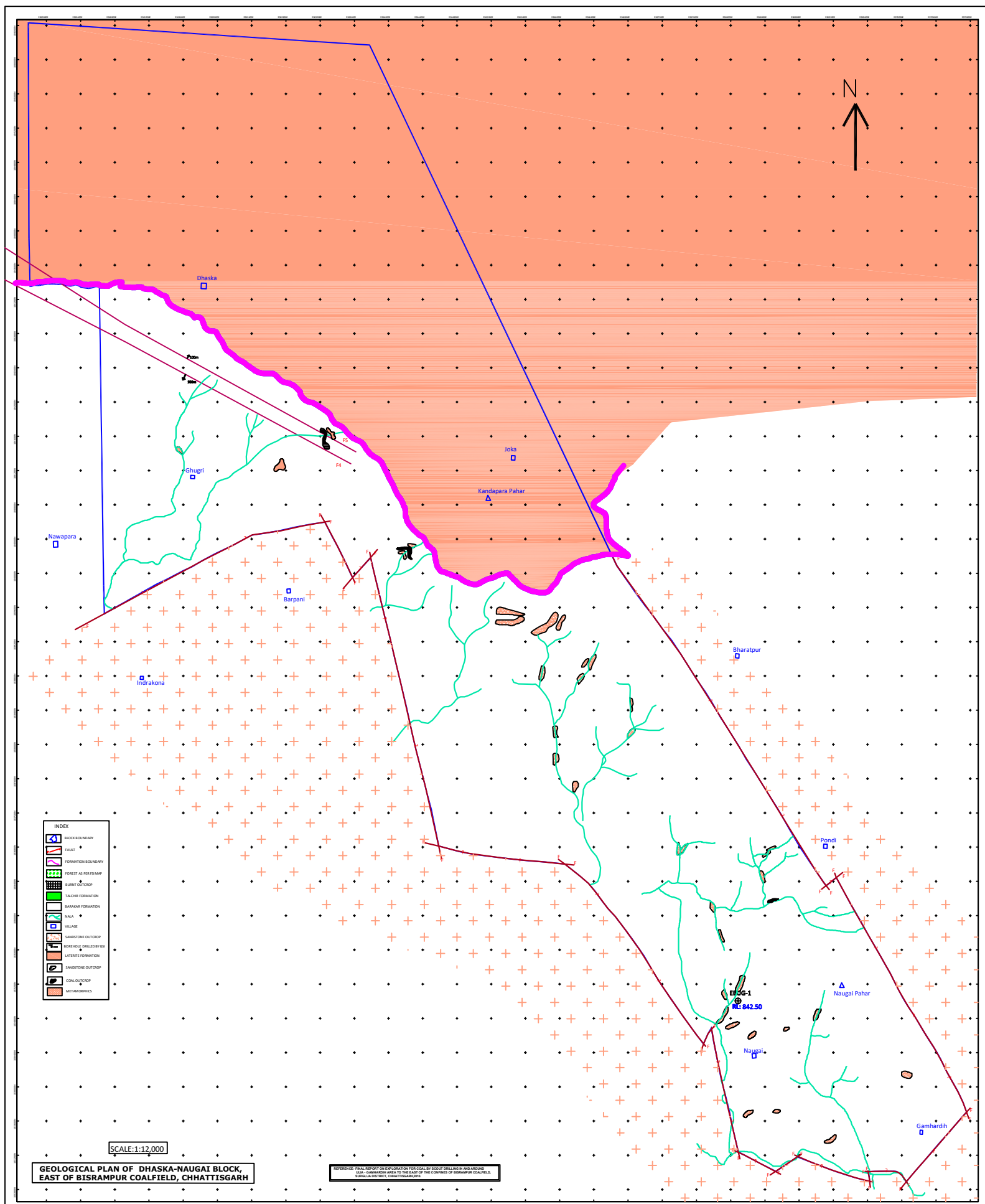
- I. Block Location Map of Dhaska-Naugai block of East of Bistrampur Coalfield
- II. Proposed Borehole Location Plan along with Floor contour plan (tentative) of seam-IB in Dhaska-Naugai block of East of Bistrampur Coalfield.
- III. Geological plan of Dhaska-Naugai block of East of Bistrampur Coalfield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

LOCATION OF DHASKA NAUGAI BLOCK IN EAST OF BISRAPMUR COALFIELD,CHHATTISGARH



Legend

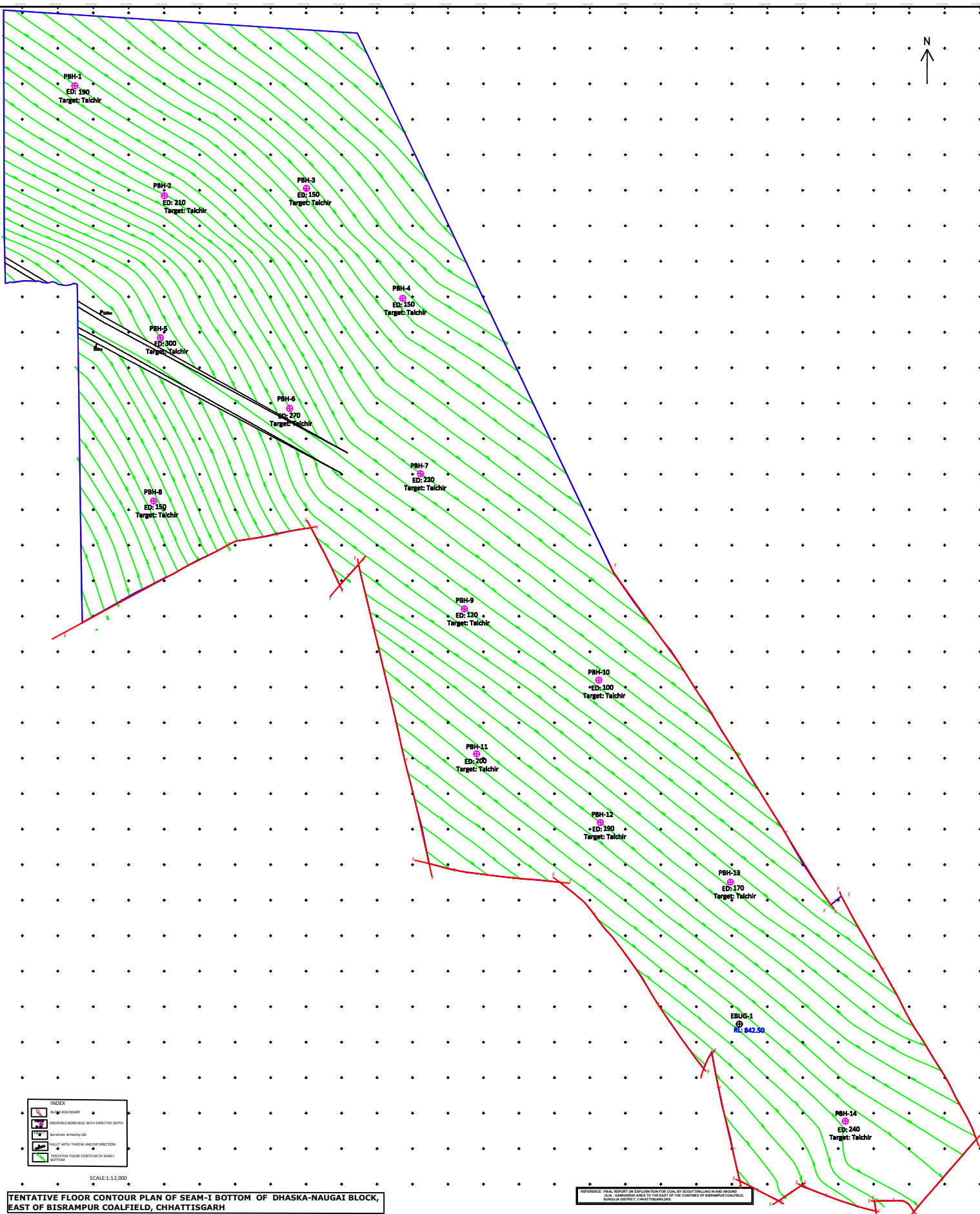
DHASKA NAUGAI BLOCK



SCALE:1:12,000

GEOLOGICAL PLAN OF DHASKA-NAUGAI BLOCK,
EAST OF BARAMPUR COALFIELD, CHHATTISGARH

REFERENCE: FINAL REPORT ON EXPLORATION FOR COAL BY BLOCK DRILLING IN AND AROUND
DHASKA-NAGAI AREA TO THE EAST OF THE COALFIELD OF BARAMPUR COALFIELD,
BASTAR DISTRICT, CHHATTISGARH

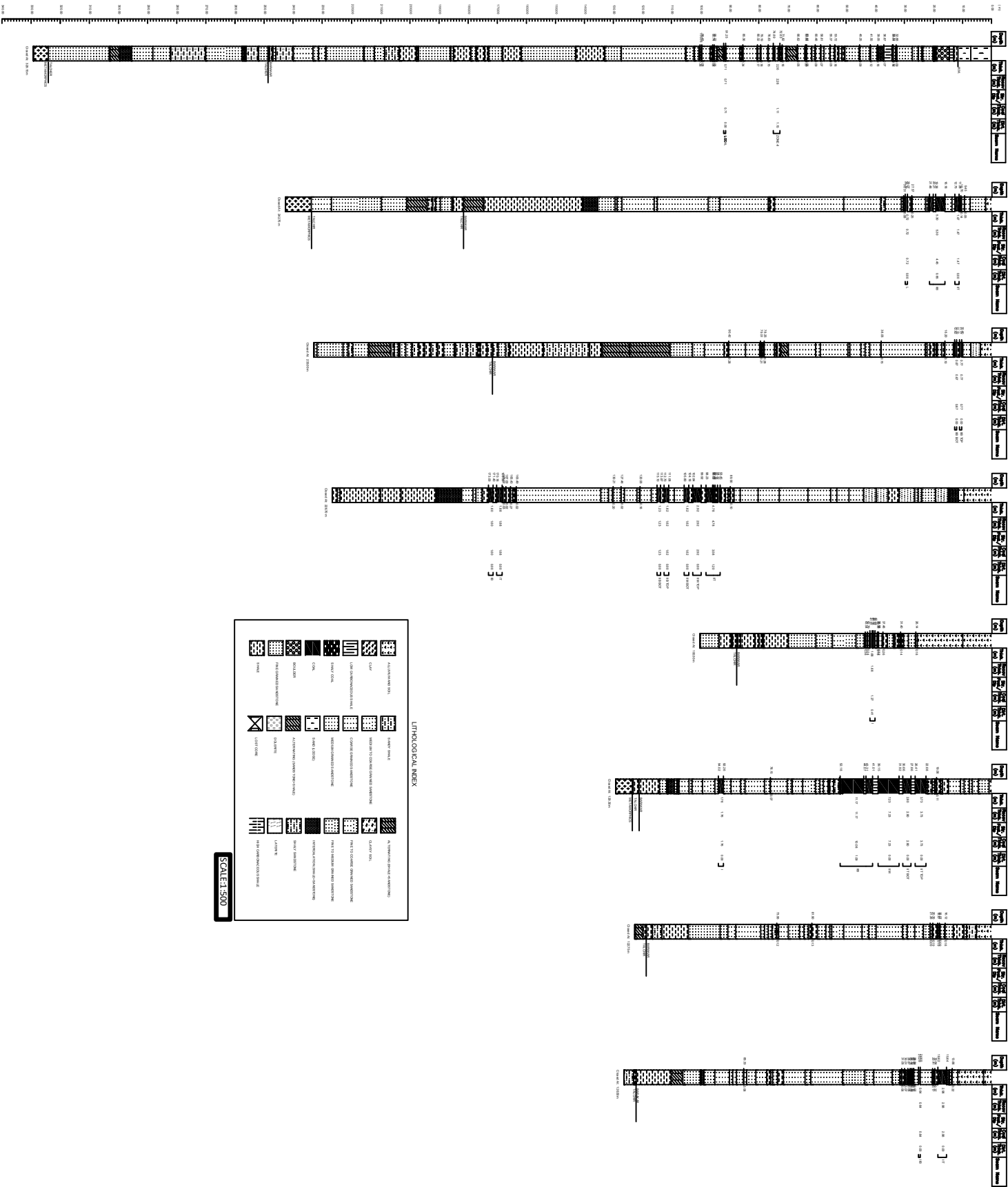


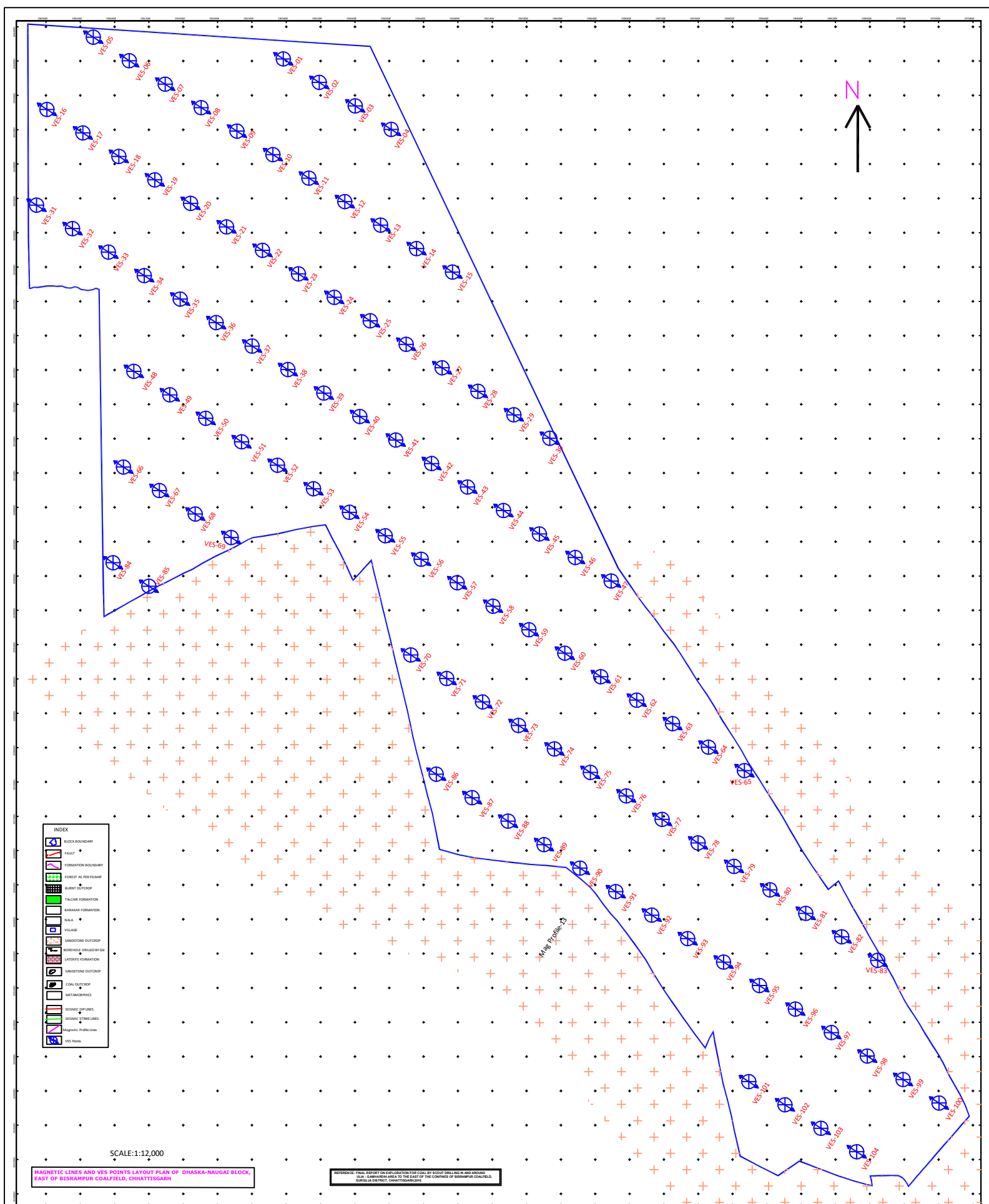
INDEX	
	BLOCK BOUNDARY
	PROPOSED BOREHOLE WITH EXPECTED DEPTH
	Borehole drilled by GSI
	FAULT WITH THROW AND DIRECTION
	TENTATIVE FLOOR CONTOUR OF SEAM-I BOTTOM

SCALE:1:12,000

TENTATIVE FLOOR CONTOUR PLAN OF SEAM-I BOTTOM OF DHASKA-NAUGAI BLOCK, EAST OF BISTRAMPUR COALFIELD, CHHATTISGARH

REFERENCE: FINAL REPORT ON EXPLOREWORK FOR COAL BY SCOUT DRILLED IN AND AROUND BLA, DAMANARA AREA TO THE EAST OF THE COINTEGRATED BISTRAMPUR COALFIELD, MINERAL DISTRICT, CHHATTISGARH

[illegible]



Project Cost Estimate for Exploration (G3 Stage) in Dhaska Nugai 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>I- Field operations (Outsourcing)</i>						
A	DRILLING						
1	Drilling (As per MoC Rate 2020-21)	2.2.1.1b	m	5619	5619	2700	15171300
B	GEOPHYSICAL STUDIES						
1	Borehole Geophysical logging (As per MoC Rate 2020-21)	3.11	m	601	601	2700	1622700
2	Electrical resistivity (AB/2= 1km)	3.5a	per station		70650	104	7347600
	Field operations Total (A+B)						24141600
	<i>II- Field Work (In House)</i>						
A	GEOLOGICAL WORK						
1	Survey Work -1 Surveyor	1.6.1a	Day	8300	8300	45	373500
2a	Geological Party days-Field - 1 Geologist	1.5.1b	Day	11000	11000	90	990000
2b	Geological Party days-HQ (Data processing & Report Preparation)-1 Geologist	1.5.1b	Day	9000	9000	45	405000
	Sub Total A						1768500
B	GEOPHYSICAL STUDIES						
3b	Geophysict Party days-Field (Field Work) - 1 Geologist	3.19	Day	11000	11000	30	330000
3c	Geophysicst Party days-HQ (Data processing & Report Preparation)-- 1 Geologist	3.19	Day	9000	9000	30	270000
	Sub Total B						600000
	Field Work Total (A+B)						2368500
	<i>III-Laboratory Studies (In House)</i>						
1	<i>Band By Band Analysis</i>						
a	Ash+Moisture	4.2.6	per sample	700	700	700	490000

b	House Keeping	4.2.1	per sample	115	115	700	80500
2	Overall analysis						
a	Proximate analysis	4.2.7	per sample	935	935	295	275825
b	Moisture at 60% RH & 40C	4.2.8	per sample	1010	1010	295	297950
c	GCV	4.2.11	per sample	1505	1505	295	443975
d	Sample preparation & House Keeping	4.2.3	per sample	795	795	295	234525
3	Special Test						
a	Ultimate analysis	4.2.17	per sample	9945	9945	29	288405
b	Total Sulphur	4.2.14	per sample	1900	1900	29	55100
c	Distribution of Sulphur	4.2.15	per sample	3695	3695	29	107155
d	HGI including sample preparation	4.2.18	per sample	3805	3805	29	110345
e	AFT (Ash Fusion Temperature)	4.2.20	per sample	2745	2745	29	79605
f	Ash analysis	4.2.25	per sample	325	325	29	9425
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					2810335
	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
c	Operational charges for CMPDI	Point 3 of SOC			1500000	1500000
d	DGPS Survey of bundary, borehole points (14 boreholes & 16 boundary point)	1.6.2	per point	19200	19200	30 576000
c	Land crop compensation	5.6	Per bh	20000	20000	14 280000
d	Borehole pillaring	2.2.7	Per bh	2000	2000	14 28000
e	Geological Report preparation (3% or 2000000 Max)	5.2				977833
f	Peer review			10000	10000	10000
	Miscellaneous Charges Total					4251833
	Total (I- Field op +II- Field work+III- Lab+ IV -Misc)					33572268
	GST (@18%)					6043008.249
	Grand Total					39615276
						3.96152763

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

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.

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Time Schedule/Action Plan for Dhaska Nugai Block, East of Bistrampur 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	Drilling (Nos of rigs-1 rigs)	Months				<----->									2700 in 14 Bh	
4	Borehole Geophysical logging	Days				<----->									2700 in 14 Bh	
5	Resistivity survey	Days				<----->									104 points	
6	Survey Party days (1 Party)	Days				<----->									45 Days	
7	Geologist Party days, Field (1 Party)	Days				<----->									90 Days	
8	Geophysict Party days, Field (1 Party)	Days				<----->									30 Days	
9	Laboratory Studies (Band By Band)	Nos.					<----->								700 sample	
10	Laboratory Studies (Overall)	Nos.							<----->						295 sample	
11	Laboratory Studies (Special) & (Petrography)	Nos.									↔				29 Sample & 5 Sample	
12	Geologist Party days, HQ (1 Party)	Days								<----->						45 Days
13	Geophysict Party days, HQ (1 Party)	Days								<----->						30 Days
14	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