

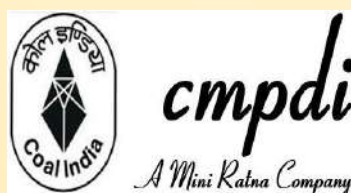
**PROPOSAL FOR PRELIMINARY
EXPLORATION (G-3 STAGE) FOR COAL**

WEST OF CHUPERBHITA BLOCK

NMET FUNDED PROJECT

RAJMAHAL COALFIELD

DISTRICT-GODDA, JHARKHAND



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(कोल इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
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1.0 INTRODUCTION

Chuperbhita Peripheral Area as the name indicates occurs along the periphery of Chuperbhita OCP, Chuperbhita Underground, Simlong OCP, Simlong South-East Extension and Jitpur OCP blocks of Chuperbhita Coalfield which is the second largest coalfield among the five coal fields of Rajmahal Coalfields. A major part of this peripheral area has been earmarked as West Of Chuperbhita Block as shown in the plan.

During the course of regional mapping, it was observed that in the north-western part of the Chuperbhita Coalfield some coal seams are exposed. Guided by these observations, in the Co-ordination Committee Meeting held between CMPDIL, MECL and ECL on 16.2.1982 at Asansol, it was decided that a few boreholes may be drilled to find out the development of coal seams in this part. The data obtained through these initial boreholes were quite encouraging. Consequently, the Jitpur Block was demarcated and a detailed scheme of exploration was carried out to assess the potentiality of the coal seams in this area.

In the Mid-term-review meeting held on 20.09.88, CMPDIL requested MECL to submit an updated regional geological map of the Chuperbhita Coalfield. As such a regional geological map on RF 1:25000 was prepared covering an area of about 100 sq.km of Chuperbhita Coalfield which consists of Chuperbhita OCP, Chuperbhita Under Ground, Simlong OCP, Simlong South-East Extension and Jitpur OCP Blocks and their peripheral areas.

Earlier, only one borehole i.e. RJC-07 was drilled in the south -western part of the block. Only few thin coal bands of Karharbari Formation were encountered in this borehole. However, Boreholes drilled in the periphery of Chuperbhita OC block, Simlong Block and Jitpur Block are very promising.

2.0 OBJECTIVE

The G3 stage of Exploration in the block is proposed to fulfill following objectives:

- a. To establish the existence and continuity of coal seams occurring in the block as significant coal resources are present in adjoining block such as Chuperbhita Underground Block to the east, Jitpur Block to the West and Simlong Block to the South East.
- b. To establish the lay, disposition and potentiality of coal seams.
- c. To assess the coal resource by G3 stage of exploration in the block.

3.0 LOCATION, COMMUNICATION & ACCESSIBILITY:

The block covers an area of 24.57 sq.km. It is included in the Survey of India Toposheet No.72 P/5 & P/6 and lies between the latitudes 24°43'4.719"N to 24°47'58.273"N and longitudes 87°24'35.335"E to 87°28'48.025" E. Major part of the block falls under the administrative jurisdiction of Godda district, Jharkhand.

The block is connected by all-weather metalled roads to such places as Godda, Sahibganj, Barharwa and Pakur. Godda-Sahibganj metalled road, via Sunderpahari, Dharampur and Berhait passes through the southern part of the block. The road to Pakur bifurcates from Godda-Sahibganj road at Dharampur More via Litipara. The block is about 50 km. from Pakur Railway Station on the Kiul-Bardhaman loop line of the Eastern Railway. Barharwa Railway Station on the same line is also at a distance of 50 km. east of the block.

Important Towns like Bhagalpur, Deoghar, Asansol and Dhanbad are connected by road at a distance of about 100 km., 110 km., 218 km. and 275 km. respectively from southern fringe of the block. The two Super Thermal Power Stations i.e. Farakka and Kahalgaon are 75 km. (via Barharwa) and 120 km. (via Lalmatia) away from the block respectively.

The nearest air strip is located at Banka which is about 20 km. south-west from the Chuperbhita Underground Block.

It may be noted that the block beyond the western side of Jitpur Block has not been considered for exploration as Seam I has outcropped in the Jitpur Block itself and there may not be any possibility of getting any Coal Resources there.

The cardinal points of block boundary of West of Chuperbhita Block is presented in Table-I.

Table-I:

CARDINAL POINT OF WEST OF CHUPERBHITA BLOCK, RAJMAHAL COALFIELD, , JHARKHAND IN WGS84			
Sl. No.	CARDINAL POINT No.	Longitude	Latitude
1	1	87° 24' 50.226" E	24° 47' 43.125" N
2	2	87° 25' 30.750" E	24° 47' 48.751" N
3	3	87° 26' 8.039" E	24° 47' 53.924" N
4	4	87° 26' 39.399" E	24° 47' 58.273" N
5	5	87° 26' 39.701" E	24° 47' 56.169" N
6	6	87° 26' 33.451" E	24° 47' 51.110" N
7	7	87° 26' 27.764" E	24° 47' 48.125" N
8	8	87° 26' 26.139" E	24° 47' 45.362" N
9	9	87° 26' 26.406" E	24° 47' 39.958" N
10	10	87° 26' 28.365" E	24° 47' 36.138" N
11	11	87° 26' 28.569" E	24° 47' 29.292" N

12	12	87° 26' 26.614" E	24° 47' 22.778" N
13	13	87° 26' 22.329" E	24° 47' 16.068" N
14	14	87° 26' 17.782" E	24° 47' 11.876" N
15	15	87° 26' 17.640" E	24° 47' 3.718" N
16	16	87° 26' 19.130" E	24° 46' 57.201" N
17	17	87° 26' 20.177" E	24° 46' 56.239" N
18	18	87° 26' 24.711" E	24° 46' 54.246" N
19	19	87° 26' 26.799" E	24° 46' 50.805" N
20	20	87° 26' 26.823" E	24° 46' 46.651" N
21	21	87° 26' 26.229" E	24° 46' 42.887" N
22	22	87° 26' 28.189" E	24° 46' 40.256" N
23	23	87° 26' 33.788" E	24° 46' 36.925" N
24	24	87° 26' 36.867" E	24° 46' 32.585" N
25	25	87° 26' 36.821" E	24° 46' 10.228" N
26	26	87° 26' 37.078" E	24° 45' 51.979" N
27	27	87° 26' 39.704" E	24° 45' 42.811" N
28	28	87° 26' 23.245" E	24° 45' 53.143" N
29	29	87° 26' 17.269" E	24° 45' 50.429" N
30	30	87° 26' 20.027" E	24° 45' 36.026" N
31	31	87° 26' 21.742" E	24° 45' 26.854" N
32	32	87° 26' 30.926" E	24° 45' 25.200" N
33	33	87° 26' 37.087" E	24° 45' 18.969" N
34	34	87° 26' 42.829" E	24° 45' 15.742" N
35	35	87° 26' 49.415" E	24° 45' 11.222" N
36	36	87° 26' 53.947" E	24° 45' 9.618" N
37	37	87° 26' 58.922" E	24° 45' 2.490" N
38	38	87° 27' 2.586" E	24° 44' 58.818" N
39	39	87° 27' 5.056" E	24° 44' 56.245" N
40	40	87° 27' 10.909" E	24° 44' 51.906" N
41	41	87° 27' 15.733" E	24° 44' 43.458" N
42	42	87° 27' 9.543" E	24° 44' 43.144" N
43	43	87° 27' 24.743" E	24° 44' 25.981" N
44	44	87° 28' 13.306" E	24° 43' 56.809" N
45	45	87° 28' 48.025" E	24° 43' 37.451" N
46	46	87° 27' 55.751" E	24° 43' 28.422" N
47	47	87° 27' 0.418" E	24° 43' 18.857" N
48	48	87° 26' 2.710" E	24° 43' 8.876" N
49	49	87° 25' 30.131" E	24° 43' 3.239" N
50	50	87° 25' 27.342" E	24° 43' 4.719" N
51	51	87° 25' 20.937" E	24° 43' 14.825" N
52	52	87° 25' 12.310" E	24° 43' 28.433" N
53	53	87° 25' 30.912" E	24° 43' 47.590" N
54	54	87° 25' 47.935" E	24° 44' 5.118" N
55	55	87° 26' 0.847" E	24° 44' 21.051" N
56	56	87° 25' 57.852" E	24° 44' 36.685" N
57	57	87° 25' 55.304" E	24° 44' 49.981" N
58	58	87° 26' 15.768" E	24° 44' 48.045" N
59	59	87° 26' 37.514" E	24° 44' 45.987" N
60	60	87° 26' 35.005" E	24° 44' 55.801" N
61	61	87° 26' 31.064" E	24° 45' 0.071" N
62	62	87° 26' 25.137" E	24° 45' 2.282" N

63	63	87° 26' 10.312" E	24° 45' 5.422" N
64	64	87° 25' 40.691" E	24° 45' 15.981" N
65	65	87° 25' 12.189" E	24° 45' 24.536" N
66	66	87° 24' 47.598" E	24° 45' 31.916" N
67	67	87° 24' 41.039" E	24° 46' 2.598" N
68	68	87° 24' 35.335" E	24° 46' 29.279" N
69	69	87° 24' 44.816" E	24° 46' 38.678" N
70	70	87° 24' 55.904" E	24° 46' 49.686" N
71	71	87° 24' 59.166" E	24° 47' 6.682" N
72	72	87° 25' 1.720" E	24° 47' 19.176" N
73	73	87° 24' 59.139" E	24° 47' 35.778" N

4.0 PHYSIOGRAPHY AND DRAINAGE:

Area exhibits highly undulating topography. A very pronounced topographical features marked by a narrow valley which is traversed by the Kewari Nala is extending in N-S direction along the entire length of the adjoining block. The rise in topography on either side of valley is marked by small hillocks. The maximum ground elevation of 202m is noticed in the eastern part of the block near Triangulation Station JT-21. The lowest ground level of 114m is in the Kewari nala near the southern boundary of the adjoining block.

The Chuperbhita Coalfield is exposed along the valleys formed by the Gumani River and its tributaries. The area shows an undulating topography. The general slope of the valley is towards east. To the north and south of this valley high hills of Traps are noticed, however, in the eastern part the Traps are deposited at the valley level (about 85m Level). The highest point on the Traps hill is 485m in the southern part of the area (Topo No.72P/6), while the lowest point is 85.38m RL near borehole RCH-26.

The Gumani River flows through the block almost east-west and provides the main drainage channel to the area. This is a perennial river and its catchment area is spread over about 1096 sq.km. A number of seasonal nalas flowing from the trap hills feeds the Gumani River. RL of the Gumani Barrage is 50.63m (As per Gumani Barrage Project, Irrigation Department Report).

Artesian flow of water at high pressure was encountered in borehole Nos. RJC-2, RJC-3, RJC-4 and RJC-8. The borehole RJC-1 at Simlong drilled earlier also encountered artesian conditions at depths of 87 m. and 106m. Artesian conditions were noticed at a depth of 303 m. in RJC-2 and at 360 m. in RJC-3. In borehole RJC-8, artesian condition was recorded at 106 m. and 184m. depth. Evidently, the major aquifer was a medium to coarse grained sandstone unit underlying the seam III. The gentle inclination of the beds coupled with adequate re-charge possibilities from the surrounding trappean hillocks have contributed to the unique geohydrological conditions in the basin. Locally other aquifers have

also given rise to artesian conditions, as in the case of RJC-4 where the roof sandstone of seam XII acted as the main water-bearing strata.

5.0 CLIMATE AND VEGETATION

The area under investigation experiences a typical tropical weather. During summer (May-June), the temperature sometimes rises above 42°C and in winter the mercury drops down to a level as low as 4°C. The average annual rainfall is 134 Cm. (Source Gumani Barrage Project booklet) in the area. During monsoon maximum rainfall is experienced from June to September.

There different water bodies like river, nallas, ponds etc.; data available from the adjoining area indicate that the water table in this region varies from 1.50 m. to 12.00 m. Artesian conditions have not been observed in any of the boreholes drilled in the block.

Vegetative cover is confined to the slopes of the trap hills located in the northern part of the block. Trees commonly found to occur are Sal, Mahua, Asan etc. A small population of bears, wild boars, rabbits and snakes are found in the sparse jungles.

6.0 GEOLOGY

6.01 Regional Geology:

A group of detached coal prospects occurring between the latitudes 24°15'00"(N) to 25°17'23"(N) and longitudes 87°18'00" E to 87°34'30" E have been referred to as the Rajmahal Coalfields. These coal prospects are aligned in a north-south direction with the Pirpainti-Barahat Coal Basin occurring in the northernmost part followed successively southward by the Hura, Chuperbhita, Panchwara, Mahuagarhi and Brahmani Coal basins. Vast expanses of Gondwana sediments underlie the Rajmahal Trap/Gangetic Alluvium of the region. The south-western extension of the Gondwana basin has been established as far away as Galsi (latitude 23°20'(E) and longitude 87°42'(N)) where the coal bearing Barakars have been countered in deep boreholes drilled by the G.S.I. In the east, the extension of the Rajmahal Trap overlying Triassic sequence has been established by geophysical survey and exploratory drilling by the G.S.I. In the Trans-Ganga area, near Purnea (latitude 25°48' (E) and longitude 87°31'(N)) the Gondwanas have been intersected in a borehole drilled by the Oil and Natural Gas Commission (ONGC) 1600 m. below the surface (GSI Buletin, Sr. A, No. 45, Vol.-IV, Part I, 1987; Coal Resources of Bihar by C.S. Raja Rao). The generalized geological sequence (after GSI, referred to above) as manifested in the Rajmahal Coalfields is presented in Table-II.

TABLE-II: Generalised Geological Sequence in Rajmahal Group of Coalfields (After G.S.I., 1987)

Age	Formation	Lithology	Thickness
Recent to Sub-Recent	Alluvium		Upto 80 m.
Upper Tertiary		Friable, immature coarse to medium grained sandstone, gravel, pebble beds, subordinate greenish silt and	107 m.
-----	-----	-----Unconformity-----	-----
Lower Cretaceous	Rajmahal Traps and Intertrappeans.	Flows of basalt, pitchstone and inter-trappean beds (sandstone, shale	600 m.
-----	-----	-----Unconformity-----	-----
Upper Triassic	Dubrajpur	Pebbly sandstone, coarse to medium grained sandstone, red siltstone.	60-250 m.
-----	-----	-----Unconformity-----	-----
Lower Triassic	Panchet	Green and purple clay and soft fine grained sandstone.	+ 900 m.
-----	-----	-----Unconformity-----	-----
Lower Permian	Barakar	Coarse to medium grained sandstone, pebbly sandstones, grey shales, clay and coal seams.	250-550 m.
-----	-----	-----Unconformity-----	-----
Upper Carboniferous to Lower Permian	Talchir	Tillite, fine to medium grained sandstone, olive green shale.	
-----	-----	-----Unconformity-----	-----
Precambrian		Basic rocks, amphibolites, bands of quartzite, limestone, gneisses and granites.	

6.02 Geology of the Block:

As the Name suggests, West of Chuperbhita Block is located in the western part of the Chuperbhita Basin, it is flanked by Jitpur Block, Simlong Block and Chuperbhita U/G Block on the North-western, South-Western and Eastern side respectively. As such many of the lithounits of Chuperbhita Basin are found to be present within the block. The tentative extent of the Karharbari formational contact has been marked in the Plan (After G.S.I., 1987). The Metamorphic formational boundary is situated adjacent to the South_Western Boundary of the West of Chuperbhita Block.

The generalized geological sequence of West of Chuperbhita Block is established on the basis of geological mapping as well as sub surface data obtained by drilling in the adjoining blocks and is as follows (Table III).

TABLE –III: Generalised Geological Sequence in Chuperbhita Block(s) (After G.S.I., 1987)

<u>Lithology</u>	<u>Formations</u>	<u>Age</u>
Soil, sand and clay	Alluvium/soil (16.65 m.)	Recent to Sub-recent.
Basalts, shales and sandstones	Rajmahal Traps and intertrappeans	Lower Cretaceous
Medium to coarse grained sandstones and clays	Dubrajpur	Lower Triassic
Medium to coarse grained .sandstones, shales and coal seams.	Barakar	Lower Permian
Greenish sand-stones and shales.	Talchir	Late Carboniferous to Early Permian.
Amphibolite, bands of quartzites, gneisses, schists and granites	Metmorphic	Pre cambrian

6.03 Geological Structure:

The geological structure of the West of Chuperbhita Block is apparently a simple one as evidenced from the sparse sub-surface data. The present availability of data is quite inadequate to arrive at any conclusive structural interpretation. Not only is the density of boreholes within the block is very low but also scope of making field observation was limited due to presence of monotonous surficial cover of soil/alluvium. Hence, the strike and dip of beds, attitude of faults, position of incrop of coal seams etc., as described subsequently, are likely to undergo appreciable modifications in the block if additional data are generated consequently upon detailed exploration. However, the broad structural interpretation presented in this documentation is in conformity with regional geological set up of the area, as described below.

On the basis of sub-surface data and geological mapping structure of Chuperbhita Coalfield has been deciphered. The strike of the formation is almost N-S in the major part of the basin, but in Jitpur OCP strike of formation varies from NE-SW to NW-SE. In the Simlong OCP Blocks NW-SE strike is observed. On the basis above observation on adjacent blocks, it can be inferred that the strike of the coal seams in the central and northern part of the block is almost N-S with dip towards East, whereas the strike swings to NW-SE direction at the southern part of the identified block with dip towards NE. The dip of the formation varies from 3° to 15° towards east in the majority of the block area and NE at the south.

Chuperbhita basin is structurally a less disturbed area. Two sets of faults are observed in Chuperbhita basin. One set of faults is trending E-W to NW-SE, while the other set is trending NNW-SSE to N-S. Faults trending EW to NW-SE are major in magnitude while the other set of faults is minor.

7.0 COAL SEAMS

On the basis of exploration carried out in the Chuperbhita Block twenty-two (22) persistent coal seams have been identified. In general, seams XV, XIV, XIII, L-5, XII, XI, X, L-4, IX, VIII, VII, VI, V, IV(TOP), IV(BOT), III(TOP), III(BOT), L-3, II, L-2, L-1 and I. Except seams L-1, L-2, L-3, L-4, L-5 & IV(TOP) ; all the seams are quite consistent.

However, as a traverse is made to the North Western Jitpur Block it is observed that several seams have outcropped and only *Twelve Seams* are still persistent (VII, VI, V, IV (BOT), III (TOP), III (BOT), L-3, II, L-2, L-1 and I (TOP, MID, BOT)). It may be inferred therein that most of the seams that have outcropped while traversing westwards from the Chuperbhita U/G Block to the Jitpur Block, have done so within the West of Chuperbhita Block and their locations can be confirmed with further course of exploration.

The range of variation in thickness of coal seams and their intervening parting as encountered in the boreholes of adjacent blocks have been furnished in Table IV:

TABLE – IV: Details of Coal Seam that may be encountered in West of Chuperbhita block, Rajmahal Coalfield

SEAM NO.	ROOF DEPTH OF OCCURANCE (m)		THICKNESS (m)
XI	11.00	27.30	2.56
PARTING			3.40
X	12.66	32.16	2.25-3.09
PARTING			53.20
IX	21.43	108.48	0.33-1.70
PARTING			9.32-22.82
VIII	22.50	122.73	1.20-6.00
PARTING			14.65-33.03
VII	29.59	30.28	0.47-1.35
PARTING			19.60-21.61
VI	43.71	55.80	0.31-4.60
PARTING			10.69-14.14
V	61.10	72.13	3.04-5.64
PARTING			18.90-29.47
IV(BOT)			0.10-2.08
PARTING			20.00
III(TOP)	20.69	99.40	0.18-1.45
PARTING			2.00-7.44
III(BOT)	24.83	129.57	0.34-1.61
PARTING			14.68-14.99
L-3	47.36	149.56	0.11-1.33
PARTING			3.12-7.81
II TOP UP SPLIT	27.29	164.05	1.25-11.30
PARTING			1.01-5.13
II TOP LWR SPLIT	31.51	71.70	0.13-3.12
Parting from L-3			9.07
II TOP	47.96	89.51	5.36-10.46
Parting from II TOP . & II TOP LWR Split			3.14-6.49
II BOT	16.50	166.01	0.14-1.87
Parting from L-3			----
II COMB.	73.53	141.39	13.03-13.99
Parting from II COMB. & II BOT			2.15-13.59
L-2	24.03	176.30	1.29-3.74
			1.28-8.94
L-1	122.24	185.20	0.2-4.18
Parting from II COMB. & II BOT			4.42
L-2 & L-1 COMB.			7.14
Parting from L-2 & L-1 COMB OR L-1			6.77-13.95
I TOP	25.60	202.20	3.87-9.25
			7.31-9.48
I TOP+MIDDLE			4.59-9.80
Parting from I TOP			0.34-3.13
I MIDDLE	101.00	194.73	0.12-5.77
			1.58-2.69
I BOT+MIDDLE	42.50	98.87	2.33-6.92
Parting			0.37-6.03

From I MIDDLE TOP+MIDDLE			
I BOT	33.20	206.16	0.05-2.13
PARTING From L-2 & L-1 Or L-1			6.97
I COMB.	36.06	49.10	12.58-14.46
			276.96
TALCHIR			12.32

The dominant grade of Coal in the proposed block varies from **G8-G10**.

8.0 **EXPLORATION SCHEME:**

8.1 Drilling:

Drilling of approximately **2200 m** in **09** boreholes has been proposed in 1600x1600 m grid for the West of Chuperbhita Block Block. The depth of intersection for Seam I has been proposed from 170.00 m to 410.00 m at minimum to maximum range. (Table V)

TABLE-V: Depth of Proposed Boreholes in West of Chuperbhita block, Rajmahal Coalfield

<u>Sl. NO.</u>	<u>Proposed Borehole No.</u>	<u>APPROXIMATE DEPTH(m)</u>	<u>REMARKS</u>
1	PBH-01	230	
2	PBH-02	405	
3	PBH-03	300	
4	PBH-04	215	
5	PBH-05	60	till Metamorphic formation
6	PBH-06	250	
7	PBH-07	160	
8	PBH-08	260	
9	PBH-09	320	
Total		2200.00	
Grand Total		2200.00	

In view of the unconsolidated nature of Tertiary sediments and the extremely hard Rajmahal Trap which causes problem in the drilling, appropriate technology & combination of drilling method to be adopted to complete the project within the time schedule.

Time Schedule of Completion of Project- 12 Months from sanction of project.

8.2 Laboratory Studies:

Band by Band Analysis, overall analysis, special tests & petrographic studies will be carried out on coal samples.

8.3 Quantum of Work Proposed:

Details of proposed work for detailed exploration for coal in West of Chuperbhita block is given below in Table-VI.

TABLE-VI : QUANTUM OF WORK

S.No	Activity	Quantity
1.	Geological Mapping	24.57 sq.km
2.	<u>Drilling:</u>	
	i) No. of Boreholes	09 BHs.
	ii) Meterage	2200m
3.	i) Levelling and Triangulation	As per requirement
	ii) RL and Co-ordinates	09 BHs.
4.	Drill Core Logging	2200 m
5.	Geophysical Logging	09 boreholes; 2200m
6.	<u>Chemical Analysis:</u>	
	i) Band by Band	650 samples
	ii) Overall	220 samples
	iii) Calorific Value	220 samples
7.	Special Tests	15 samples
8.	Petrographic Studies	15 samples
9.	Time Schedule	12 months

9.0 LIMITATIONS

1. Out of the Total area 24.57 Sq km (approx.) under exploration 95% is Open Mixed Jungle.
2. Some of the boreholes may require shifting due to non-approachability due to hills / gullies / villages/ forest cover, geological structure etc.
3. As the proposed meterage is completely based on the tentative structure as per regional reports and data of adjoining blocks, actual meterage may vary during course of exploration.
4. The tentative R.L. of every proposed borehole point was taken from Google earth i.e., tentative and may change at the time of actual survey.
5. The Resource estimated may vary greatly because the overall thickness of seam across the block cannot be delineated without further course of exploration and several seams are expected to have outcropped across the block.

10.0 LIST OF PLATES:

Following plates are enclosed with the proposal:

1. Proposed Borehole Locations on Formation Plan
2. Proposed Borehole Locations with boreholes of adjacent blocks
3. Graphic logs of boreholes of adjacent Jitpur, Chuperbhita and Simlong Block
4. Proposed Borehole Locations on Topographical map.

Summary of proposal for Preliminary Exploration (G-3) for coal in in “West of Chuperbhita” Block, Rajmahal CF, District Godda, Jharkhand

The block covers an area of 24.57 sq.km. It is included in the Survey of India Toposheet No.72 P/5 & P/6 (1:50000). The block falls under the administrative jurisdiction of Godda district, Jharkhand.

The bounding geographical co-ordinates of the block defined are as follows:

Latitude : **24°43'4.719"N to 24°47'58.273"N**
Longitude : **87°24'35.335"E to 87°28'48.025" E**

Generalised Geological Sequence in West of Chuperbhita Block is as follow-

Formations	Lithology	Age	Thickness Range (m)
Alluvium/soil	Soil, sand and clay	Recent to Sub-recent.	10-25m
Rajmahal Traps and intertrappeans	Basalts, shales and sandstones	Lower Cretaceous	30-60m
Dubrajpur	Medium to coarse grained sandstones and clays	Lower Triassic	40 – 50m
Barakar	Medium to coarse grained sandstones, shales and coal seams.	Lower Permian	400-500m
Talchir	Greenish sand-stones and shales.	Late Carboniferous to Early Permian.	40 – 50m
Metmorphic	Amphibolite, bands of quartzites, gneisses, schists and granites	Pre cambrian	-

The general strike of the beds is N-S with dip towards east, in the northern part of the block the strike swings to NNE- SSW while in the southern part the trend is NW-SE. In general, the dip of the strata in the northern half of the block 3° while in the southern half the dip 15° or so. In the central part of the block the average dip of the beds is 6°.

On the basis of exploration carried out in the adjoining Chuperbhita Underground Block, Twenty Five (22) coal seams have been identified. In general, namely, XI , X, IX, VIII, VII, VI, V, IV(TOP), IV(BOT), III(TOP), III(BOT), L-3, II TOP UPPER SPLIT, II TOP LOWER SPLIT, II TOP, II BOT, II COMB., L-2 , L-2 & L-1 COMB. L-2, L-1, and I (TOP,MID,BOT).However, as a traverse is made to the North Western Jitpur Block it is observed that several seam have outcropped and only Twelve Seam are still persistent (VII,

VI, V, IV(BOT), III(TOP), III(BOT), L-3, II, L-2, L-1 and I (TOP,MID,BOT)). ; All the seams are quite consistent.

Coal seam sequence likely to be encountered in the proposed block is tabulated below.

SEAM NO	ROOF DEPTH OF OCCURANCE (m)		THICKNESS RANGE (m)
	FROM	TO	
XV	70.45	107.52	0.14-1.90
XIV	101.00	136.85	2.00-4.45
XIII	134.95	176.95	4.60-4.80
L-5			1.06-2.31
XII	200.91	245.26	6.39-7.41
XI	208.11	252.98	4.50-4.74
X			0.46
L-4			0.55-1.24
IX	294.65	352.34	0.3-1.39
VIII	318.25	378.33	6.75-8.19
VII	85.64	418.44	3.15-8.55
VI	106.30	442.56	0.85-4.29
V	194.71	458.32	3.10-5.88
IV(TOP)	155.04	506.20	0.19-3.13
IV(BOT)	160.05	511.06	0.30-4.02
III(TOP)			0.15
III(BOT)	461.10	537.87	0.45-2.50
L-3	183.00	559.14	0.29-1.25
II	194.13	570.04	1.29-2.22
L-2	519.80	580.50	0.08-0.10
L-1		584.80	
I		560.00	7.00

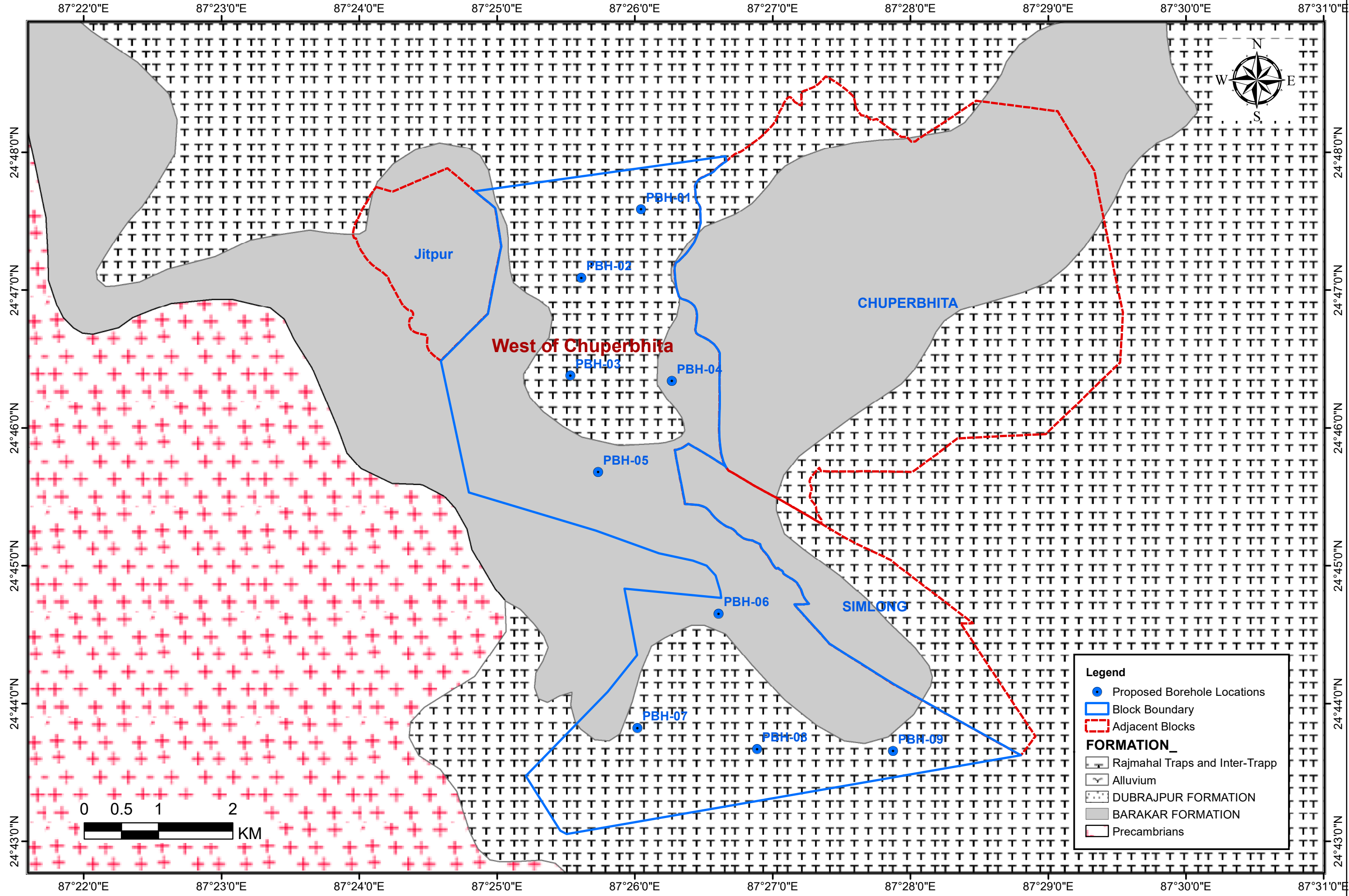
The dominant grade of coal in the block is likely to be in G8 to G10 range.

The exploration is proposed for G3 stage as per ISP 2022 in the block for assessing the resource, grade and to establish the structure/behavior of coal seams for mining potential. The quantum of work proposed for G3 stage of exploration is as follow-

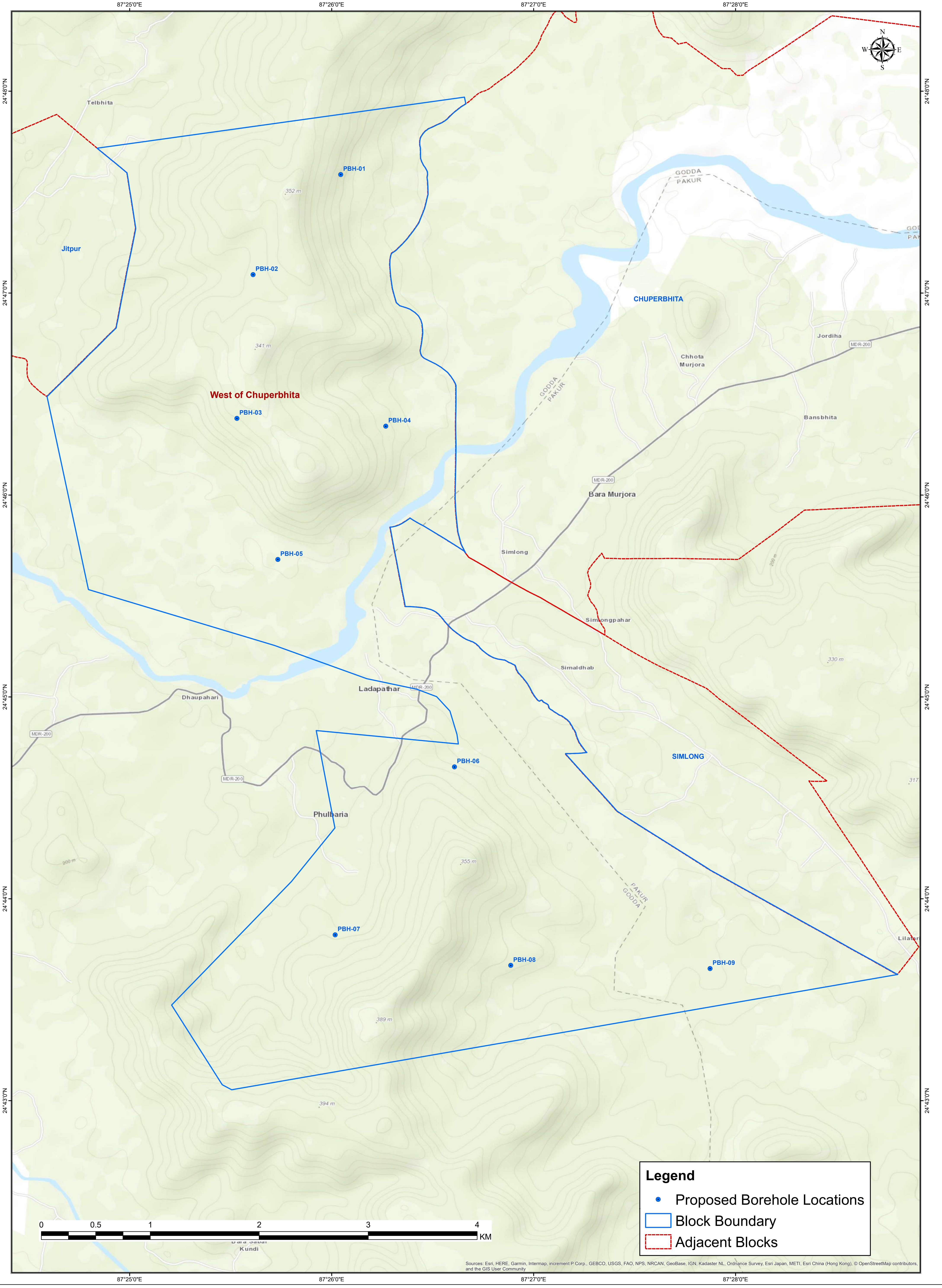
Quantum of Work

S.No.	Activity	Quantity
1.	Geological Mapping	24.57 sq.km
2.	Drilling:	
	i) No of Boreholes	09 BHs.
	ii) Meterage	2200m
3.	i) Levelling and Triangulation	As per requirement
	ii) RL and Co-ordinates	09 BHs.
4.	Drill Core Logging	2200 m
5.	Geophysical Logging	9 boreholes; 2200m
6.	Chemical Analysis:	
	i) Band by Band	650 samples
	ii) Overall	220 samples
	iii) Calorific Value	220 samples
	Special Tests	15 samples
7.	Petrographic Studies	15 samples
8.	Time Schedule	12 months

Geological Formation Plan of West of Chuperbhita Block, Rajmahal Coalfield



Topographical Plan of West of Chuperbhita Block, Rajmahal Coalfield



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), © OpenStreetMap contributors, and the GIS User Community

