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

GURWANI

NMET FUNDED PROJECT

MAIN BASIN, SINGRAULI COALFIELD

DISTRICT– SINGRAULI, MADHYA PRADESH

सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीच्यूट लिमिटेड
(कोल इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
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CORPORATE IDENTITY NUMBER – U14292JH1975GOI001223

DECEMBER - 2021

PROPOSAL FOR PRELIMINARY EXPLORATION FOR COAL (G-3 STAGE) IN GURWANI BLOCK, MAIN BASIN, SINGRAULI COALFIELD DISTRICT-SINGRAULI, MADHYA PRADESH.

1.0 INTRODUCTION

1.1 The Singrauli Coalfield is situated at the northern most part of the Son-Mahanadi Master Basin in Central India, covering an area of about 2200 sq.km. It is located mainly in Singrauli district of Madhya Pradesh with small portion falling in Sonbhadra district of Uttar Pradesh.

1.2 Two techno-sedimentary domain, namely, Moher Sub-Basin on the east and Main Basin in the west have been identified in Singrauli Coalfield. The larger part, Main Basin covers nearly 1900 sq.km. area, is partly explored while the Moher Sub-Bain, with an area of about 300 sq.km. is extensively explored and major opencast coal mines are all situated in this sub-basin.

1.3 Regional exploration in Main Basin of the Singrauli Coalfield was commenced by GSI in 1962 and still continuing.

1.4 The Gurwani Block is situated almost at the central portion of the Main Basin. It is surrounded by CBM exploration block on the north, Dongrital North on the west, Dongrital-II block on the south and part of Dhirauli Block on the eastern side.

1.5 The adjacent Dongrital and Dhirauli Blocks were explored in detail by MECL, whereas the Dongrital-II block was detailed explored by Geological and Mining Consultancy. Another block, named as Suliyari-Belwar, situated on the south-eastern tip of Gurwani block, was also explored in detail by MECL. Assuming the similar geological structure is present in the Guwani block, the concerned exploration scheme is prepared.

1.6 The available geological report explained that the general strike of the strata is NE-SW to ENE-WSW with dip direction towards north or north-west. Assuming the same orientation of the formations, the Gurwani Block, is present on the down dip side of with respect to Dongrital-II block and Dhirauli Block. The Gurwani Block is virgin, from exploration point of view.

1.7 The south-central part and some area in the north-eastern part of the block falls within the forest area of Mohanban Reserve Forest covering an area of about 15.50 sq.km.

1.8 The Gurwani block is located almost at the central area of Main Basin of Singrauli Coalfield. The area is covered in the toposheet no. 64 I/5 and 63 L/8. The area falls Singrauli district of Madhya Pradesh.

1.9 CMPDI has drawn the exploration scheme for preliminary exploration in the Gurwani Block involving 4950m of drilling in 9 boreholes.

2.0 OBJECTIVES

2.1 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 Dhirauli, Dongrital-II and Dongrital Blocks.
b) To establish the lay, disposition and potentiality of coal seams.
c) To assess the coal resource by G3stage of exploration in the block.

3.0 LOCATION

3.1 The Gurwani block has an area of about 19.08 sq.km. The area falls under the Survey of India toposheet no. 64 I/5 and 63 L/8

3.2 The area is bounded by the following co-ordinates

Latitude: 23° 58' 34.547" N and 23° 59' 14.744" N

Longitude: 82° 16' 9.673" E and 82° 19' 5.849" E

4.0 COMMUNICATION AND ACCESSIBILITY

4.1 The Block falls in Singrauli district of Madhya Pradesh, which is about 70 Km in South-West of Singrauli township and 50 km from Waidhan township, the district headquarter on Singrauli district.

4.2 The Waidhan-Sidhi SH-75 via Bargawan is the nearest state highway. Apart from that the block is approachable through all weathered road from Sarai, Sidhi and Singrauli.

4.3 The nearest railway station is Gajra Bahara on Katni-Chopan railway line. Sarai is another railway station near the concerned area.

4.4 However, the block is consist of network of PMGSY roads and forest roads. The villages Gorwani, Phatpani located within the block. Apart from that, Dhirauli, Bhalyatola, Pondi Dol, Khanuya Nawa etc. villages are present surrounding the block area.

4.5 The Singrauli township is connected to Katni (100 km), Satna (130km) and Varanasi (210km) by NH-7. The nearest airport is located in Varanasi.

4.0 PHYSIOGRAPHY AND DRAINAGE

4.1 The area exhibits a gentle undulating topography. Most of the area is covered by cultivation land and forest area of Mohanban Reserve Forest. However, small hillocks named as Gurwani Hill present at the north of the block but outside the concerned block area.

4.2 The approximate ground elevation is around 390.60 (Bh no. MJT – 31 of Dongrital block) to 455m (as per Geological Report of Dongrital-II block).

4.3 The main drainage system of the area is the Gopad river, which is a tributary river of Son river, situated on the south-western side of the block but out of the concerned area.

4.4 The westerly flowing Sukhiya nala is passing through the north-western part of the block and eventually drains into the Gopad river along with Hardul Nala.

4.5 Other seasonal nala contributing in to the Sukhiya nala is present within the block creating a dendritic type drainage pattern.

5.0 CLIMATE AND VEGETATION

5.1 The climate of the area is characterized by hot dry summer and well distributed rainfall in the monsoon season. The summer season begins from March to May with temperature rising upto $48^{O}C$ during the peak period. During the peak winter the temperature drops down below $10^{O}C$ in the night. The winter season commences in early November up to February with the mean daily minimum temperature of 8.1ºC in January The monsoon period extends from June to September with an average rainfall of 1132.7 mm.

5.2 The common flora in the area includes Sal, Jamun, Mahua, Imli, Tendu, Neem, Mango etc.

5.3 Agriculture is the main occupation of the people living in the area. Forest is the main land cover spread over an area of around 15.50 Sq km within the block. The major area is mainly covered by reddish yellow sandy soil and is low fertile in nature. Paddy, Wheat, Toovar, Chana, Jwar, Kodo, Sonari etc. are the major crops grown over the Paddy-plain in the area. Crop fields near wells, nalas are being irrigated round the year while remaining crops are rain feed.

6.0 BROAD GEOLOGICAL SET UP

6.1 Stratigraphic Sequence

The geological succession in this basin as per published report of MECL and Geological and Mining Consultancy in the study area are tabulated below :

GENERAL STRATIGRAPHIC SUCCESSION OF THE SINGRAULI COALFIELD

Age	Group	Formation	Lithology
Cretaceous		Intrusives	Dolerite dykes & Sills
Upper Triassic (?)	Upper Gondwana	Mahadeva	Coarse grains, ferruginous sandstone with bands of shale, clay and conglomerates.
Lower Triassic	Lower Gondwana	Panchet (?)	White, greenish white and pink micaceous, medium to coarse grained sandstone with red beds, greenish brown silty shales and conglomerates.
Upper Permian		Raniganj (215-403 m)	Fine grained sandstones and shales with coal seams including 134 m thick Jhingurdah seam
Middle Permian		Barren Measures (125-300 m)	Very coarse grained, ferruginous, sandstones, green clays & shales.
Lower Permian		Barakar (325-600 m)	Medium to coarse grained, sandstones, shales, clays and coal seams.
Upper Carboniferous to Lower Permian		Talchir (75-130 m)	Tillite, sandstones, siltstones, needle shales etc.
---------- Unconformity ----------			
Precambrian		Precambrian	Phyllites, quartzites, schists and gneisses.

Table 1: Generalized Stratigrpahic Succession of Singrauli Coalfield

7.0 GEOLOGY OF THE BLOCK

7.1 On the basis of Surface and Subsurface data of exploratory boreholes drilled by MECL and Geology and Mining Consultancy in the adjacent coal blocks, the generalized sequence of the different formations in the area under study is given below in Table 3.

STRATIGRAPHIC SUCCESSION OF THE BLOCK

Age	Formation	Avg. Thickness Range (m)	Lithology
Recent to Sub-recent	Soil	0.50m – 9.00	Reddish brown sandy soil
Cretaceous	Intrusives	1.50 – 30.00	Basic dyke & Sills
Middle Permian	Barren Measure	25.00 – 100.00	Medium to coarse grained kaolinised sandstones with shale
Lower Permian	Barakar	300.00- 420.00	Medium to coarse grained kaolinised sandstones with shale,clay, intercalations and coal seams
Upper Carbonaceous	Talchirs	>3.00 – 8.00	Tillite, fine grained sandstones siltstones (Greenish) needle shale

Table 2: Tentative Stratigraphic succession of Gurwani Block, Main Basin, Sinrauli Coalfield

8.0 REGIONAL STRUCTURE

8.1 The general attitude of the bedding in the Gurwani Block is likely to be NE-SW with dip direction towards NW, however the amount of dip and change in direction cannot be ruled out due to occurrence of any fault in the block. Towards south-eastern part, the strike changes towards ENE-WSW.

8.2 The interpretation of geological structure in Gurwani Block is based on the sub-surface data obtained from the boreholes drilled in the Dongrital, Dongrital-II and Dhirauli blocks coupled with regional structure.

9.0 SEQUENCE OF THE COAL SEAMS

9.1 In the adjacent blocks, there are 8 major coal seams, namely Seam VIII to Seam I in descending order, occurs in the Barakar Formation.

9.2 Detailed exploration in the adjacent Donrital, Dongrital-II and Dhirauli Block by MECL and Geology and Mining Consultancy has established the occurrence of eight major coal seams which are numbered VIII, VII, VI, V, IV, III, II and I younger to older in descending order from top/surface. The Seam-VII is mainly splitted into two: VII Top and VII Bottom, however, VII Middle is also reported. The Seam-III is also splitted into two: III Top & II Bottom Seams.

9.3 Apart from these seams, local coal seam bands are also reported from the adjacent blocks.

9.4 The sequence of coal seams likely to occur in the proposed block on the basis of boreholes drilled in adjoining block mainly comprises eight regional co-relatable seams. The details of coal seam encountered in the surrounding blocks are described in Table 3.

EXPECTED SEQUENCE OF THE COAL SEAM IN THE BLOCK
(Grades are indicative based on coal seam quality of surrounding blocks)

SEAM NO	Avg. Roof Depth of Occurrences (m)		Avg. Thickness (m)	Overall Quality of the Seam
	FROM	TO		
VIII	8.21	258.99	0.11 – 2.80	G11 – G13
Parting			12.00 – 30.00	
VII Top	12.40	296.78	0.50 – 2.50	G8 – G10
Parting			0.78 – 5.20	
VII Bottom	69.84	299.00	0.20 – 1.50	G7 – G9
Parting			12.00 – 30.00	
VI	27.47	318.45	0.10 – 2.50	G9 – G12
Parting			20.00 – 50.00	
V	64.17	392.81	0.50 – 1.20	G4 – G6
Parting			4.00 – 30.00	
IV	51.08	407.80	1.11 – 3.90	G6 – G8
Parting			2.85 – 14.00	
III Top	27.11	422.12	1.60 – 4.00	G6 – G8
Parting			0.50 – 6.50	
III Bottom	29.20	426.91	0.20 – 2.50	G4 – G6
Parting			4.00 – 45.00	
II	60.02	440.00	0.05 – 4.20	G4 – G6
Parting			20.00 – 40.00	
I	94.50	445.10		

Table 3: Expected sequence of the coal seams in the block

10.0 EXPLORATION SCHEME

10.1 Drilling:

Drilling of approximately **4950m** in **9** boreholes has been proposed in for the Gurwani Block. The tentative depth of the proposed borehole points are given below (Table 5).

DEPTH OF THE PROPOSED BOREHOLES IN GURWANI BLOCK, MAIN BASIN, SINGRAULI COALFIELD

APPROXIMATE METERAGE OF PROPOSED BOREHOLE POINTS IN GURWANI BLOCK, MAIN BASIN, SINGRAULI COALFIELD					
S. NO.	**P. POINT NO**	**TENTATIVE R.L.(m)**	**TENTATIVE F.R.L.(m) FOR SEAM VIII**	**APPROXIMATE DEPTH (m)**	**REMARKS**
1	P1	450	185	640	Up to Talchir
2	P2	450	215	610	Up to Talchir
3	P3	450	270	555	Up to Talchir
4	P4	450	210	615	Up to Talchir
5	P5	450	240	585	Up to Talchir
6	P6	450	295	530	Up to Talchir
7	P7	450	310	515	Up to Talchir
8	P8	450	365	460	Up to Talchir
9	P9	450	385	440	Up to Talchir
Grand Total (9 Boreholes)				**4950.00m**	
Note: Meterage of proposed boreholes may also vary due to, surface R.L., change in trend and throw amount of faults if any. Existence of faults cannot be ruled out.					

Table 4: Tentative borehole depth in the Gurwani Block, Main Basin, Singrauli Coalfield

All Boreholes are planned to be drilled up to the Talchir /Basementfor establishing the complete stratigraphic sequence in the region.

10.2 Geophysical Investigation:

- **2 D Seismic:** 2D seismic survey has been planned in the block in line with the proposed reform in coal exploration sector by Ministry of coals which suggests that the pace of exploration of coal & lignite should be enhanced by

suitably incorporating geophysical surveys in the exploration program under detailed exploration and to take up large demarcated area for surface and sub-surface exploration to know the possible occurrence of feasible resources under regional exploration / promotional exploration using geophysical techniques,

- For detailed mapping of the sub surface structures 2D seismic survey Profile lines are evenly distributed (400m x 800m) i.e. 400m line spacing along Dip and 800m line spacing along the strike direction, so as to have almost uniform coverage of the Seismic data of the whole block. Approximately 80 line km 2D seismic reflection and refraction survey is required in Gurwani block Main basin Singrauli CF to map the geological structure.

10.3 Laboratory Studies

Band by Band Analysis, Overall analysis, Special tests, Petrographic analysis, will be carried out on coal samples.

10.4 Quantum of Work Proposed

Details of proposed work for detailed exploration for coal in Gurwani block is given below in Table 6

QUANTUM OF WORK

S.No.	Activity	Quantity
1.	Geological Mapping	20.20 Sq km
2.	Drilling:	
	i) Boreholes	9 BHs.
	ii) Meterage	4950 m
3.	i) Levelling and Triangulation	As per requirement
	ii) RL and Co-ordinates	9 BHs.
	DGPS Survey	16 points (9 BHs & 7 Cardinal Points)
4.	Drill Core Logging	4950 m
5.	Geophysical Logging	9 boreholes 4950.00
6	2D seismic survey	80 Line Km
7.	Magnetic Survey	93 Line km
7.	Chemical Analysis:	
	i) Band by Band	550 Samples
	ii) Overall	270 Samples
	iii) Calorific Value	270 Samples
8	Special Tests	15 Samples
	Petrographic Studies	10 Samples
10	Time Schedule & project Cost	14 months & 11.92 crores

Table 5: Quantum of Work for reconnaissance exploration in Gurwani Block

11.0 LIMITATIONS

11.1 Some of the boreholes may require shifting due to non-approachability due to nalas/ villages/ forest cover, geological structure etc.

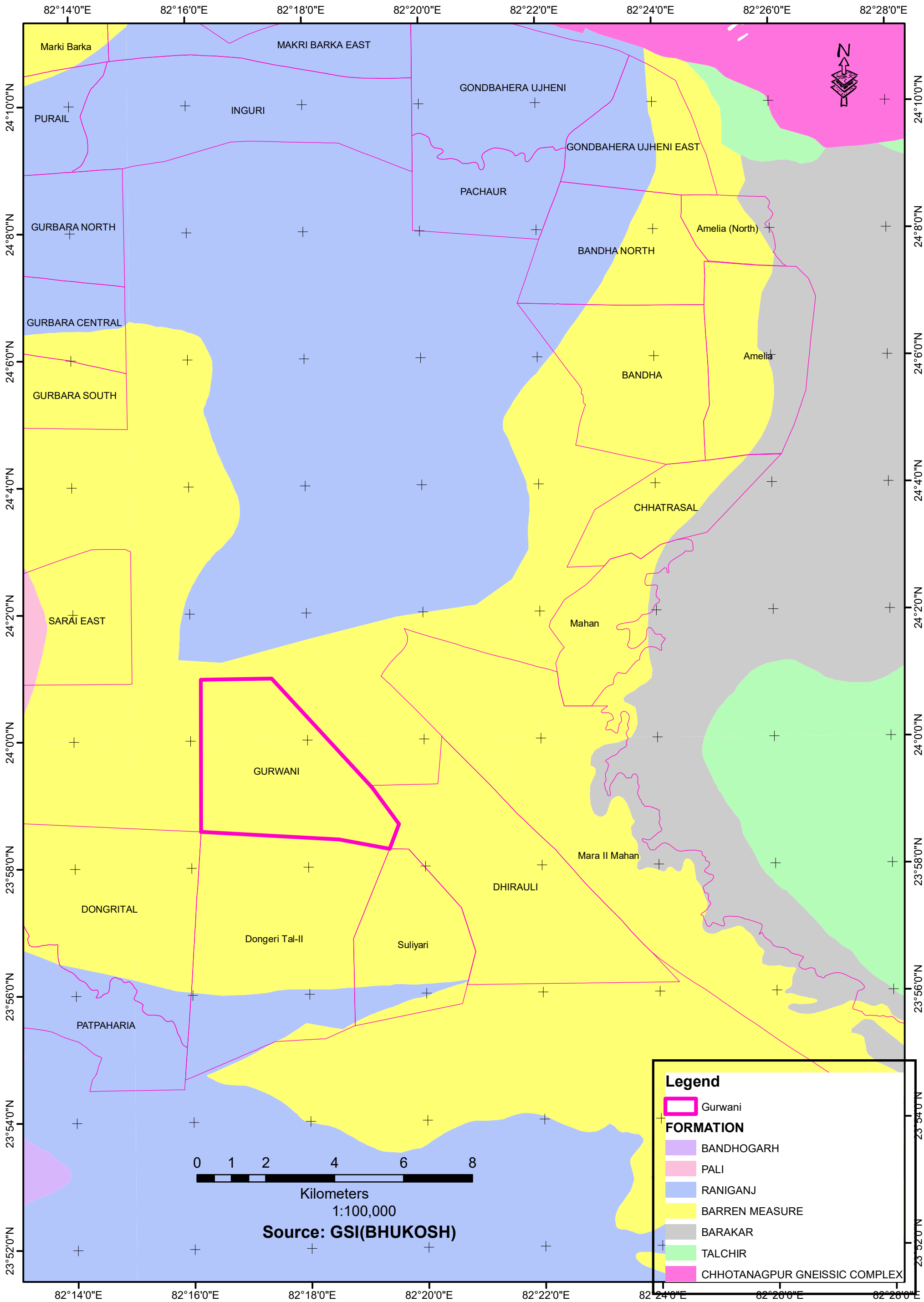
11.3 As the proposed meterage is based on the tentative structure as per geological reports and data of the adjoining blocks, actual meterage may vary during course of exploration.

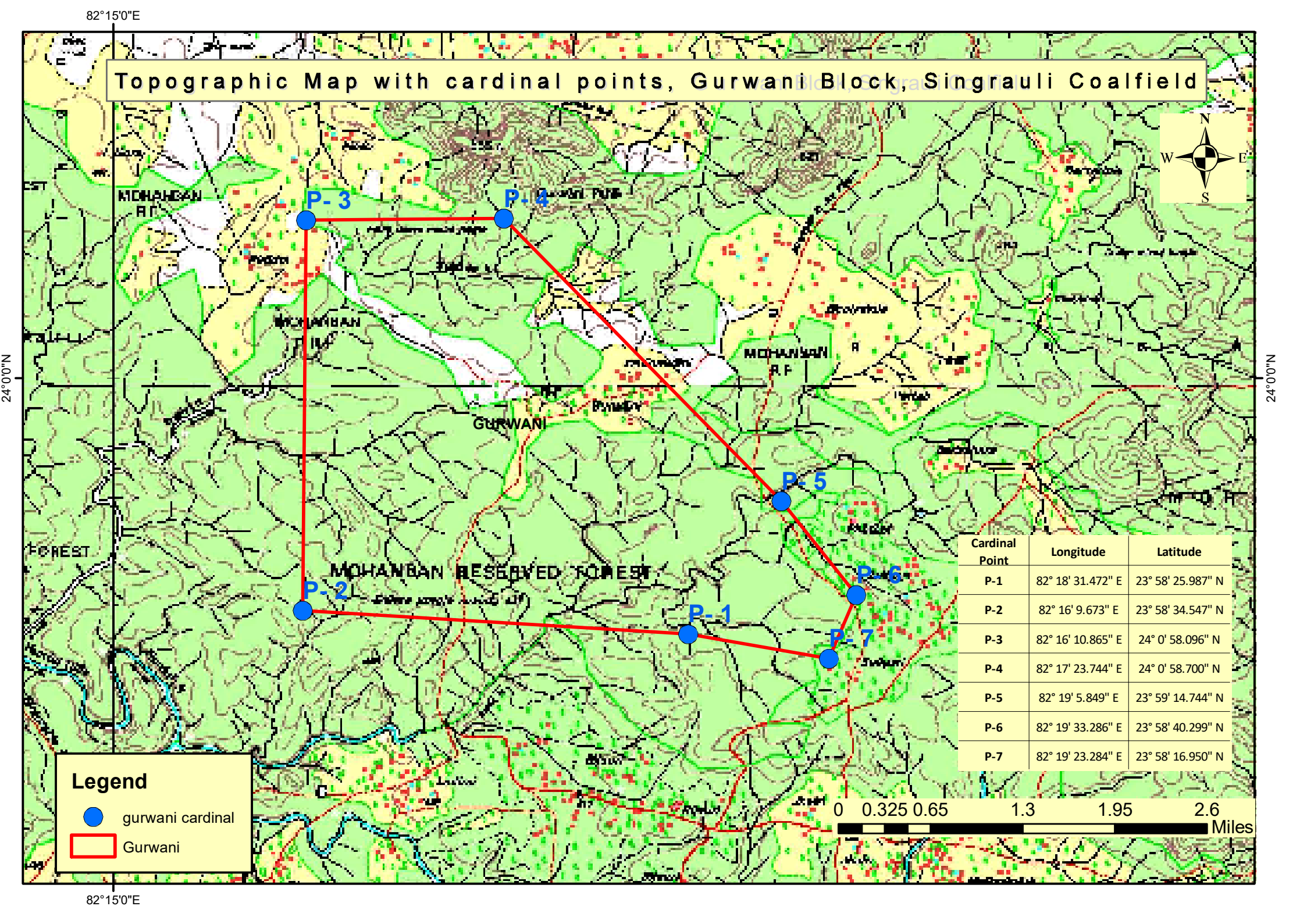
12.0 LIST OF PLATES

12.1 Following plates are enclosed with the proposal:

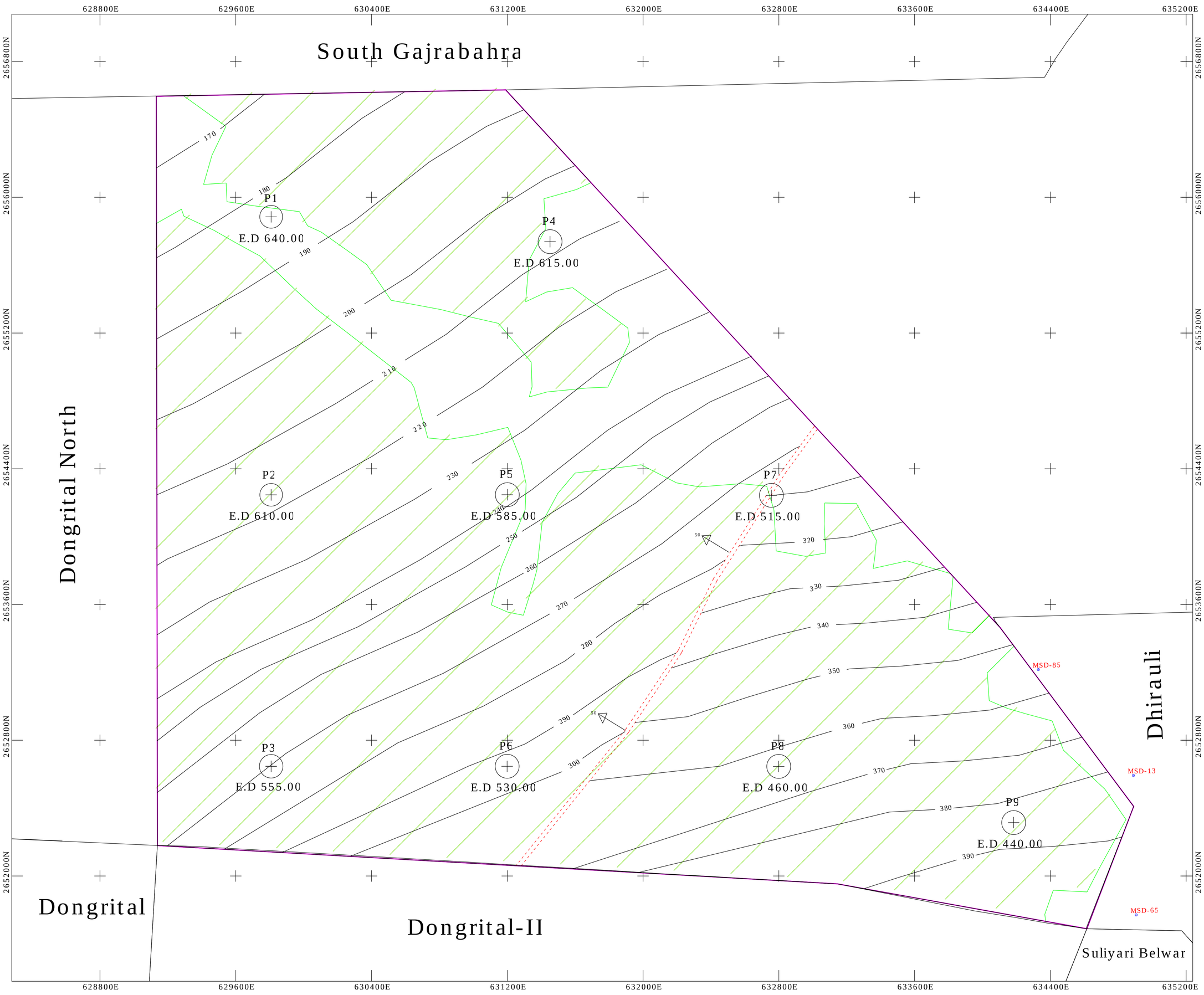
I. Location Plan of Gurwani Block
II. Borehole Location Plan & Floor contour plan (tentative).
III. Geological Plan
IV. Graphic logs of boreholes drilled by MECL.
V. Block location on Topographical map.
VI. 2D seismic survey lines in block boundary.
VII. Magnetic Survey lines

GEOLOGICAL MAP OF A PART OF SINGRAULI COALFIELD, MADHYA PRADESH





Cardinal Point	Longitude	Latitude
P-1	82° 18' 31.472" E	23° 58' 25.987" N
P-2	82° 16' 9.673" E	23° 58' 34.547" N
P-3	82° 16' 10.865" E	24° 0' 58.096" N
P-4	82° 17' 23.744" E	24° 0' 58.700" N
P-5	82° 19' 5.849" E	23° 59' 14.744" N
P-6	82° 19' 33.286" E	23° 58' 40.299" N
P-7	82° 19' 23.284" E	23° 58' 16.950" N



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P1
E.D 600.00
PROPOSED BOREHOLE POINTS WITH EXPECTED DEPTH

FOREST BOUNDARY

BLOCK BOUNDARY

EXPECTED FAULT LINE WITH THROW DIRECTION

270
EXPECTED FLOOR COUNTOURS

JOB TITLE

TENTATIVE FLOOR CONTOUR PLAN (SEAM VIII) WITH PROPOSED BOREHOLE LOCATION IN GURWANI BLOCK MAIN BASIN,SINGRAULI COALFIELD

	ACTIVITY	NAME	DESIGNATION	SIGN.	DATE
	APPROVED				
	RF 1: 10000				

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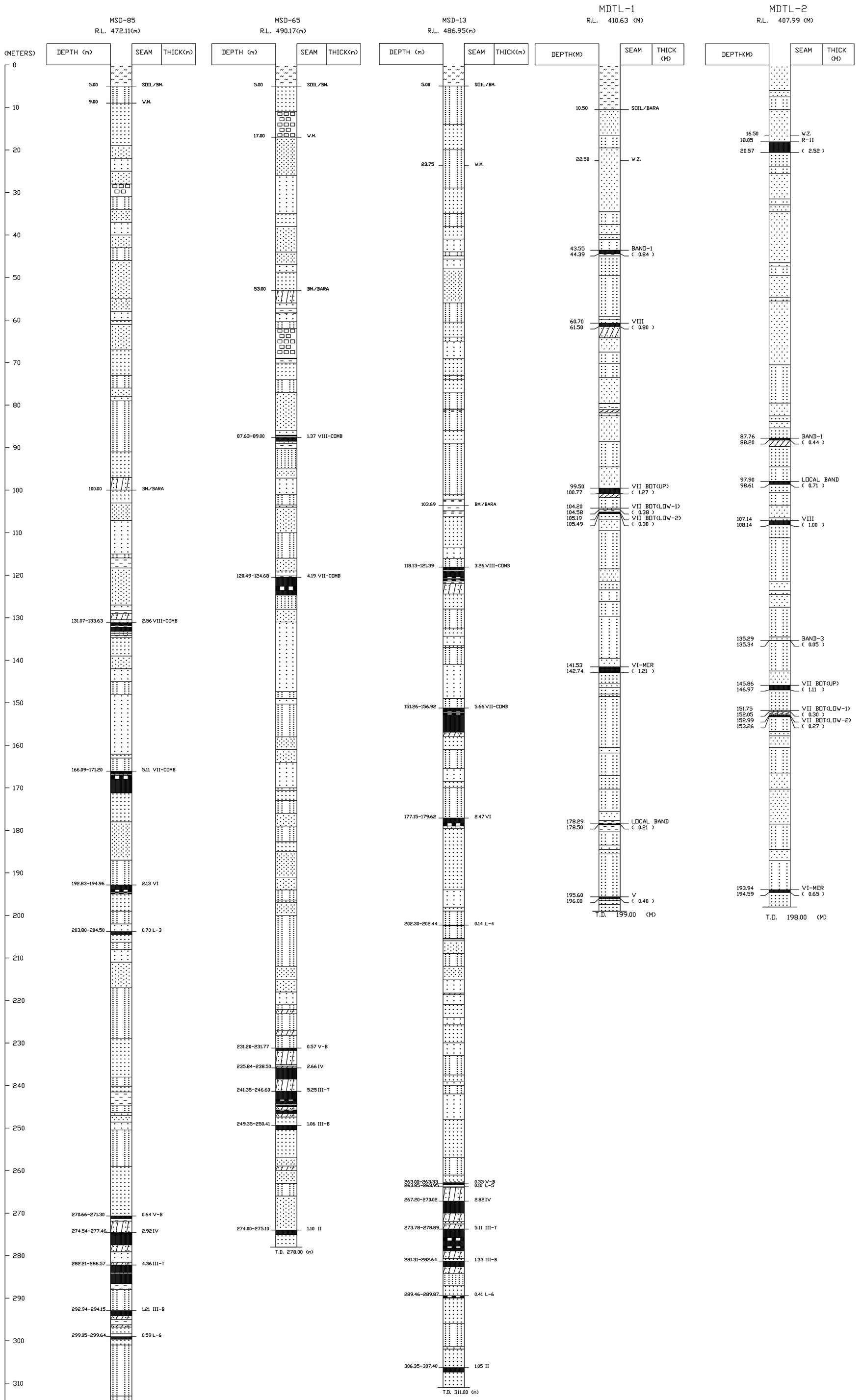

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- SOIL/ALLUVIUM
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- SHALE
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- ARENACEOUS SHALE
- SANDSTONE ARGILLACEOUS
- INTERCALATION OF SST AND SH
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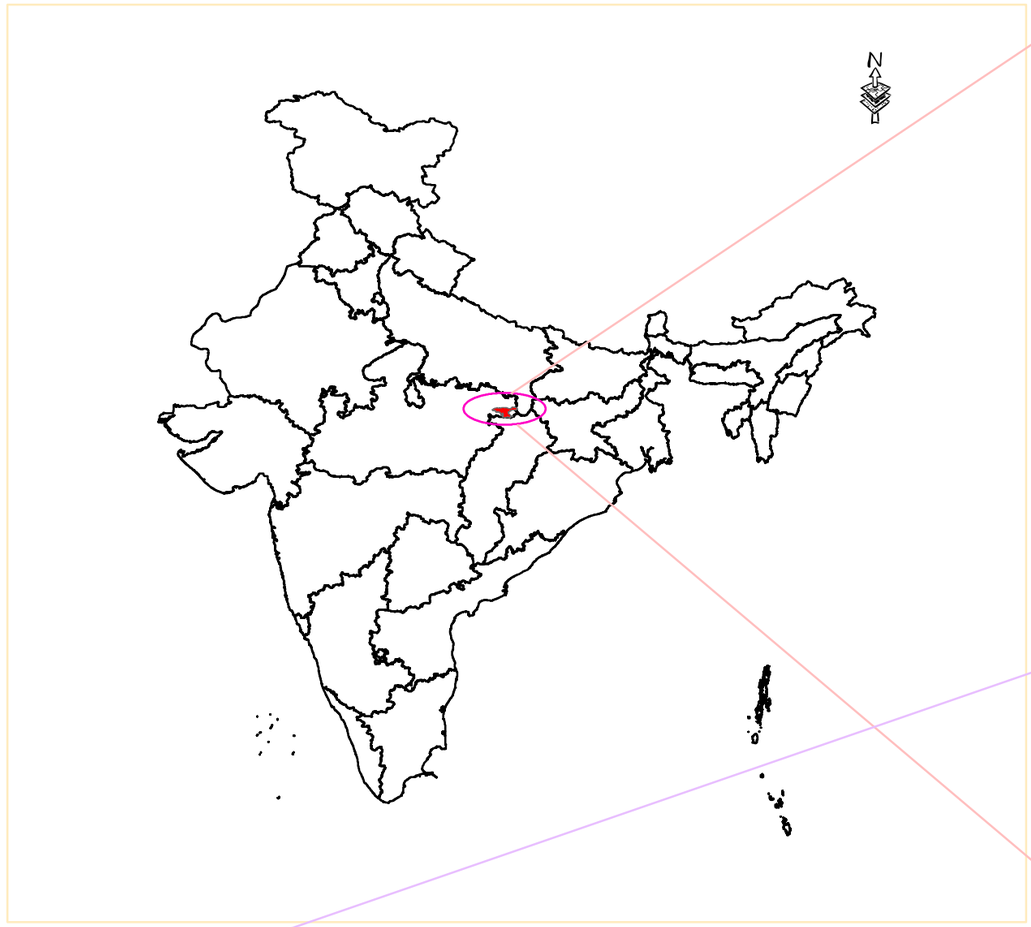
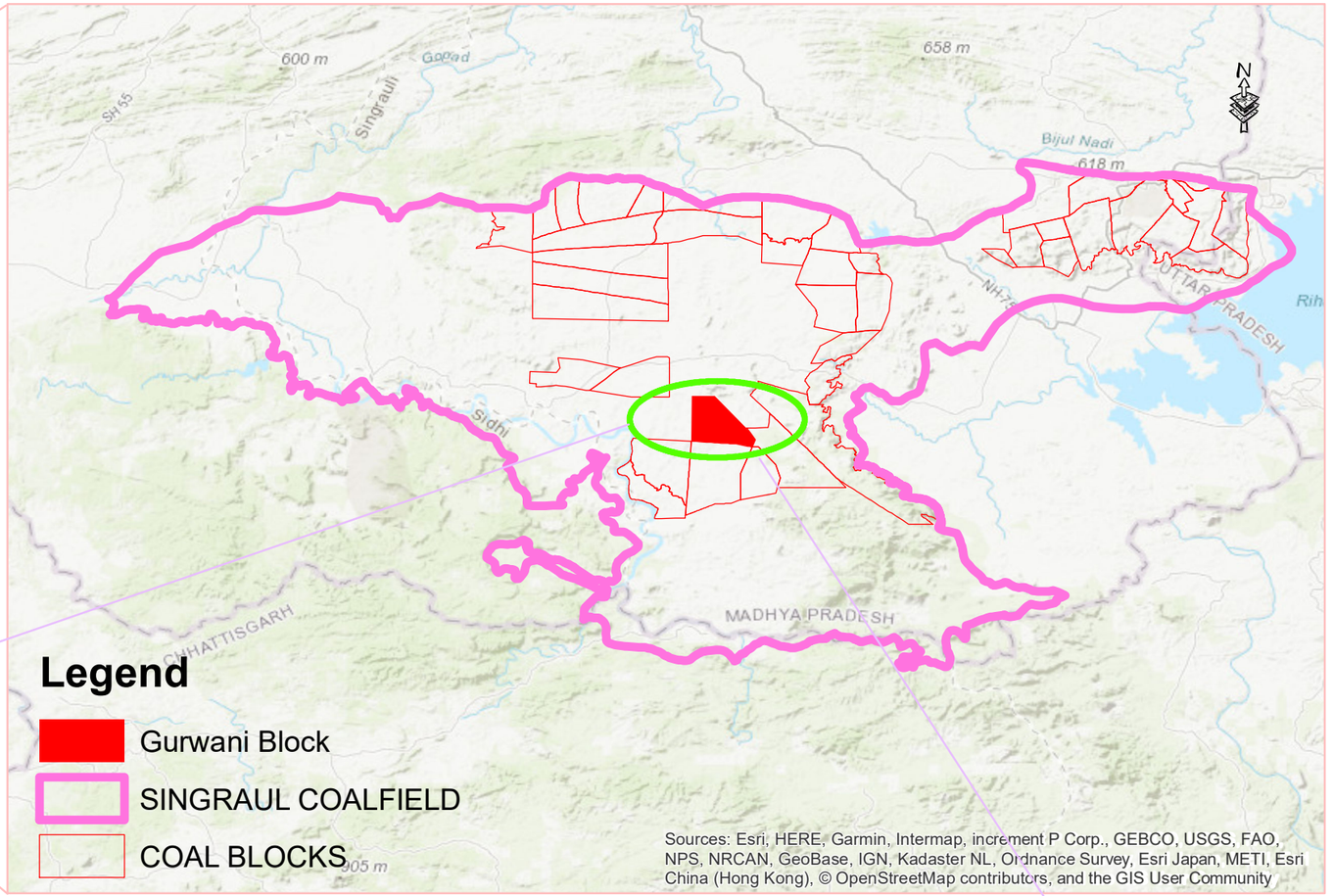
- COAL
- JHAMA/BAKED SC
- DOLERITE/Lamprophyre
- W.M WEATHERED MANTLE
- R.L- REDUCED LEVEL
- T.D. TOTAL DEPTH

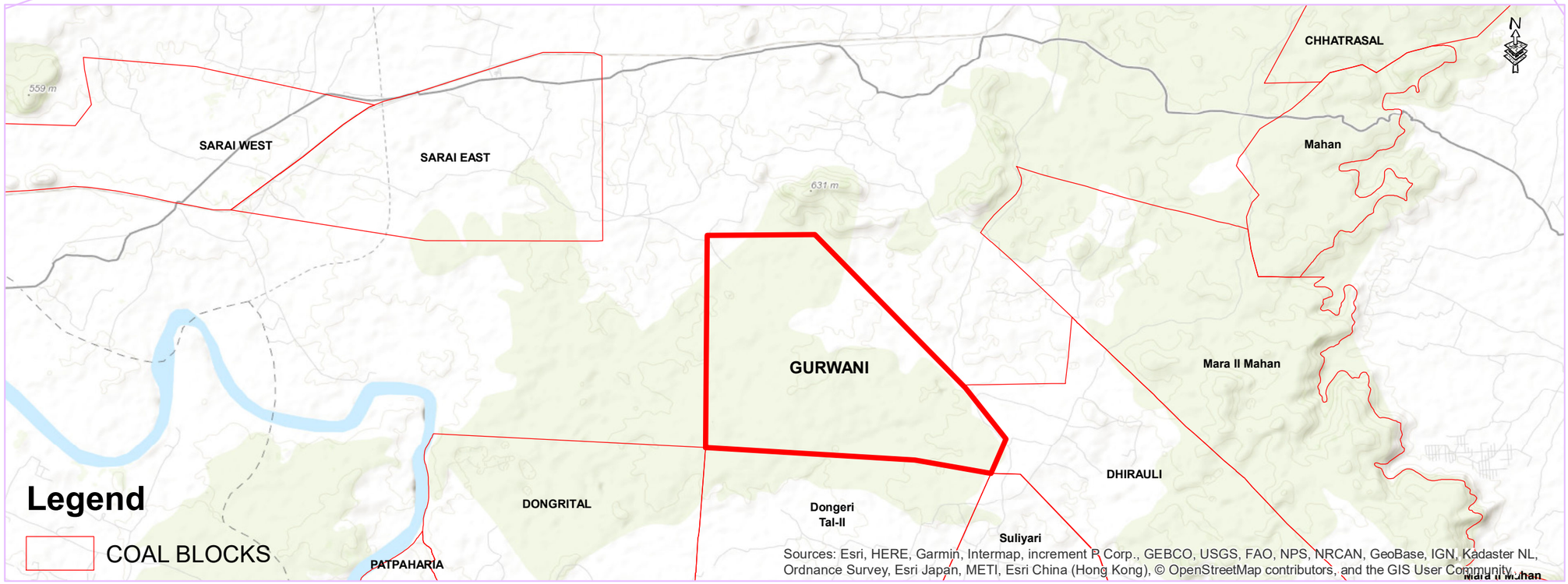
JOB TITLE: REPRESENTATIVE GRAPHIC LITHOLOGS OF ADJACENT BLOCKS OF GURWANI BLOCK
MAIN BASIN,SINGRAULI COALFIELD

	ACTIVITY	NAME	DESIGNATION	SIGN.	DATE
	PREPARED	PROSUN BANERJEE	Mgr(GEOLOGY)		
cmpdi A Mini-Ratna Company	CHECKED	S. K GUPTA	HOD(EXPLORATION)		
	APPROVED				
	RF 1: 500				

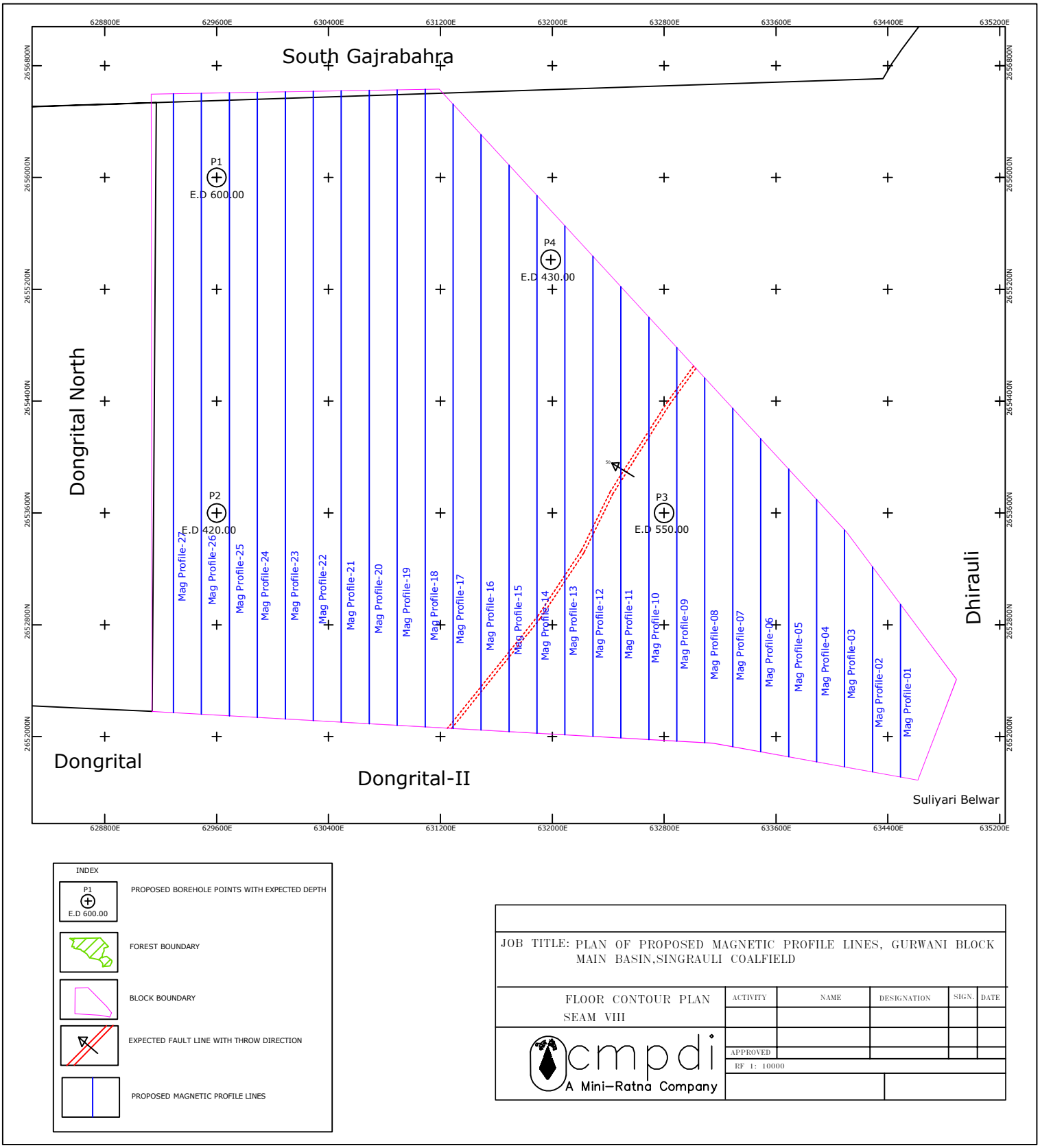
LOCATION MAP GURWANI BLOCK,SINGRAULI COALFIELD,MP, INDIA







ALL MAPS NOT TO SCALE



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- P1 E.D 600.00 — PROPOSED BOREHOLE POINTS WITH EXPECTED DEPTH
- FOREST BOUNDARY
- BLOCK BOUNDARY
- EXPECTED FAULT LINE WITH THROW DIRECTION
- PROPOSED MAGNETIC PROFILE LINES

JOB TITLE: PLAN OF PROPOSED MAGNETIC PROFILE LINES, GURWANI BLOCK MAIN BASIN,SINGRAULI COALFIELD

FLOOR CONTOUR PLAN
SEAM VIII

ACTIVITY	NAME	DESIGNATION	SIGN.	DATE
APPROVED				

RF 1: 10000

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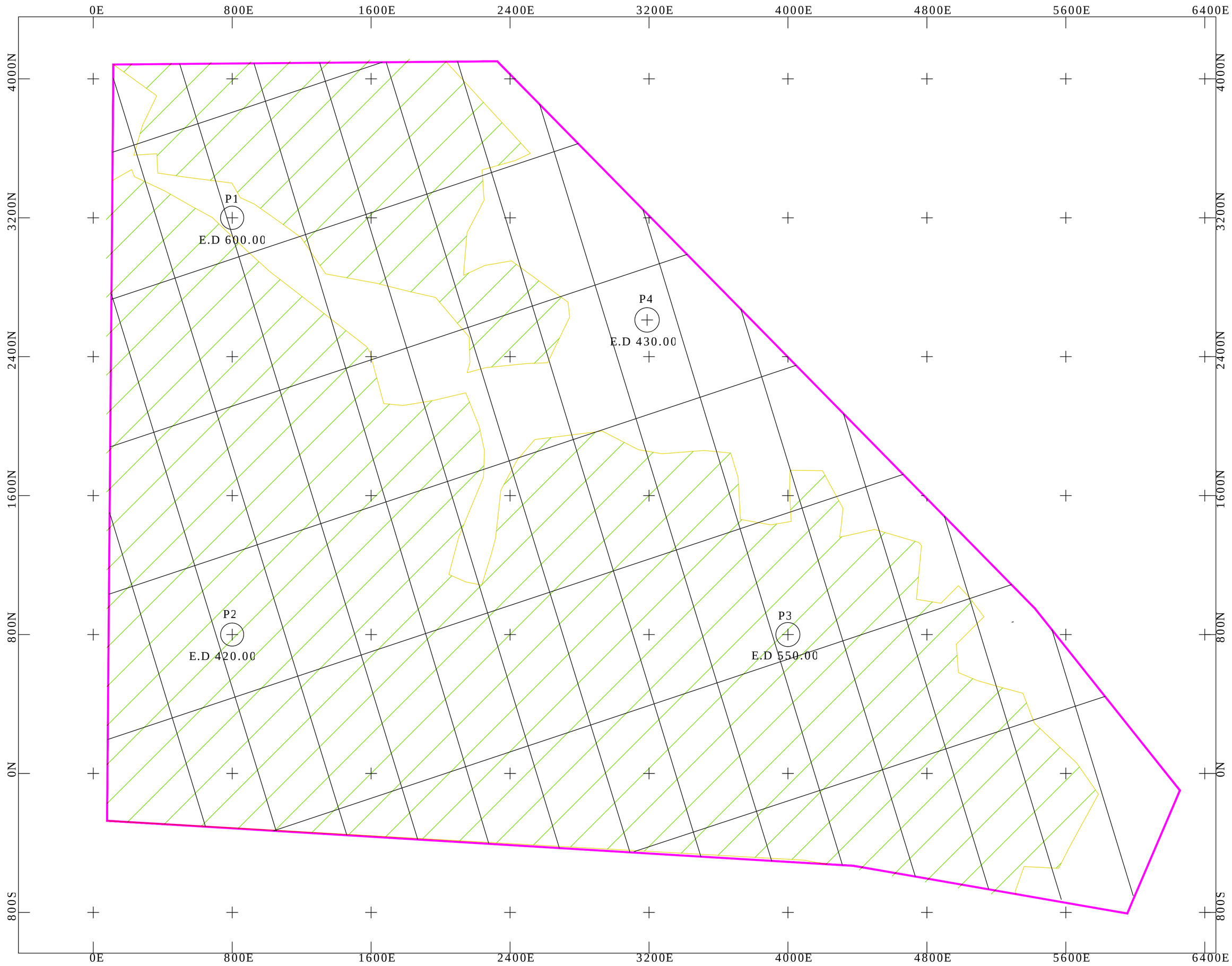

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P1 ⊕ E.D 600.00	PROPOSED BOREHOLE POINTS WITH EXPECTED DEPTH
	FOREST BOUNDARY
	BLOCK BOUNDARY
	PROPOSED 2D SEISMIC SURVEY LINES

JOB TITLE: TENTATIVE 2D SEISMIC SURVEY PLAN WITH BOREHOLE LOCATION IN GURWANI BLOCK
MAIN BASIN,SINGRAULI COALFIELD

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	ACTIVITY	NAME	DESIGNATION	SIGN.	DATE
	PREPARED	VIPIN KUMAR	Dy.Mgr(GEOPHYS.)		
	CHECKED	S. K GUPTA	HOD(EXPLORATION)		
	APPROVED				
	RF 1: 10000				

Project Cost Estimate for Exploration (G3 Stage) in Gurwani Block, Singrauli 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	4950	27814050
B	**GEOPHYSICAL STUDIES**						
1	Borehole Geophysical logging (As per MoC Rate 2020-21)	3.11	m	601	601	4950	2974950
2	*2D Seismic Survey (as per actulas)	3.14 a/3.14 b	Lkm		700000	80	56000000
	Field operations Total (A+B)						**86789000**
	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	150	1650000
2b	Geological Party days-HQ (Data processing & Report Preparation	1.5.1b	Day	9000	9000	60	540000
	Sub Total A						**2688000**
B	**GEOPHYSICAL STUDIES**						
3a	Magnetic Survey	3.2a	Linekm	72000	38200	93	3552600
3b	Geophysict Party days-Field (Field Work) - 1 Geologist	3.19	Day	11000	11000	30	330000
3c	Geophysicst Party days-HQ (Data processing & Report Preparatic	3.19	Day	9000	9000	15	135000
	Sub Total B						**4017600**
	Field Work Total (A+B)						**6705600**
	III-Laboratory Studies (In House)						
1	***Band By Band Analysis***						
a	Ash+Moisture	4.2.6	per sample	700	700	550	385000
b	House Keeping	4.2.1	per sample	115	115	550	63250
2	***Overall analysis***						
a	Proximate analysis	4.2.7	per sample	935	935	270	252450

b	Moisture at 60% RH & 40C	4.2.8	per sample	1010	1010	270	272700
c	GCV	4.2.11	per sample	1505	1505	270	406350
d	Sample preparation & House Keeping	4.2.3	per sample	795	795	270	214650
3	***Special Test***						
a	Ultimate analysis	4.2.17	per sample	9945	9945	15	149175
b	Total Sulphur	4.2.14	per sample	1900	1900	15	28500
c	Distribution of Sulpher	4.2.15	per sample	3695	3695	15	55425
d	HGI including sample preparation	4.2.18	per sample	3805	3805	15	57075
e	AFT (Ash Fusion Temperature)	4.2.20	per sample	2745	2745	15	41175
f	Ash analysis	4.2.25	per sample	325	325	15	4875
4	**Petrographic analysis**						
a	Pellet preparation	4.3.14a	per sample	1160	1160	10	11600
b	Maceral Analysis (with photomicrography)	4.3.14e	per sample	25000	25000	10	250000
c	Microlithotype Analysis (with photomicrography)	4.3.14g	per sample	25000	25000	10	250000
d	Mean Ro%	4.3.14j	per sample	16345	16345	10	163450
	Laboratory Studies Total						**2605675**
	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 (9 boreholes & 7 bound	1.6.2	per point	19200	19200	16	307200
e	Geological Report preparation (3% or 2000000 Max)	5.2					2000000
f	Land crop compensation	5.6	Per bh	20000	20000	9	180000
g	Borehole pillaring	2.2.7	Per bh	2000	2000	9	18000
h	Peer review			10000	10000		10000
	Miscellaneous Charges Total						**4895200**
	Total (I- Field op +II- Field work+III- Lab+ IV -Misc)						100995475
	GST (@18%)						18179185.5
	Grand Total						119174661

11.91746605

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

Time Schedule/Action Plan for Gurwani Block, Singrauli Coalfield																
S. No	**Activities**															**Remarks**
		Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	Outsourcing	Months	<------>														3 Months
2	Mobilising	Months				↔											1 months
3	2 D Seismic survey	Months					<---------->										3 Months,80 Line km
4	Magnetic Survey	Months					<------>										2 Months,93 Line km
5	Drilling (Nos of rigs-2 rigs)	Months					<---------->										4950 in 9 Bh
6	Borehole Geophysical logging	Days					<---------->										4950 in 9 Bh
7	Survey Party days (1 Party)	Days					<---------->										60 Days
8	Geologist Party days, Field (1 Party)	Days					<---------->										150 Days
9	Geophysict Party days, Field (1 Party)	Days					<---------->										30 Days
10	Laboratory Studies (Band By Band)	Nos.						<---------->									550 sample
11	Laboratory Studies (Overall)	Nos.								<---------->							270 Sample
12	Laboratory Studies (Special)	Nos.								<---------->							15 Sample
13	Laboratory Studies (Petrography,)	Nos.										↔					1 month
14	Geologist Party days, HQ (1 Party)	Days											<------>				60 Days
15	Geophysict Party days, HQ (1 Party)												<------>				15 Days
16	Report Writing & Peer Review	Months											<---------->				5 Months

Note: Please add activities accordingly and timelime (months)

Total Time Period of Completion of Project- *14 months from Sanction of Project*