

**PROPOSAL FOR PRELIMINARY
EXPLORATION FOR COAL IN**

PAWANCHORA CENTRAL

NMET FUNDED PROJECT

WARDHA VALLEY COALFIELD

DISTRICT– CHANDRAPUR, MAHARASHTRA



सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीच्यूट लिमिटेड
(कोयला इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)
गोन्दवाना प्लेस, कान्के रोड, राँची - 834 031, झारखंड (भारत)
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CORPORATE IDENTITY NUMBER - U14292.TH1975GOI001223

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**PROPOSAL FOR PRELIMINARY EXPLORATION FOR COAL
IN PAWANCHORA CENTRAL BLOCK , WARDHA VALLEY COALFIELD
DISTRICT-CHANDRAPUR, MAHARASHTRA**

1.0 INTRODUCTION

- 1.1 Wardha Valley Coalfield has assumed importance by virtue of its location to meet the increasing coal demand in southern and western part of the country. Wardha Valley Coalfield covers an area of about 4130 sq.kms. Within the districts of Chandrapur and Yeotmal in Maharashtra State. The likely extension of this coalfield due NNW in the Wardha district below the Deccan Traps cannot be ruled out. Furthermore, the Godavari Valley Coalfield in SSE may be the likely extension of Wardha Valley Coalfield in the Adilabad district of Telangana. The block proposed in the present report forms part of western limb of the plunging anticline in the northwestern part of Wardha Valley Coalfield. The possible occurrence of coal in the block is located in dip side of Baranj block, Bhatali block, East of Ekarjuna, Temurda South and north eastern part of Anandwan block where exploration for coal has been carried out by GSI, CMPDIL & MECL.
- 1.2 Wardha Valley Coalfield is located in the south-eastern part of Maharashtra State and is bounded between Latitude N 19° 30' & N 20° 27' and Longitude E 78°50' & E 79°49'.
- 1.3 Regional exploration in the block was carried out by GSI and MECL in the nearby blocks such as Padmapur, Agarzari, Bhatali, and Anandwan block in the south and south east of the Pawanchora Block for identifying underground and open cast resources of coal. In assumption that similar geological structure occurs in the block in continuation with the blocks mentioned earlier few scout boreholes were drilled by GSI & MECL in and around the proposed area. GSI drilled 3 scout boreholes in Pirli-Pavna area, Wardha Valley Coalfield in 1995-96 (WPP-1, 2, 3 totaling 1147.65m). A Geological note on Pawan-Chora Area, Wardha valley Coalfield, District Chandrapur, Maharashtra, May-1999 was prepared by MECL where 8 nos of boreholes MWPC -1 to 8 totaling 2820.05m were drilled in an area of 200Sqkm.
- 1.4 Out of the 11 scout boreholes drilled by GSI & MECL coal was only encountered in WPP-2, the other boreholes were closed in Motur and were not lowered upto Barakars and prematurely closed. During 2010-2020 CMPDI/MECL undertook regional/detailed exploration in the adjoining blocks i.e. Temurda and Bhatali etc where complete coal sequence has been identified in Barakars in the drilled boreholes establishing significant coal resources. The Pawanchora Central has been identified for Preliminary (G3) stage of exploration on the basis of findings in Temurda & Bhatali Block
- 1.5 Pawanchora Central is located in the north eastern part of Wardha valley CF District chandrapur. The area is covered in the toposheet **55 P/3** and **55P/4**. The area falls in the Bhadravati tehsil of Chandrapur district of Maharashtra state.

- 1.6 Accordingly CMPDI has drawn proposal for exploration for coal in Pawanchora Central Block involving **5000 m** of drilling in **5** boreholes along with 2D seismic Survey of 232 Line Km. The proposal has been modified and comments are included as per Minutes of 30th TCC of NMET.

2.0 OBJECTIVES

- 2.1 The Preliminary Exploration in the block is proposed to fulfill following objectives-
1. To establish the existence and continuity of coal seams occurring in the block as significant coal resources are present in adjoining block such as Temurda, Bhatali etc.
 2. To establish the lay, disposition and potentiality of coal seams.
 3. To assess the coal resource by G4 stage of exploration in the block.

3.0 LOCATION, COMMUNICATION AND ACCESSIBILITY

- 3.1 The area falls in the Bhadravati tehsil of Chandrapur district of Maharashtra state The Chandrapur District Township is located at a distance of about 35 kms from this block and is connected by a State Highway road no. MH-SH 264. From Nagpur, the block is at a distance of 120 Kms. connected by State Highway road SH 264 up to Jamb and NH 7 from Jamb to Nagpur.
- 3.2 A number of Tar roads from Warora and Bhadravati located on Nagpur-Chandrapur Highway connects the area through Mangli, Isapur, Mansar, Ashti, Chora, belgaon, Khokri, Agra, Sagra, Dhamni, Pawan.

Table-I

CARDINAL POINTS OF BLOCK BOUNDARY FOR PAWANCHORA CENTRAL BLOCK

CARDINAL POINT OF PAWANCHORA CENTRAL BLOCK, WARDHA VALLEY COALFIELD, CHANDRAPUR DISTRICT, MAHARASHTRA CARDINAL POINTS_COALGRID & WGS84					
Sl. No.	CARDINAL POINT No.	Easting	Northing	Longitude	Latitude
1	C1	3015691.60668648	1098767.98835311	79° 8' 55.444" E	20° 8' 51.780" N
2	C2	3010736.05998415	1104614.77294006	79° 6' 4.842" E	20° 12' 2.115" N
3	C3	3009004.14829249	1104621.41551062	79° 5' 5.158" E	20° 12' 2.361" N
4	C4	3009004.14826477	1106962.62653351	79° 5' 5.197" E	20° 13' 18.529" N
5	C5	3013676.42541711	1111759.46154505	79° 7' 46.354" E	20° 15' 54.491" N
6	C6	3017336.85141861	1115517.53739905	79° 9' 52.670" E	20° 17' 56.650" N
7	C7	3023861.68449269	1110022.3077216	79° 13' 37.412" E	20° 14' 57.637" N
8	C8	3020326.36343697	1106264.08155254	79° 11' 35.400" E	20° 12' 55.509" N
9	C9	3018384.56541019	1101336.31556407	79° 10' 28.306" E	20° 10' 15.257" N

- 3.3 Pawanchora Central is located in the north eastern part of Wardha valley CF District Chandrapur. The area is covered in the toposheet 55 P/3 and 55P/4. The geographical co-ordinates of the block defined are as follows:

Latitude : N – 20° 08' 51.78 " N to 20° 17' 56.65" N
 Longitude : E – 79° 5' 5.197" E to 79° 13' 37.412" E

4.0 PHYSIOGRAPHY, DRAINAGE

- 4.1 Major part of the Pawanchora Central block is covered with soil and is characterized by gently undulating terrain with altitude ranging between 200m to 240m above Mean sea level. The area is drained by Shirnal nadi and Lendi Nadi and its tributaries flowing in the North-Western part of the block.

5.0 CLIMATE AND VEGETATION

- 5.1 The block area falls in typical sub-tropical climate zone experiencing hot summer and mild winter. In summer, average temperature varies from 28⁰C to 43⁰C. However, the temperature shoots up as high as 48⁰C in May/June. In winter, average temperature varies from 12⁰C to 29⁰C. However, minimum temperature falls to as low as 8⁰C in December/January.
- 5.2 The area under study is generally forested however occurrence of Thick forests and dense Jungles are found in the area. Out of the Total area 124Sq km(approx.) under exploration 6 Sq. km is Forest area and 118 Sq. km(approx. 95%) Non Forest Area. Teak, sal pipal, Kendu and bamboo are the dominant plants in the Forest. Tadoba reserve forest occurs at Southern part of the block.

6.0 BROAD GEOLOGICAL SET UP

6.1 Stratigraphic Sequence

The geological succession in this basin as per published report of GSI CMPDI and MECL in the study area are as given below

TABLE-II
STRATIGRAPHIC SUCCESSION OF THE BLOCK

Age	Formation	Lithology
Recent/Sub-Recent	Detrital Mantle	Black cotton soil/sandy soil
Upper Cretaceous	Deccan Trap	Basalts
-----UNCONFORMITY-----		
Cretaceous	Lameta	Cherty limestone, chert, brown, yellowish to pale white silicified sandstones, claystone.
-----UNCONFORMITY-----		
Upper Permian to Lower	Kamthi	Red, brown and variegated clays, ferruginous coarse

Age	Formation	Lithology
Triassic		grained sandstone and shale bands.
-----UNCONFORMITY-----		
Middle Permian	Motur	Medium to fine grained variegated sandstones, variegated clays and shales.
Lower Permian	Barakar	Light grey to whitish sandstones with grey shale, sandy shale, alternate bands of shale and sandstone and coal seams.
Upper Carboniferous to Lower Permian	Talchir	Greenish to grey sandstones, siltstone and shale.
-----UNCONFORMITY-----		
Pre-Cambrian	Vindhyan	Greenish to grey quartzitic sandstone, pinkish limestone and chert.
-----UNCONFORMITY-----		
Archaean	Metamorphics	Quartzites, granites, gneisses and schist etc.

7.0 Geology of the block

7.1 On the basis of Surface and Subsurface data of exploratory boreholes drilled by GSI/CMPDI/MECL in Pirli-Pavna/ Bahatali/ Temurda the generalised sequence of the different formations in the area under study is given below in Table III

TABLE-III
STRATIGRAPHIC SUCCESSION OF THE BLOCK

Age	Formation	Lithology	Thickness range
Recent/Sub-Recent	Detrital Mantle	Black cotton soil/sandy soil	2.00- 9.00
-----UNCONFORMITY-----			
Cretaceous	Lameta	Cherty limestone, chert, brown, yellowish to pale white silicified sandstones, claystone.	2.00-9.00
-----UNCONFORMITY-----			
Upper Permian to Lower Triassic	Kamthi	Red, brown and variegated clays, ferruginous coarse grained sandstone and shale bands.	40.00-60.00
-----UNCONFORMITY-----			
Middle Permian	Motur	Medium to fine grained variegated sandstones, variegated clays and shales.	60.00-375.00
Lower Permian	Barakar	Light grey to whitish sandstones with grey shale, sandy shale, alternate bands of shale and sandstone and coal seams.	18.00-243.00
Upper Carboniferous to Lower Permian	Talchir	Greenish to grey sandstones, siltstone and shale.	3.00-170.00

Age	Formation	Lithology	Thickness range
-----UNCONFORMITY----- -----			
Pre-Cambrian	Vindhyan	Greenish to grey quartzitic sandstone, pinkish limestone and chert.	
-----UNCONFORMITY----- -----			
Archaeans	Metamorphics	Quartzites, granites, gneisses and schist etc.	

8.0 Regional Structure

- 8.1 The general attitude of the bedding in the Pawanchora Central is North West to South east with North –easterly dip ,however the amount of dip and change in direction cannot be ruled out due to occurrence of large faults in Northern part and South western part.
- 8.2 The interpretation of geological structure in Pawanchora Central block is solely based on the sub-surface data obtained from the boreholes drilled in the block coupled with regional structure interpreted in adjacent Bhatali, Anadwan and Takli jena Bellora Block .
- 8.3 Based on the data obtained from boreholes drilled in the surrounding block by MECL, GSI and CMPDI and regional structure in Blocks, tentative floor contour plans have been attempted to decipher the geological structure of Pawanchora Central Block.
- 8.4 It is observed from the floor contour plans that the general strike of the beds trends North Westerly to South easterly with low dip (6deg to 8 deg) in north Easterly direction.
- 8.5 The geological structure deciphered in the block is highly tentative in nature and occurrence of additional Fault in the area under investigation cannot be ruled out completely which may increase or decrease the depths of the boreholes

9.0 Sequence and quality of coal seams:

- 9.1 The Wardha Valley Coalfield is characterized by the presence of one thick Coal Seam varying in thickness from 15 m to 20 m that splits into two or three sections as Top & Bottom or Top, Middle & Bottom. These correlatable sections are separated by well-defined parting. Apart from this Composite Seam, there is also one insignificant Upper band which is developed in most part of the coalfield
- 9.2 The detailed exploration in the adjoining blocks reveals mainly the existence of one Composite Seam with prominent Top and Bottom sections as per the recent nomenclature for delineation of Coal seams.

- 9.3 The sequence of coal seams likely to occur in the proposed block on the basis of boreholes drilled in adjoining blocks mainly comprises one composite seam which is designated as Main Seam and few local coal seams. The details of coal seam encountered in the surrounding blocks are described below.

SEAM NO	DEPTH RANGE(m)		THICKNESS	OVERALL QUALITY OF THE SEAM
	FROM	TO		
Local band	220	570	0.05-0.59	
Parting			61.00-70.00	
Top Section	300	500	0.17-0.81	(G-11)
Parting			4.54-4.57	
Middle section	290	351	0.18-2.10	(G7 to G11)
Parting			1.66-5.68	
Bottom section	300	378	2.62-4.00	(G7 TO G11)
Mid+ Bot	400	500	5.00-6.00	(G10)

The overall grade in the proposed block varies from G7-G11.

The tentative coal resources likely to be established through G4 stage of exploration is 2400Mt.

10.0 EXPLORATION SCHEME

10.1 Drilling:

Drilling of **5000 m** in 5 boreholes has been proposed for the Pawanchora central Block. The depth of intersection for Bottom Section has been proposed from 570 m to 1000 m at minimum to maximum range.

TABLE IV
Proposed Boreholes in Pawanchora Central block, Wardha valley Coalfield
Depth of

Sl. No.	Proposed BH No.	Projected Depth (m)
1.	P01	800
2.	P02	900
3.	P03	1000
4.	P04	1000
5.	P05	1000
	GRAND TOTAL: 4700m(Approx.) say 5000m	

Three boreholes may be extended beyond 1000m due to structural complexities like faulting/ to encounter the Talchir formation & for establishing the complete stratigraphical sequence in the region.

In view of soft and friable nature of Motur clays and sandstone which causes problem in the drilling appropriate technology, combination of drilling method be adopted to complete the project in the time schedule.

Time Schedule of Completion of Project- 21 Months from sanction of Project

10.2 Geophysical logging:

NGPM Bouguer gravity datasets downloaded from Bhukosh site of GSI and coupled with the existing geological map of Wardha valley coalfield and drilling data from the adjacent blocks of Pawanchora central from the following inferences are drawn,

- a) On contouring the data, it directly differentiates low-density sediments from high-density metamorphic rocks and few spots with sudden deviation in density contrast than normal in the overall area laterally.
- b) On narrowing down, Bouguer anomaly map confirms the presence of high-density metamorphic rock in the northern part of the block acting as a boundary. Sedimentary-Metamorphic boundary fault with massive throw is interpreted directly based on density contrast from the Bouguer anomaly map. The fault position can be clearly seen in the residual gravity map.
- c) Southern portion of the Bouguer anomaly map shows a sudden change in the density contrast which can be attributed to fault(s) having throw towards north direction in the area. This fault location is identified to a few extent using residual gravity maps.

Drawing conclusions on the throw of the fault(s) and the way it influence the lay and disposition of coal seams are difficult using gravity data alone as it conveys only the lateral density contrast exist in the area. Therefore, seismic survey and drilling are needed for accurately deciphering the potential coal seams lay & disposition, structure position, throw values and dip of the fault plane existing in the area under study.

Results of 2D/3D seismic survey is the representation of sub-surface reflectors and structural position in terms of time section. To interpret these seismic reflectors as meaningful geological horizons, borehole information especially geophysical logging with parameters dual density, caliper, Natural gamma, resistivity and sonic is essential to be drilled on the intersections of seismic dip and strike lines. Without geophysical logging information, it is not possible to mark any geological horizons & its continuity, which may mislead in identification of faults and its throw, and to obtain final output of seismic data in terms of depth.

Therefore, to obtain better geological information from seismic data, drilling in properly distributed borehole points during course of 2D/3D seismic survey on the

intersection of seismic dip and strike lines with above mentioned logging parameters is inevitable.

For Preliminary exploration of coal in the area under study 5 boreholes along with 2D Seismic survey with grid size 800m (along the dip) *1600m (along the strike) will be followed which will aid us to find out the lay, disposition and continuity of coal seams in the area.

Surface seismic profile lines are planned along the borehole positions in order to utilize the geophysical logging parameters as Density, Sonic, Gamma etc for interpreting the seismic sections and for converting time information to depth information. Synthetic seismograms generated using density and sonic logs acts as the platform between time and depth domains in seismic depth modelling.

Total quantum of seismic work is 232 line km. The source for the seismic survey will be Vibrator/Explosives. All the 5 boreholes will be geophysical logged. The parameters involved are Sonic, Dual density, Natural Gamma, caliper, SPR, deviation, Resistivity etc.

10.3 Laboratory Studies: Band by Band Analysis, overall analysis, special tests, & Geotechnical studies will be carried out on coal samples.

10.4 Quantum of Work Proposed: Details of proposed work for detailed exploration for coal in Pawanchora Central block is given below in Table-V

TABLE-V
QUANTUM OF WORK

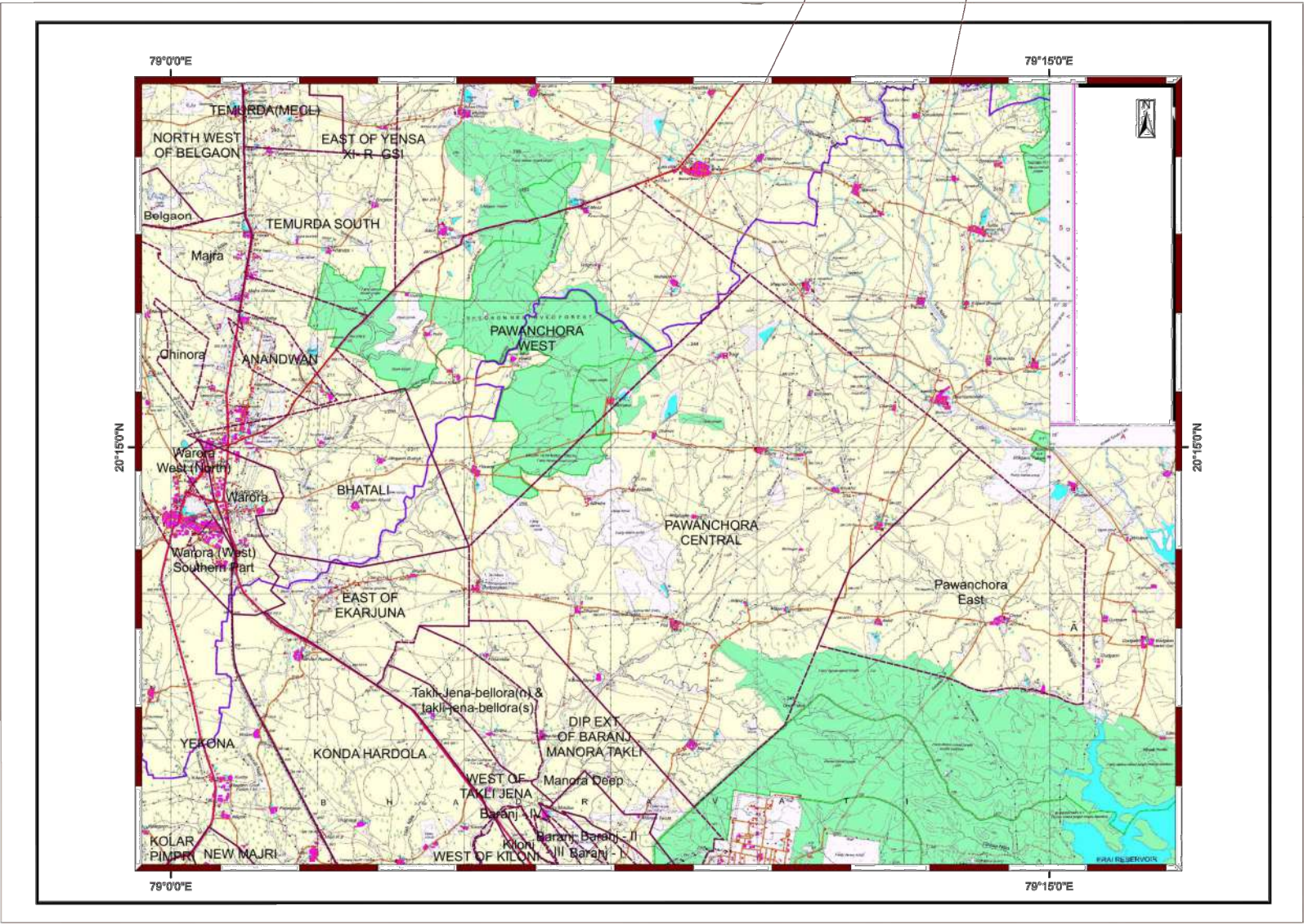
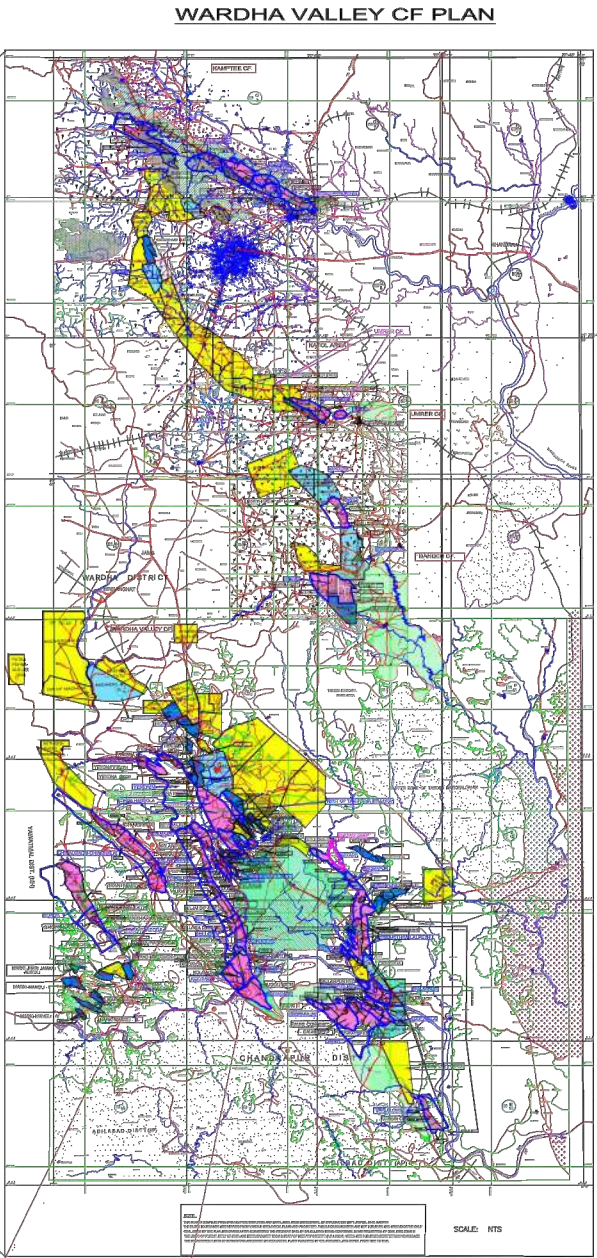
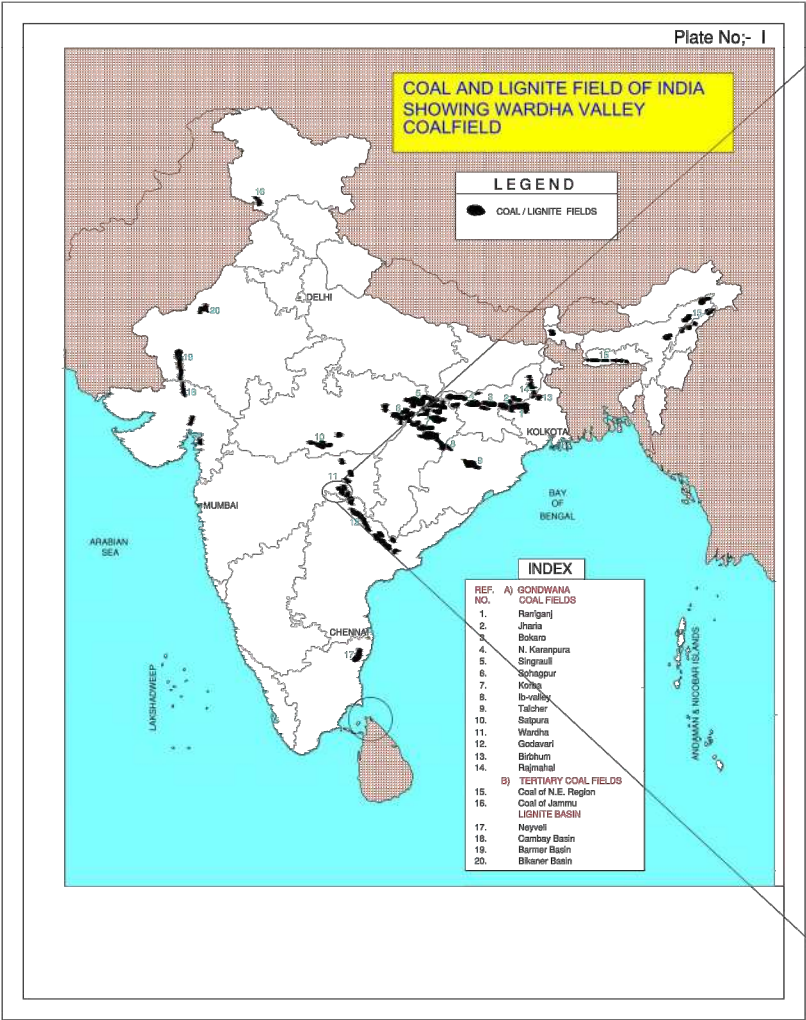
S.No.	Activity	Quantity
1.	Geological Mapping	124 Sq km
2.	<u>Drilling:</u>	
	i) Boreholes	5 BHs.
	ii) Meterage	5000m
3.	i) Levelling and Triangulation	As per requirement
	ii) RL and Co-ordinates	5 BHs.
4.	Drill Core Logging	5000m
5.	Geophysical Logging	5 boreholes 5000m
6	2D seismic survey	232 Line Km
7	<u>Chemical Analysis:</u>	
	i) Band by Band	125samples
	ii) Overall	5 BHs-50 -Samples
	iii) Calorific Value	5 BHs- 50 Samples
8	Special Tests	5 BHs- 20 Samples
9	Petrographic Analysis	6 samples

11.0 LIMITATIONS

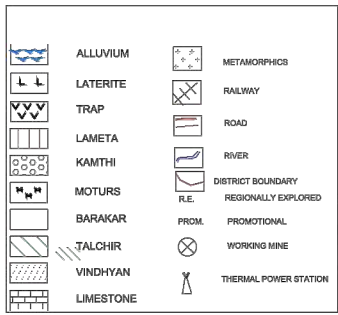
- 11.1 Out of the Total area 124Sq km (approx.) under exploration 6 Sq. km(approx.5%) is Forest area and remaining 118 Sq. km (approx. 95%) Non Forest Area. Teak, sal pipal , Kendu and bamboo are the dominant plants in the Forest. Tadoba reserve forest occurs at Southern part of the block.
- 11.3 As the proposed meterage is based on the tentative structure as per Regional reports and data of adjoining blocks, actual meterage may vary during course

12.0 LIST OF PLATES

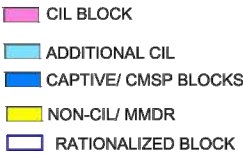
- 12.1 Following plates are enclosed with the proposal:
- I. Block Location Map (Plate –I)
 - II. Borehole Location Plan on RF 1:10,000 along with Floor contour plan (tentative) of Bottom in Pawanchora Central Block, Wardha valley CF. (Plate II)
 - III. Graphic logs of boreholes drilled by CMPDI, GSI and MECL in the surrounding blocks (Plate III-VII)
 - IV. Block location on Topographical map and Geological Plan (Plate VIII-IX)
 - V. Seismic Profile lines in block boundary. Plate X.
 - VI. Bouger anomaly and Residual Bouger Anomaly Map in Pawanchora area(Plate XI &XII)

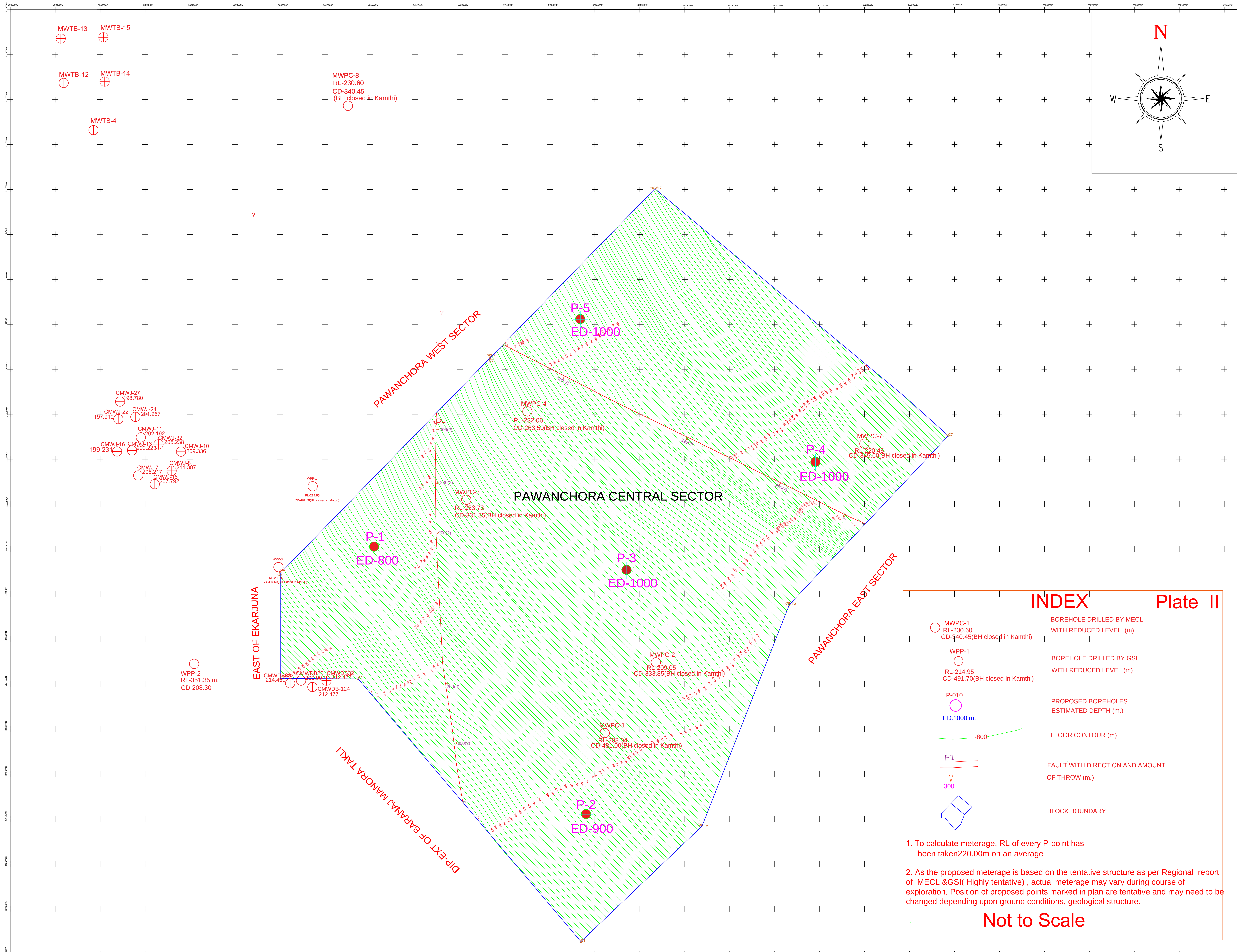


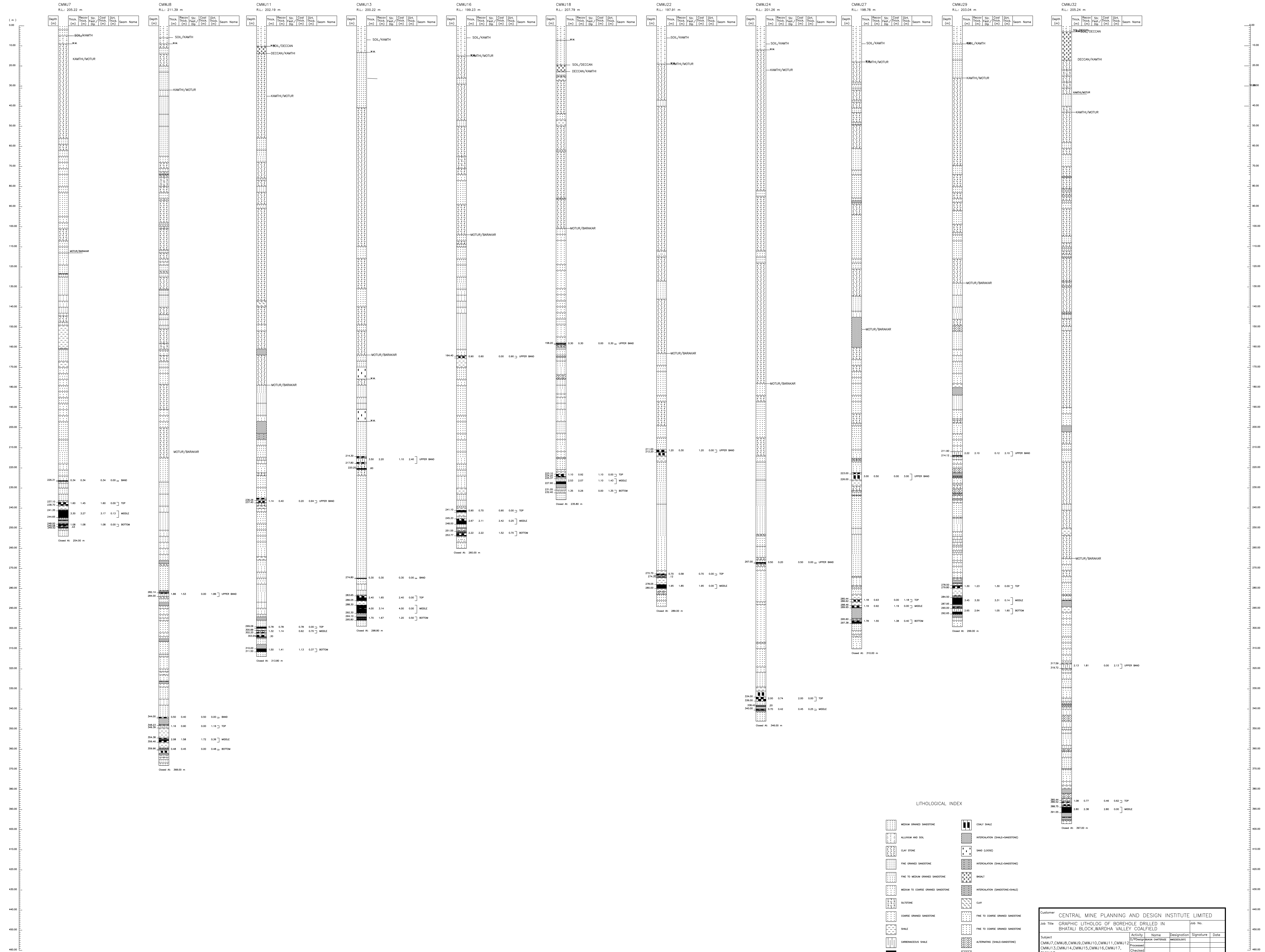
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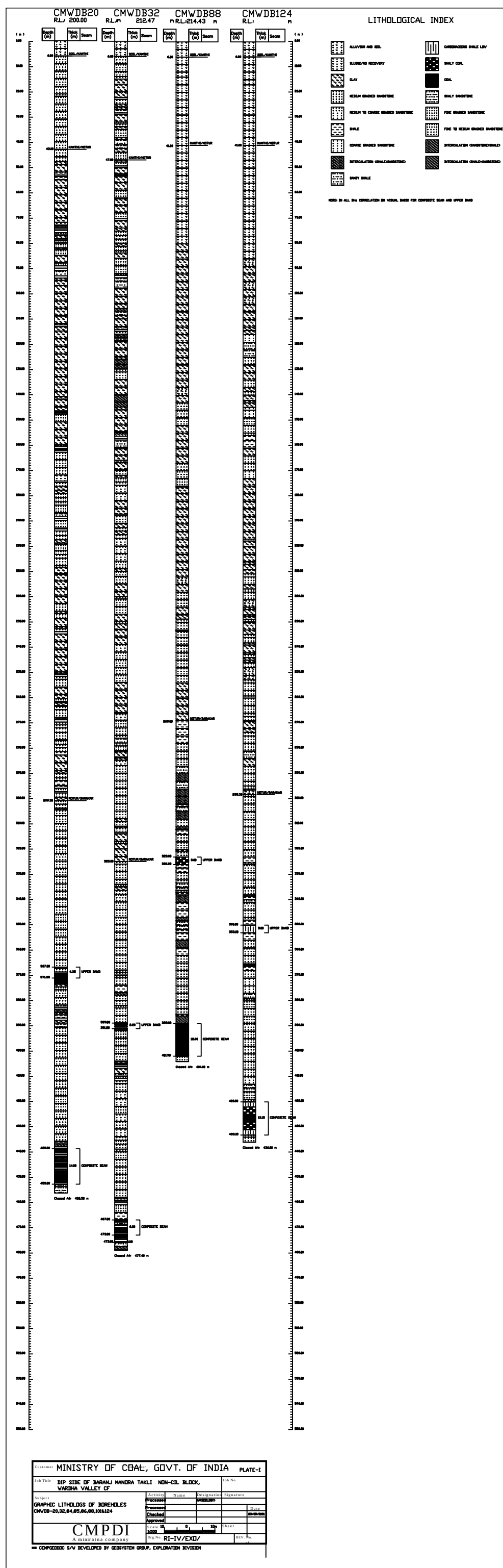
COAL BLOCKS SHOWN:

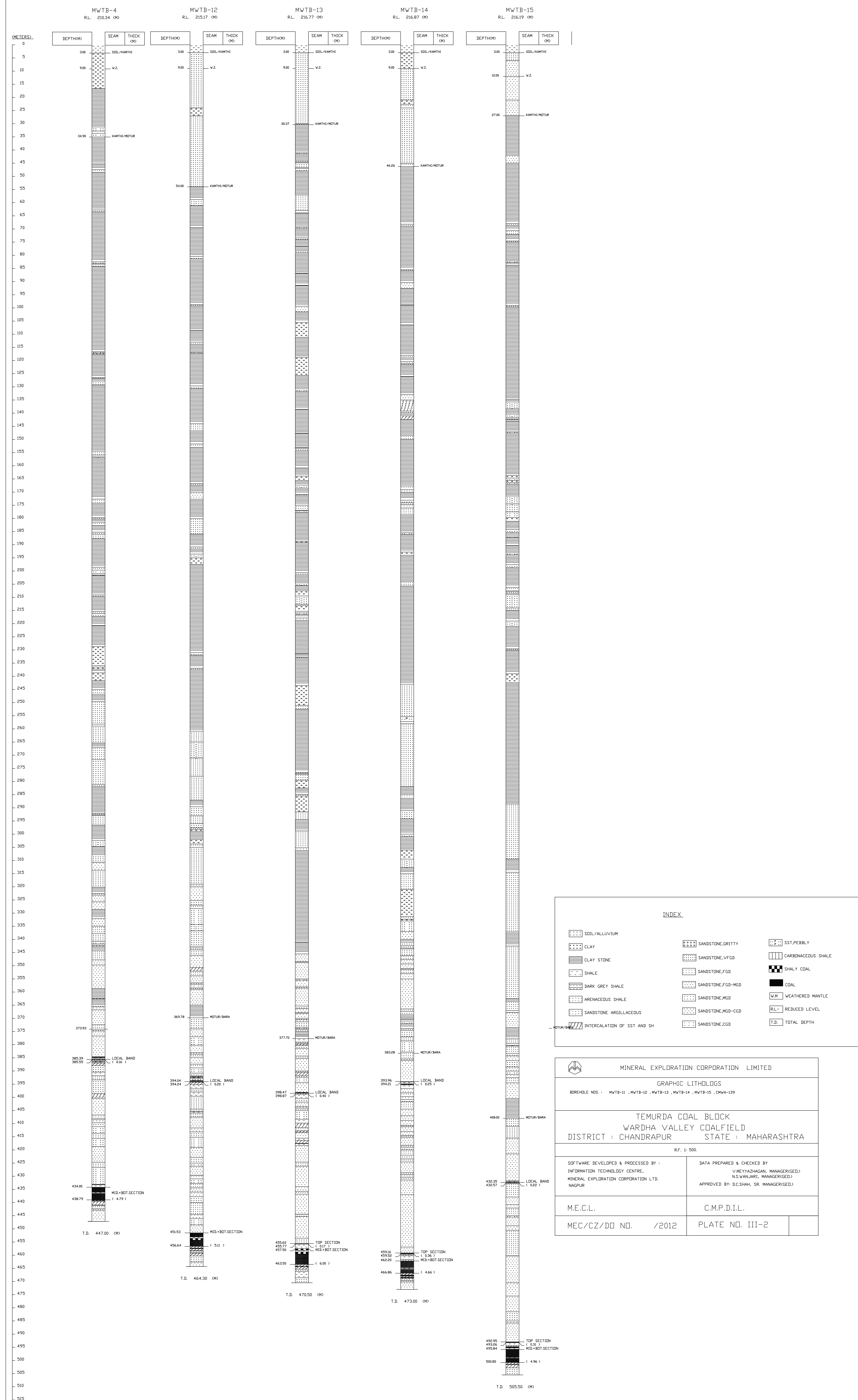






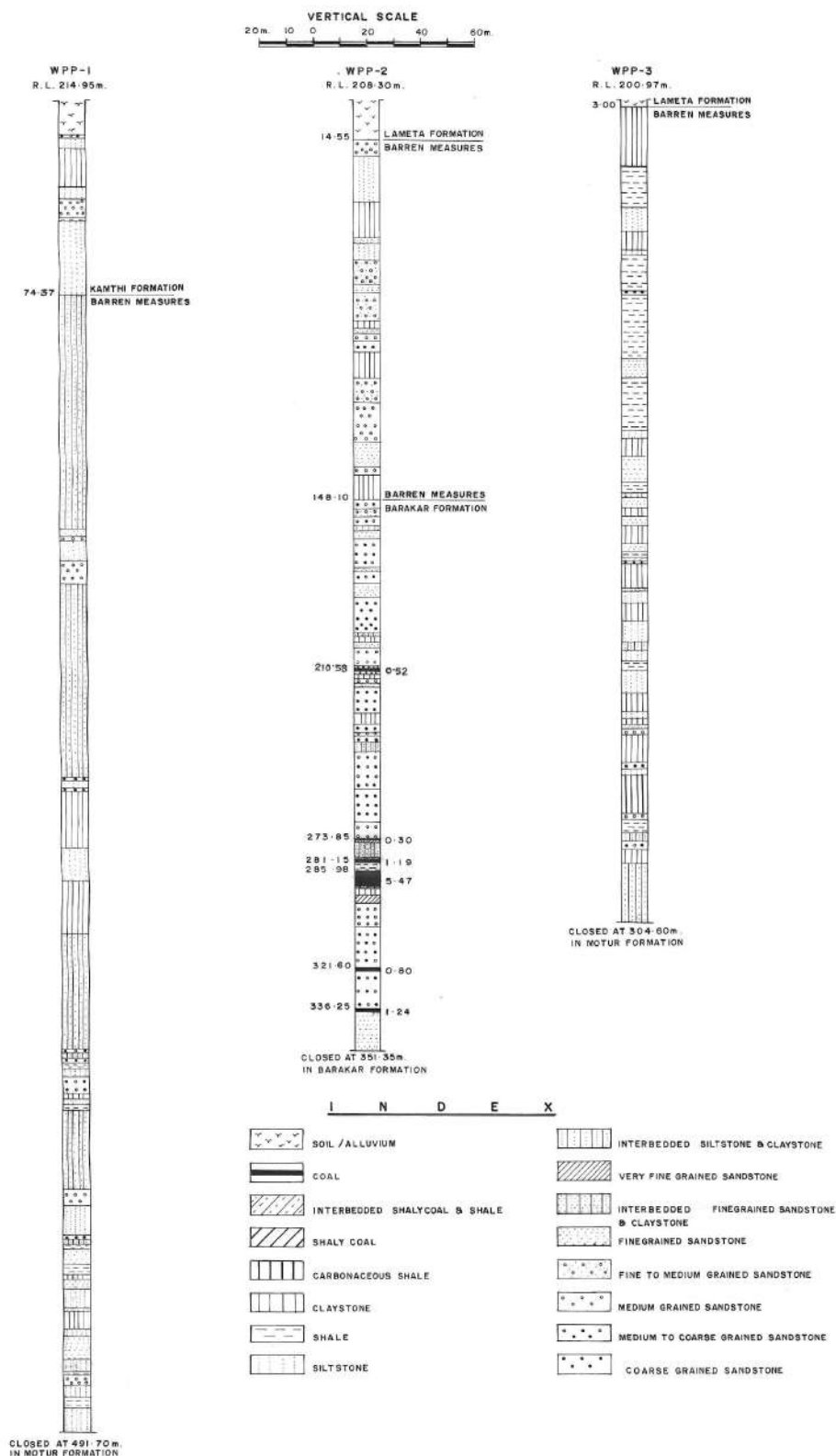
Customer: CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED					
Job Title: GRAPHIC LITHOLOG OF BOREHOLE DRILLED IN BHATALI BLOCK, WARDHA VALLEY COALFIELD					
Job No.:					
Subject: CMWJ7, CMWJ8, CMWJ9, CMWJ10, CMWJ11, CMWJ12		Activity: N/A		Designation: N/A	
CMWJ13, CMWJ14, CMWJ15, CMWJ16, CMWJ17, CMWJ18		Checked: N/A		Signature: N/A	
Scale: 1:500		Scale: 1:500		Scale: 1:500	
Date: R1		Date: R1		Date: R1	
Rev. No.:		Rev. No.:		Rev. No.:	





GEOLOGICAL SURVEY OF INDIA

GRAPHIC LITHOLOGS OF BOREHOLES DRILLED IN PIRLI-PAYNA AREA, WARDHA VALLEY COALFIELD, DIST. CHANDRAPUR, MAHARASHTRA



79°0'0"E

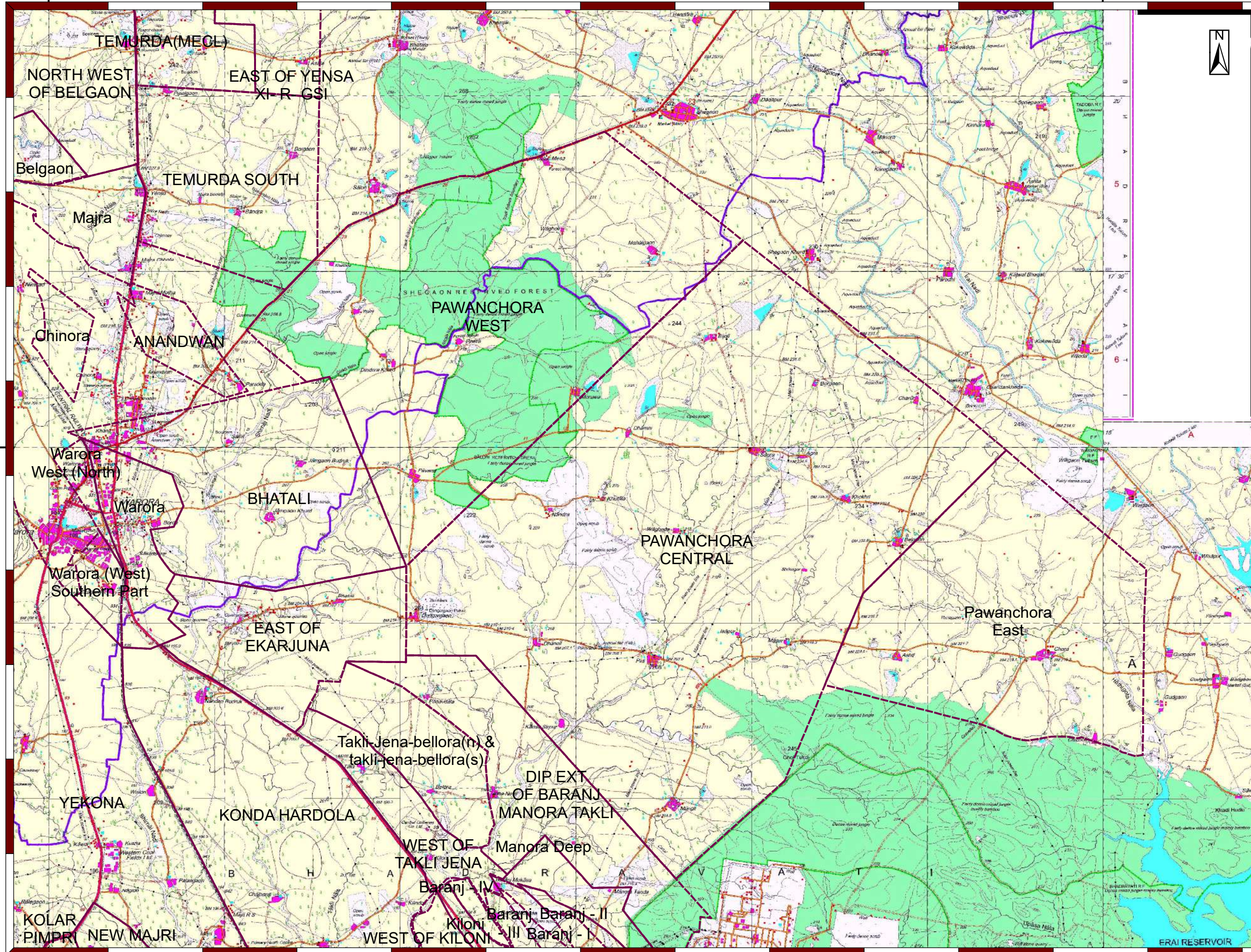
79°15'0"E

PLATE VIII



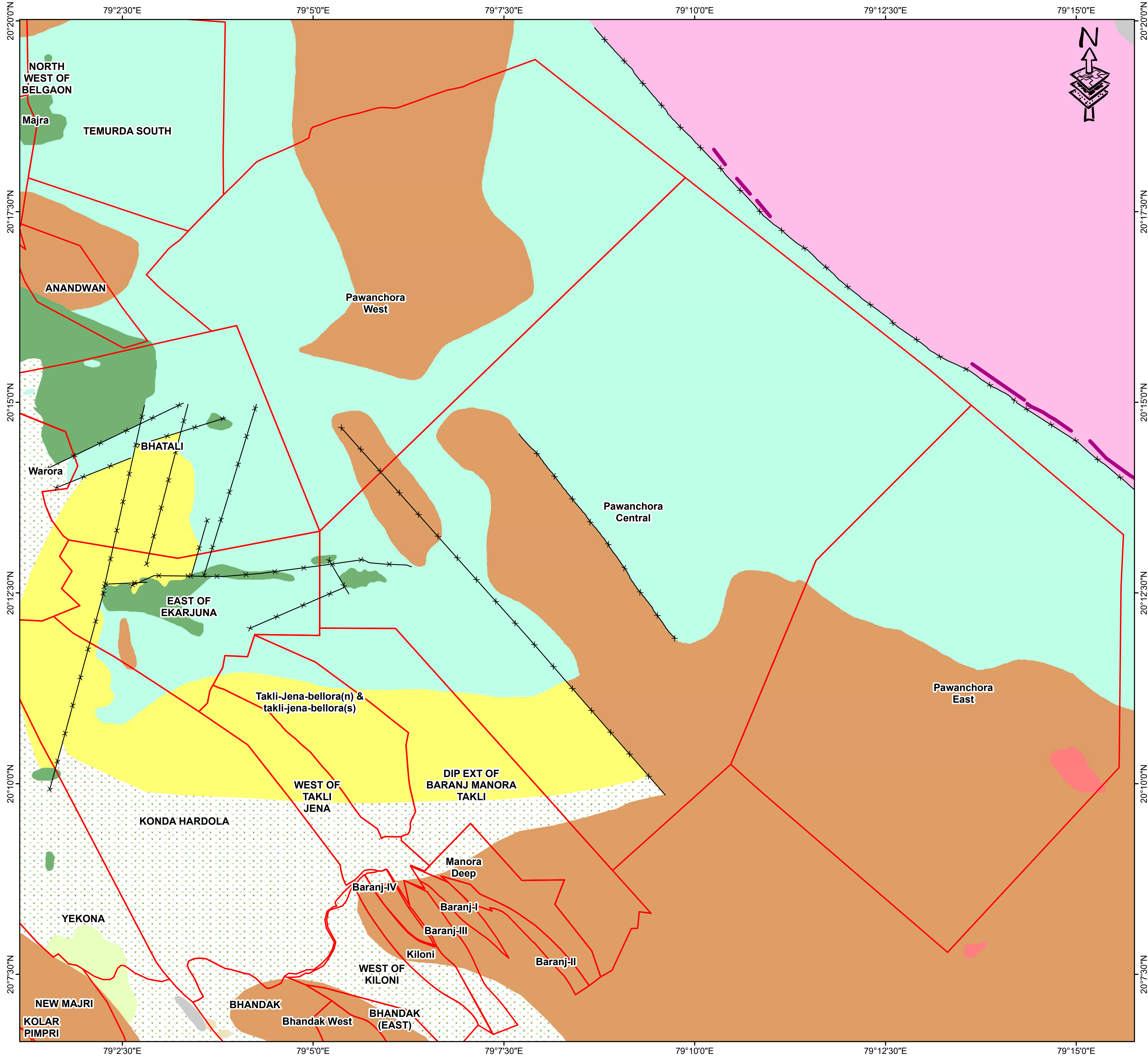
20°15'0"N

20°15'0"N

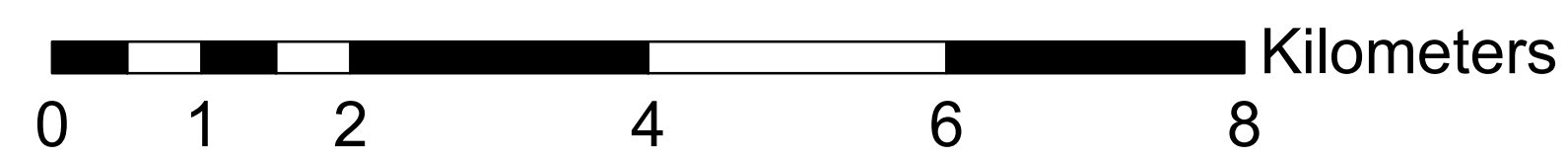


79°0'0"E

79°15'0"E

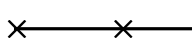


GEOLOGICAL MAP OF A PART OF WARDHA VALLEY COALFIELD,
DISTRICT- CHANDRAPUR,MAHARASTRA



1:50,000

Legend

 Fault

 Dyke

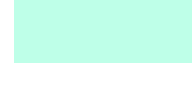
 COAL BLOCKS

FORMATION/GROUP

 ALLUVIUM

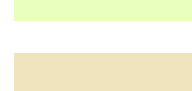
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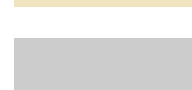
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 LAMETA

 KAMTHI

 BARREN MEASURE

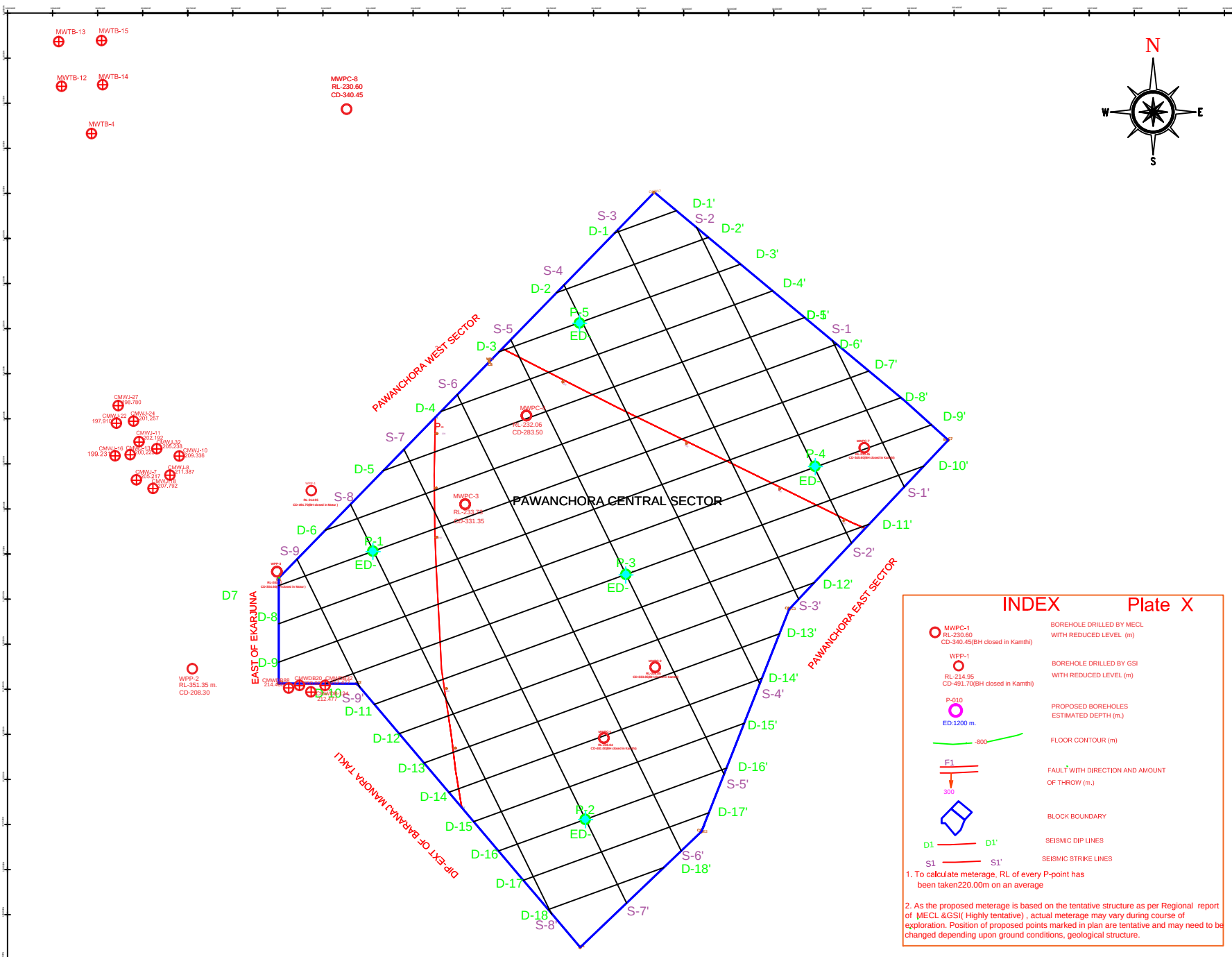
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 TALCHIR

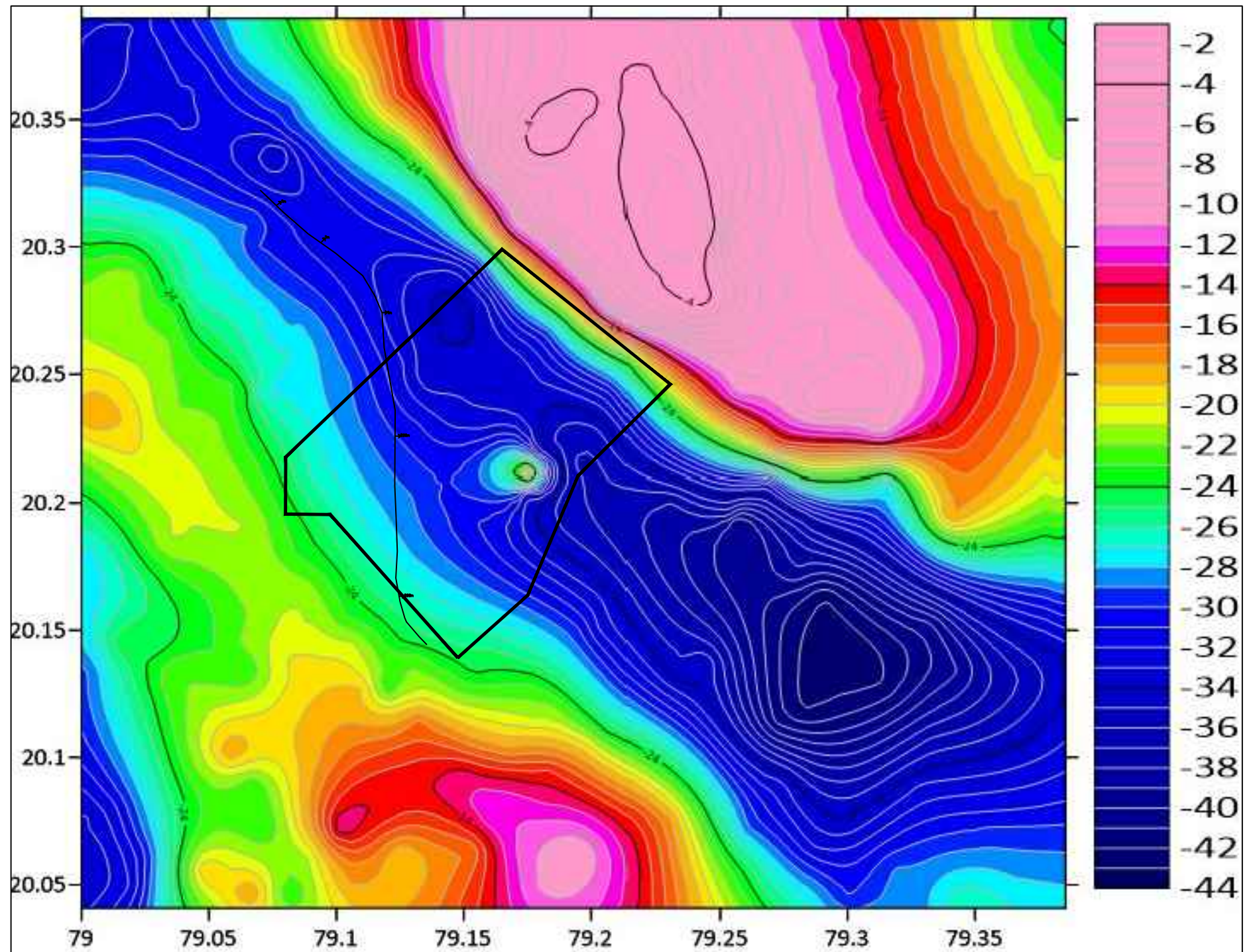
 PENGANGA

 METAMORPHICS

Source : GSI (BHUKOSH)

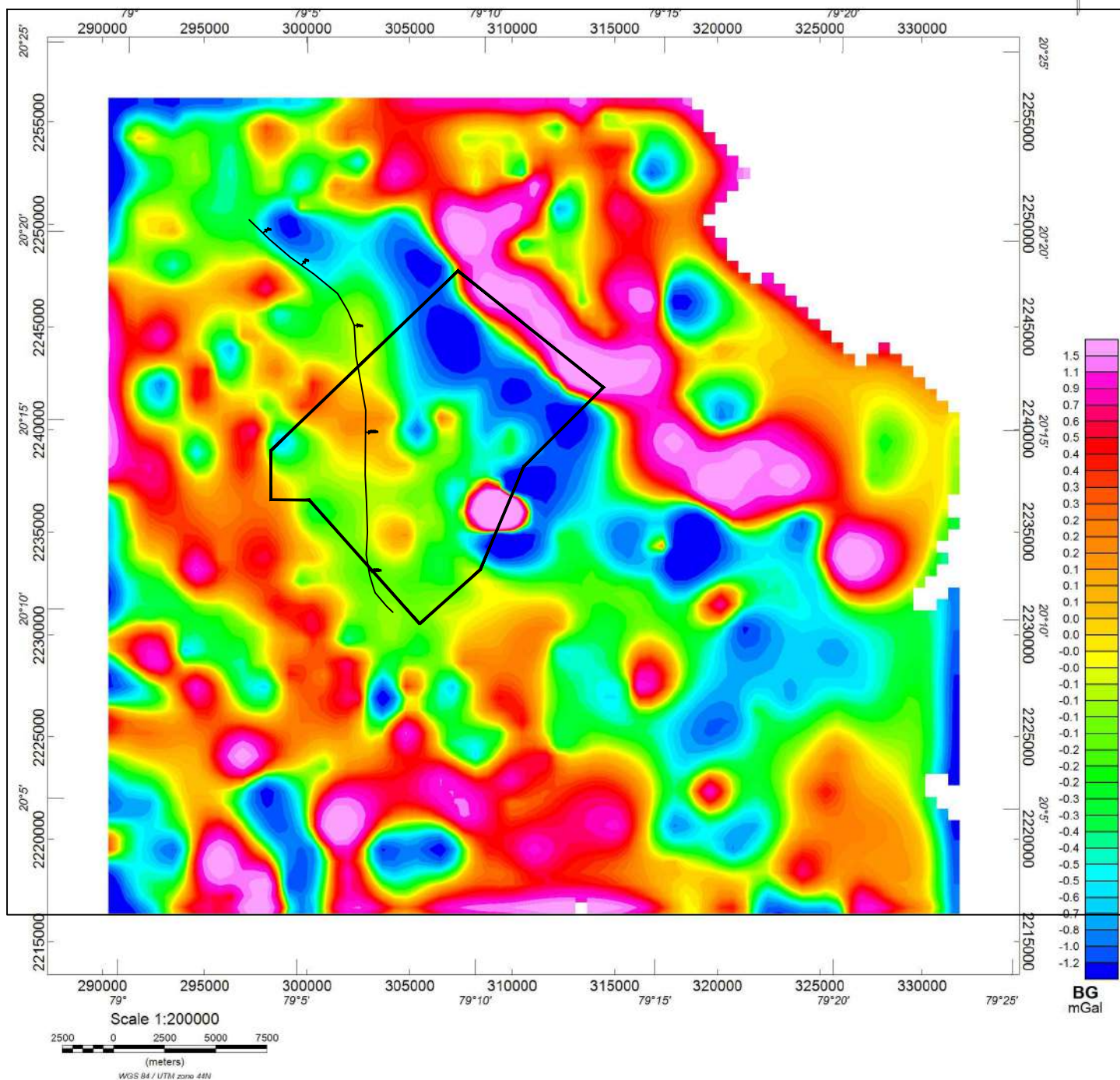


BOUGER ANOMOLY MAP PAWANCHORA CENTRAL PLATE XI



RESIDUAL MAP BOUGUER ANOMALY OF WARDHA VALLY

PLATE XII



Project Cost Estimate for Exploration of Coal in Pawanchora Central Block, Wardha Valley 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	5000	28095000
B	GEOPHYSICAL STUDIES						
1	Borehole Geophysical logging (As per MoC Rate 2020-21)	3.11	m	656	697	5000	3485000
2	*2D Seismic Survey (as per actulas)	3.14 a/3.14 b	Lkm		700000	232	162400000
	Field operations Total (A+B)						193980000
	II- Field Work (In House)						
A	GEOLOGICAL WORK						
1	Survey Work (Field Work & Monitoring) -1 Surveyor	1.6.1b	Day	8300	8300	100	830000
2a	Geological Party days-Field (Field Work & Monitoring)- 1 Geologist	1.5.1b	Day	11000	11000	120	1320000
2b	Geological Party days-HQ (Data processing & Report Preparation)-1 Geologist	1.5.1b	Day	9000	9000	60	540000
	Sub Total A						2690000
B	GEOPHYSICAL STUDIES						
2a	Geological Party days-Field (Field Work & Monitoring) - 1 Geologist	3.19	Day	11000	11000	250	2750000
2b	Geological Party days-HQ (Data processing & Report Preparation)-- 1 Geologist	3.19	Day	9000	9000	120	1080000
	Sub Total B						3830000
	Field Work Total (A+B)						6520000
	III-Laboratory Studies (In House)						
1	Band By Band Analysis						
a	Ash+Moisture	4.2.6	per sample	700	700	125	87500
b	House Keeping	4.2.1	per sample	115	115	125	14375
2	Overall analysis						
a	Proximate analysis	4.2.7	per sample	935	935	50	46750
b	Moisture at 60% RH & 40C	4.2.8	per sample	1010	1010	50	50500
c	GCV	4.2.11	per sample	1505	1505	50	75250
d	Sample preparation & House Keeping	4.2.3	per sample	795	795	50	39750
3	Special Test						
a	Ultimate analysis	4.2.17	per sample	9945	9945	20	198900
b	Total Sulphur	4.2.14	per sample	1900	1900	20	38000
c	Distribution of Sulpher	4.2.15	per sample	3695	3695	20	73900
d	HGI including sample preparation	4.2.18	per sample	3805	3805	20	76100
e	AFT (Ash Fusion Temperature)	4.2.20	per sample	2745	2745	20	54900
f	Ash analysis	4.2.25	per sample	325	325	20	6500

4	Petrographic analysis						
a	Pellet preparation	4.3.14a	per sample	1160	1160	6	6960
b	Quantification of Maceral composition	4.3.14b	per sample	10060	10060	6	60360
c	Quantification of Microlithotype composition	4.3.14c	per sample	20000	20000	6	120000
d	Maceral Analysis (with photomicrography)	4.3.14e	per sample	25000	25000	6	150000
e	Microlithotype Analysis (with photomicrography)	4.3.14g	per sample	25000	25000	6	150000
e	Mean Ro%	4.3.14j	per sample	16345	16345	6	98070
	Laboratory Studies Total						1347815
	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		1500000
d	Core Preservation (1 borehole)	5.3	Per m	1590	1590	10000	15900000
e	DGPS Survey of bundary, borehole points (5 boreholes & 20 boundary point)	1.6.2	per point	19200	19200	25	480000
f	Geological Report preparation (3% or 200000 Max)	5.2		2000000	2000000		2000000
g	3 D ore body modelling using Minex software	5.4		2500000	2500000		2500000
h	Peer review			10000	10000		10000
	Miscellaneous Charges Total						23270000
	Total (I- Field op +II- Field work+III- Lab+ IV -Misc)						225117815
	GST (@18%)						40521206.7
	Grand Total						265639022
							26.56390217

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

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

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

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

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

5) *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.

6) Rate for Rs 2500000/-is budgeted rate for 3 D ore body modelling using Minex software .

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

Time Schedule/Action Plan for Pawanchora Central Block, Wardha Valley Coalfield																										
S. No	Activities																							Remarks		
		Months	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
1	Outsourcing	Months	<----->																					3 Months		
2	Mobilising	Months				↔																		1 months		
3	2D seismic Survey	Months				<----->																				232 Line km
4	2D seismic Survey Report	Months															<----->							6 months		
5	Drilling (Nos of rigs-1 rigs)	Months				<----->																				5000 in 5 Bh
6	Borehole Geophysical logging	Days				<----->																				5000 in 5 Bh
7	Survey Party days (1 Party)	Days				<----->																				100 Days
8	Geologist Party days, Field (1 Party)	Days				<----->																				120 Days
9	Geophysict Party days, Field (1 Party)	Days				<----->																				250 Days
10	Laboratory Studies (Band By Band)	Nos.										<----->												125 sample		
11	Laboratory Studies (Overall)	Nos.										<----->												50 sample		
12	Laboratory Studies (Special)	Nos.											<----->											20 Sample		
13	Laboratory Studies (Petrography)	Nos.																	↔					6 Sample		
14	Geologist Party days, HQ (1 Party)	Days															<----->							60 Days		
15	Geophysict Party days, HQ (1 Party)	Days															<----->							120 Days		
16	3 D Modiliing	Months																	<----->					4 Months		
17	Report Writing & Peer Review	Months															<----->							7 Months		

Note: Please add activities accordingly and timeline (months)

Total Time Period of Completion of Project- 21 months from Sanction of Project