COMMODITY: COAL

PROPOSAL FOR PRELIMINARY EXPLORATION (G3) FOR COAL IN DESHWARI SECTOR, KANHAN VALLEY COALFIELD, CHHINDWARA DISTRICT, MADHYA PRADESH (G-3)

BY
GEOLOGICAL SURVEY OF INDIA
CENTRAL REGION, NAGPUR

PLACE: NAGPUR
DATE: APRIL 2026

Summary of the Block for G3 Level Exploration

GENERAL INFORMATION ABOUT THE BLOCK

Feature	**Details**
Block ID	DESHWARI SECTOR
Exploration Agency	Geological Survey of India, Central Region, Nagpur
Commodity	Coal
Mineral Belt / Geological Domain	Kanhan Valley Coalfield
Block Area	9 sq. km
Completion Period	One year
Objectives	i) To establish the strike and dip continuity of Barakar coal seams to the east of Gorakhghat Sector under favourable structural setup. ii) To assess additional coal resources in the area.
Projected Outcome	Preliminary exploration data for resource appraisal and further advancement of the block.
Personnel	Two geoscientists
Expected Field Days	Officer-1: 90 days; Officer-2: 90 days; Supervisory Officer: 7 days
Toposheet / Degree Sheet	55J/11
District / State	Chhindwara, Madhya Pradesh

1. Location

BLOCK

Cardinal Points	**Latitude**	**Longitude**
A	22°16' 01.2"N	78°30'07.2"E
B	22°16'01.2"N	78°32'52.8"E
C	22°15'03.6N	78°32'52.8"E
D	22°15'00.00"N	78°30'03.6"E
Tehsil/Taluk	Junnardeo	
District	Chhindwara	

Cardinal Points	**Latitude**	**Longitude**
State	Madhya Pradesh	

2. Area

Block Area	9 sq. km.
Forest Area	NIL
Government Land Area	Data not available
Private Land Area	Data not available

3. Accessibility

Nearest town	Junnardeo town, about 20 km to the southeast
District headquarters	Chhindwara, about 70 km southeast of Deshwari area
Nearest Rail head	Junnardeo, about 20 km to the southeast
Nearest Airport	Nagpur, 250km

4. Hydrography: Small seasonal streams and dam

5. Climate: sub tropical

6. Topography: hilly terrains, narrow valleys and undulating plains.

7. Availability of baseline geoscience data

Geological map	Large-scale geological mapping and earlier G4 & G3 investigations by GSI in and around the block
Geochemical data	NIL
Geophysical data	NGPM

8. Justification for taking up G3 level exploration

The proposed Deshwari Sector is in the east strike extension of the Gorakhghat Sector (FS: 2023–24 and 2024–25). In Gorakhghat Sector, Four regional Barakar coal seams namely, Seam-IV, Seam-III, Seam-II, and Seam-I (in descending order)—along with a Local seam have been identified between depths of 527.35 m (KGT-3) and 711.00 m (KGT-1). The cumulative coal thickness of individual seams varies from 0.55m (Local Seam, KGT-2A) to 6.15m (Seam-IV, KGT-3). The Seam-IV is the thickest seam with a maximum coal thickness of 6.15m in borehole KGT-3. The cumulative thickness of total coal in individual borehole varies from 1.00 m (KGT-1) to 11.70 m (KGT-2A) (considering ≥ 0.50m thick coal sections). The coal of the Gorakhghat Sector is characterized by **low to moderate moisture (0.77–4.04%)**, **moderate to high ash content (17.40–46.75%)**, **volatile matter**

ranging from 18–32%, and **fixed carbon varying between 31–58%**. The **Gross Calorific Value (GCV)** ranges from **4017 kcal/kg (KGT-4, thin split of Seam–III)** to **7219 kcal/kg (KGT-4, Seam–IV)**. indicating variation from low to high grades (G11 to G1). Overall, the coal is predominantly **moderate to good quality**, with significant proportion of **coking coal.** The total inferred coal resource (UNFC 333 category) within the depth range of 300–1200 m is estimated at **105.54 million tonnes**, comprising **93.67 million tonnes of coking coal** and **11.87 million tonnes of non-coking coal** over an area of 14.674 sq.km.

Against this backdrop, the Deshwari Sector, covering about 9 sq km proposed for G3 stage coal exploration with borehole spacing between 800m to 1600m and depths ranging from 850m to 900m.

PRELIMINARY EXPLORATION (G3) FOR COAL IN DESHWARI SECTOR, KANHAN VALLEY COALFIELD, CHHINDWARA DISTRICT, MADHYA PRADESH.

1.1.0 INTRODUCTION

The Pench-Kanhan-Tawa Valley Coalfield has gained considerable importance by virtue of the presence of coking, semi-coking and bendable quality of coal particularly of Kanhan Valley region. The proposed investigation area i.e., Deshwari Sector belongs to the Kanhan Valley Coalfield. The exploration programme was taken up with the objectives to establish the strike and dip continuity of Barakar coal seams, already established in Gorakhghat Sector in the west below the Motur Formation under favourable structural setup and to assess additional coal resources in the area.

The proposed programme is designed to generate the geological, geochemical, and drilling data required for preliminary resource appraisal and to guide subsequent exploration.

2.1.0 BACKGROUND INFORMATION

Preliminary exploration for coal in Deshwari Sector, bounded by latitudes 22˚15'3.96"N to 22˚16'0.75"N and longitudes 78˚30'5.78"E to 78˚32'53.77"E, covers an area of 9 sq km and falls in Survey of India toposheet No. 55 J/11. This area is situated in the northern part of Kanhan Valley Coalfield and shares its boundary with previously explored Gorakhghat Area/Sector (FS: 2023-24 & 2024-25) to the west, ongoing Mali-Bijori Sector (FS 2025-26) to the south and Damua area and Damua-Sajania block (FS 1970-78) to the southwest. The area is covered by rocks of Deccan Trap and Motur Formation and the trend of the rock exposures shows N75°E-S75°W to E-W direction dipping northwards at 6° to 9°.

3.1.0 LOCATION AND ACCESSIBILITY

Preliminary exploration for coal in Deshwari Sector bounded by latitudes 22˚15'3.96"N to 22˚16'0.75"N and longitudes 78˚30'5.78"E to 78˚32'53.77"E, covers an area of 9 sq km and falls in Survey of India toposheet No. 55 J/11. This area is situated in the northern part of Kanhan Valley Coalfield and shares its boundary with previously explored Gorakhghat Area/Sector (FS: 2023-24 & 2024-25) to the west, ongoing Mali-Bijori Sector (FS 2025-26) to the south and Damua area and Damua-Sajania block (FS 1970-78) to the southwest.

The Amla-Parasia broad gauge line (Central Railway) and Chhindwara Barkuhi narrow gauge line (S.E. Railway) serve the Kanhan Valley Coalfields. The nearest Railway station to the area under investigation, is Junnardeo which is about 20 km towards southeast. A motorable metal road connecting Chhindwara and Betul (SH-43) passes through Damua (22° 11' 34":78° 28' 01") which is

the nearest town to the Deshwari Sector. Besides these, the major villages are connected either by forest road or by foot-tract.

4.1.0 PHYSIOGRAPHY, DRAINAGE AND CLIMATE

The Deshwari Sector, Kanhan Valley Coalfield like other adjacent coalfields of the Satpura Basin, is found to be formed of hilly terrains, narrow valleys and undulating plains. In Deshwari Sector, there are number of streams which flow through the area of investigation. There are number of springs in the area which forms the main source of water supply during the summer season in the area.

The climate of the area is very dry. The maximum temperature upto 40°C is recorded during the summer and winter temperature drops down to 7°C. The area experiences monsoon rains during end of June and sporadically continues up to September. The annual rainfall ranges from 70 to 80 inches on average. The well-known Pachmarhi hill station occurs about 90 miles away from Damua. The winter is pretty cold while the summer is quite pleasant mainly due to high altitude.

5.1.0 PREVIOUS WORK

In the Gorakhghat Area and Sector (FS 2023-24 & 2024-25), A total of 4562.40 m of drilling is carried out in six boreholes namely KGT-1 to KGT-6. Sub-surface drilling data revealed intersection of Talchir, Barakar, Motur formations and Deccan Trap in ascending order in the area. The Talchir Formation with intersected thickness of 3.50m(+) (KGT-1) is found unconformable overlain by the Barakar Formation. Four regional Barakar coal seams—Seam-IV, Seam-III, Seam-II, and Seam-I (in descending order)—along with a Local seam have been identified between depths of 527.35 m (KGT-3) and 711.00m (KGT-1). The cumulative coal thickness (≥0.50m sections) varies from 1.00 m in KGT-1 to 11.70m in KGT-2A. Seam-IV is the most prominently developed seam. It attains maximum thickness of 5.75m in KGT-2A and 6.15 m in KGT-3, while it reduces to 2.70m in KGT-4 and 2.30m in KGT-5. The total ungraded inferred coal resource (300–1200 m depth) is assessed at 105.54 million tonnes over an area of 14.674 sq.km. The total inferred coking coal resource of the sector is estimated at 93.67 million tonnes. This includes thick seam resources of 70.45 million tones and thin seam resources of 23.22 million tones. The total inferred non-coking coal resource in the sector is estimated at 11.87 million tonnes, consisting of thick seam resources is 9.43 million tones and thin seam resources is 2.44 million tones.

In the Damua Area, a total of 9205.16 m has been drilled in twenty-three (23 Nos) boreholes (Kotareddy C., 1970). The total thickness of the Barakar Formation is 270m and three regional Barakar coal seams/zones, namely the Top, Middle, and Bottom seams regionally proved their continuity towards strike and dip. The coal seams intersected between the depth ranges from 87m (PK-4) to 552.05 m (PK-20A) with individual coal seam thickness varying from 0.50 m to 7.65m. The 4.00 m to 6.90m thick Top seam is the youngest and economically significant, containing grade I to II coal quality. The seam has been proved regionally over a strike length of about 10 km and for a distance of 6 km along the dip direction. The existence of this Top seam has been proved at varying depths ranging from 87m (PK-4) to 547m (PK-20A). The moisture and ash contents of this Top seam vary from 2.1% to 2.5% and 17.3% to 23.4% respectively, indicating Class-II (Grade-I to II) quality of coal. The Caking Index of this Top seam varies from 15 to 20 (BSS) indicating improvement towards the western part of the area. The middle and bottom seams at places range from 1m to 1.60m in thickness and belong to Grade-I to II quality with Ash varies from 21.0% to 22.3% and moisture between 0.7% and 2.6%. The Caking Index of the Second Seam is reported to be of the order of 18 (BSS). The 'Proved' and 'Indicated' reserves about Top Seam are estimated to be of the order of 11.28 and 156.74 million tonnes respectively.

In the **Damua-Sajaniya Area** (Datta et al., 1981), a total of 4744.50 m has been drilled in thirteen (PK-24 to PK-36) boreholes. Three regional Barakar coal seams/zones, namely the top, middle, and bottom seams regionally proved their continuity towards strike and dip along with a fourth seam i.e. a local seam. These four coal seams intersected between the depth ranges from 157.05 m to 484.22 m with individual coal seam thicknesses varying from 0.50 m to 5.55 m. The thickness of the top seam is 2.46 m to 5.55 m intersected in almost all the boreholes. From an overall perspective, the seam maintains of persistent nature and more or less homogeneous quality with a uniform caking index. The thickness of the middle seam varies between 0.50m to 1.50 m. In general, particularly for top and middle seams, the coal quality in the eastern part of the area improves along the dip direction, i.e. towards the north. The coal seams show a low moisture percentage ranging between 0.60% to 1.90%. A total of 67.399 million tonnes of coal reserves has been estimated up to a depth of 485.00 m

6.1.0 GEOLOGY OF THE AREA

The present area of exploration occupies the northern part of Kanhan Valley Coalfield. Rock exposures in the Deshwari Sector mainly consist of Deccan Trap and different basaltic flows and Motur Formation of upper Permian age.

7.1.0 OBJECTIVES OF THE PROPOSED EXPLORATION PROGRAMME

The present exploration programme has been formulated with the following objectives:

i) To establish the strike and dip continuity of Barakar coal seams to the west of Gorakhghat Sector under favorable structural setup.

ii) To assess additional coal resources in the area.

8.1.0 PROPOSED SCHEME OF EXPLORATION

The proposed G3 exploration programme comprises large scale geological mapping on 1:10,000 scale, systematic drilling, borehole geophysical logging, sample processing, and laboratory studies. The depth continuity, grade and thickness of coal seam/zone will be checked by drilling in 3 vertical boreholes with borehole spacing between 800m to 1600m and depths ranging from 850m to 900m. Borehole logging, core sampling, and laboratory analyses will support interpretation and preliminary resource appraisal. In addition, coal and associated rock samples will be analysed for rare earth elements (REEs), trace elements, Germanium (Ge), and Lithium (Li) in accordance with the latest guidelines issued by GSI.

9.1.0 QUANTUM OF WORK

Item of Work	Unit	Proposed Quantum
Geological Mapping (1:10,000)	Sq. Km	9
Subsurface exploration: drilling	m	2600
Geological Logging	m	2600
Borehole geophysical logging	m	1300
Coal samples (m)	nos.	20
Caking & swelling index	nos.	10

Item of Work	Unit	Proposed Quantum
CPS (Nos.)	nos.	10
PS	nos.	10
Coal samples for REE & Trace elements, Ge & Li (Nos)*	nos.	20
Resources Assessment	nos.	3 boreholes
Updation of Coalfield map (1:50,000)	Sq. Km	9

10.1.0 COST

Summary of the Cost estimates

Sl. No.	Item	Total Estimated Cost (Rs.)	Funding
1	Geology and Survey	0	By GSI
2	Drilling	20,735,000/-	**NMEDT**
3	Survey work	0	By GSI
4	Laboratory studies	0	By GSI
5	Geologist at HQ	0	By GSI
	Sub Total (1to 4)	20,735,000/-	
6	Exploration Report Preparation	0	By GSI
7	Proposal Preparation	0	By GSI
8	Peer review charges	0	By GSI
9	Sub Total (1to8)	20,735,500/-	By GSI
10	GST18%	3,732,300/-	
	Total:	**24,467,300/-**	
	Say Rs. In Lakh	**244.67/-**	

11.1.0 TIME SCHEDULE

The work programme is proposed for FS 2026–27, with field, laboratory, reporting, and circulation milestones as summarized below.

The proposed exploration programme is planned in such a way that all the activities like drilling, logging, core sampling and associated geological work and laboratory work will be completed within 10 months. Report writing will take 4 months with 2 months overlapping with laboratory analysis. Thus, the total duration of the project for completion of the above exploration will be 12 months from the date of commencement of the project.

ANNEXURE 32 B

Scheduled Time for Preliminary Exploration for Coal in Deshwari Sector, Kanhan Valley Coalfield, Chhindwara District, Madhya Pradesh.

	Months	Apr -26	May -26	Jun -26	Jul-26	Aug -26	Sep-26	Oct-26	Nov -26	Dec -26	Jan-27	Feb -27	Mar -27
Sl. No.		1	2	3	4	5	6	7	8	9	10	11	12
1	Surface drilling (1 rig)												

Item of Work			Unit	SoC-Item -Sl No. NMEDT	Rates as per NMET SoC 2025		Estimated Cost	
							Qty.	Total Amount (Rs)
B. SURVEY WORK								
In case of outsourced								
9	a	Demarcation of lease boundary , Fixation of borholes and determination of coordinates and reduced level (RL) of the boreholes by DGPS (including charges of labourers deployed for the work)- use of CORS Network sstem for all DGPS is compulsary	Per Point of observation	1.3.2		**24,000.00**	7	₹ 0.00
Total Cost B (in case of out sourcing)								**₹ 0.00**

Item of Work			Unit	SoC-Item -Sl No. NMEDT	Rates as per NMET SoC 2025		Estimated Cost	
							Qty.	Total Amount (Rs)
D. Drilling - OUT SOURCED								
18.a	**DRILLING**	Drilling in/ Drilling in Soft rock/ Strata: HQ size borehole upto 400m Depth and NQ Size beyond 400m depth in case of NQ size drilling is done before 400m depth, the rate shall decrese by 20%	m	2.2.1.1c		5,500.00	0	₹ 0.00
18.b		Drilling in/ Drilling in Hard rock/ Strata: HQ size borehole upto 400m Depth and NQ Size beyond 400m depth in case of NQ size drilling is done before 400m depth, the rate shall decrese by 20%	m	2.2.1.1d		10,000.00	**0**	₹ 0.00
18.c		Drilling in/ Drilling in Very Hard rock/ Strata: HQ size borehole upto 400m Depth and NQ Size beyond 400m depth in case of NQ size drilling is done before 400m depth,	m	2.2.1.1e		12,650.00	0	₹ 0.00

		the rate shall decrese by 20%						
18.d		Drilling for Lignite	m	2.2.1.1a		4,783.00	0	₹ 0.00
18.e		Drilling for Coal	m	2.2.1.1b		7,975.00	2600	₹ 20,735,000.00
18.a		Mechanised Auger Drilling for soft strata upto 30m depth	m	2.2.2.1		4,760.00	0	₹ 0.00
18.b		Hand Auger drilling in soft strata upto 30 m depth	m	2.2.2.2		3,808.00	0	₹ 0.00
18.c		RC Drilling	m	2.2.3		8,870.00	0	₹ 0.00
18.d		Non coring drilling	m	2.2.4		4,000.00	0	₹ 0.00
19	DRILLING RELATED EXPENDITURE HEADS	Borehole Deviation Survey by Multishot survey tool (interval 6m; azimuth and inclination to be recorded)	per shot	2.2.5		330.00	0	₹ 0.00
20		Land / Crop Compansation (in case the BH falls in agricultural Land)	per BH	5.6		30,000.00	3	₹ 0.00
21		Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a		2,000.00	3	₹ 0.00
22		Borehole plugging with cement	per borehole	2.2.8		10,000.00	3	₹ 0.00
23		Miscellaneous Charges (Transportation of Drilling Rig, accommodation for Drilling Camp, Camp setting and winding, construction of approach road)	Lumpsum	0	2.2.9.4	For Drilling cost >2 Cr: 10 % of the Drilling Cost with a maximum ceiling of Rs.25 Lkh	2500000	₹ 0.00
24		Drill Core Preservation- One complete BH plus mineralised cores of all the BHs of the block/ prospect to be preserved in GI Core boxex and subsequently transported to the notificed core repository.	per m	X		1,590.00	850	₹ 0.00
Total Cost D- outsourced								**₹ 20,735,000.00**
Total (Survey Work + Drilling)								**₹ 20,735,000.00**
GST 18%								**₹ 3,732,300.00**
Total Fund Required inclusive of 18% GST								**₹ 24,467,300.00**
								~ 2.45 Cr

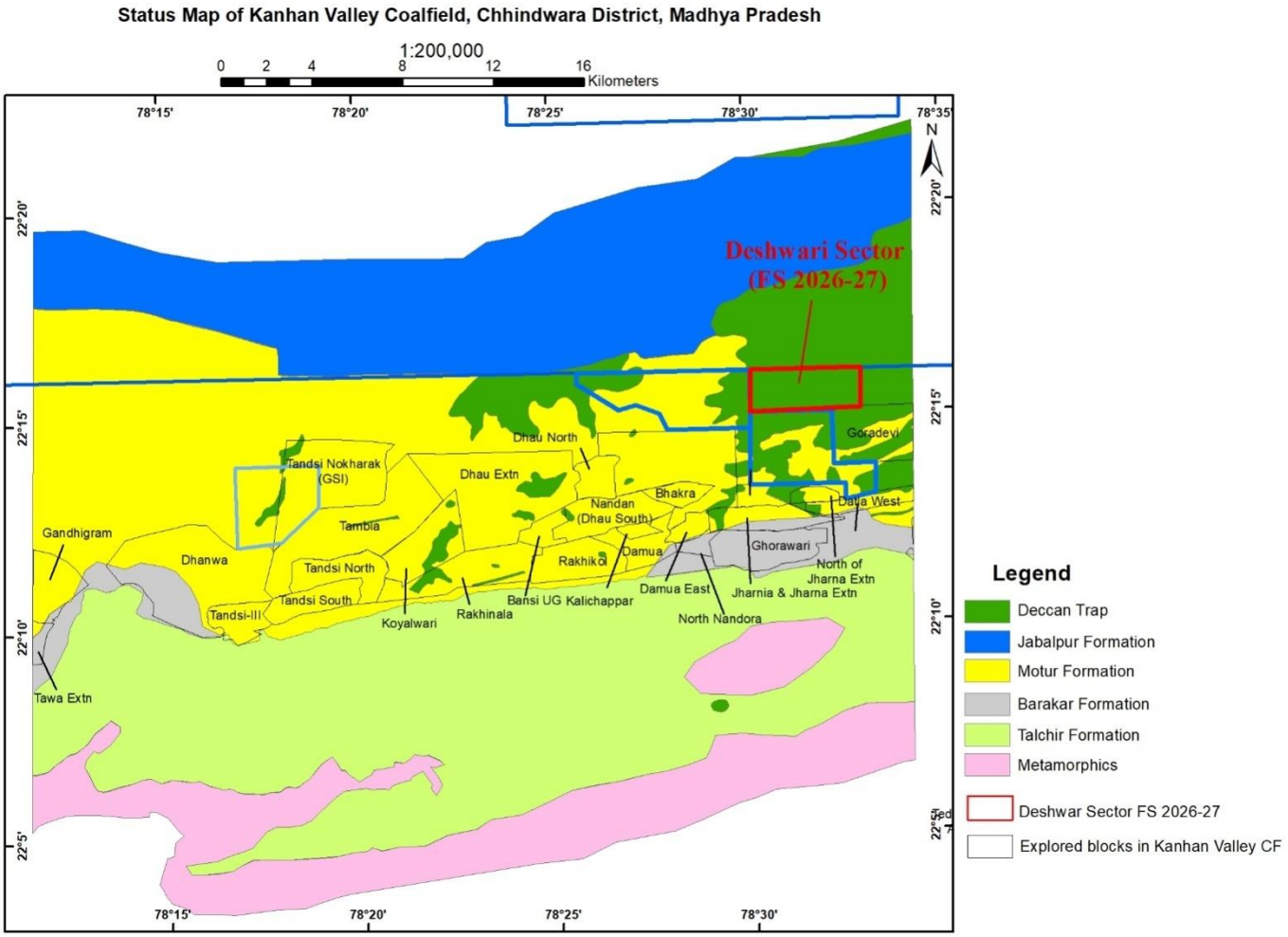

Fig1: Status map of Kanhan Valley Coalfield, Chhindwara District, Madhya Pradesh

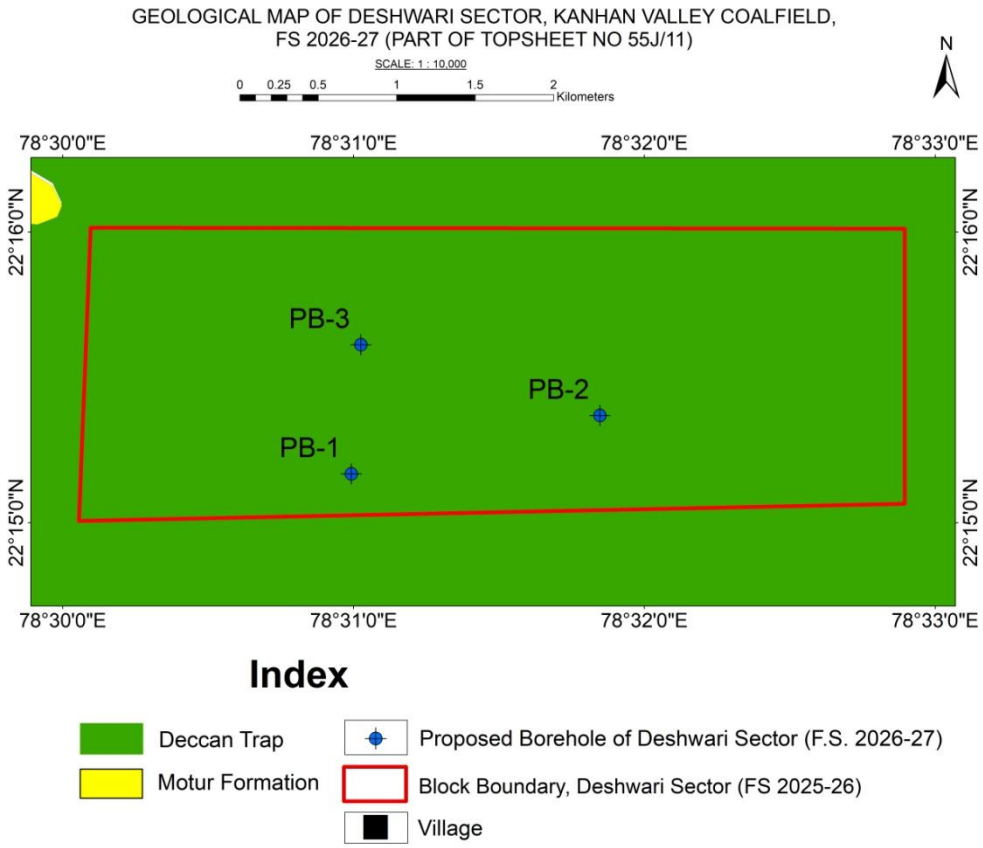

Fig2: Geological map of Deshwari Sector, Kanhan Valley Coalfield, Chhindwara District, Madhya Pradesh

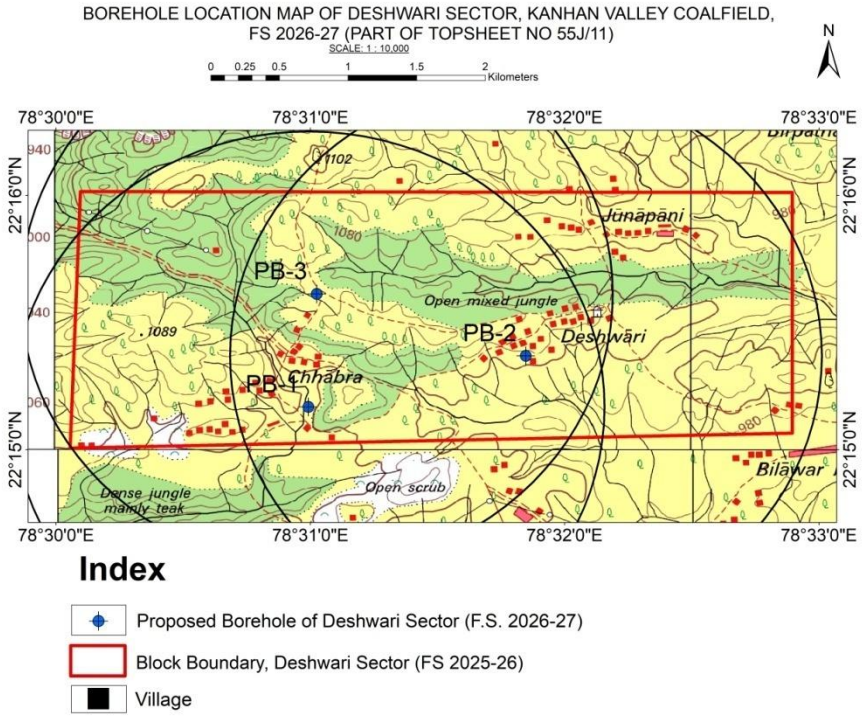

Fig3: Borehole location of Deshwari Sector on toposheet, Kanhan Valley Coalfield, Chhindwara District, Madhya Pradesh

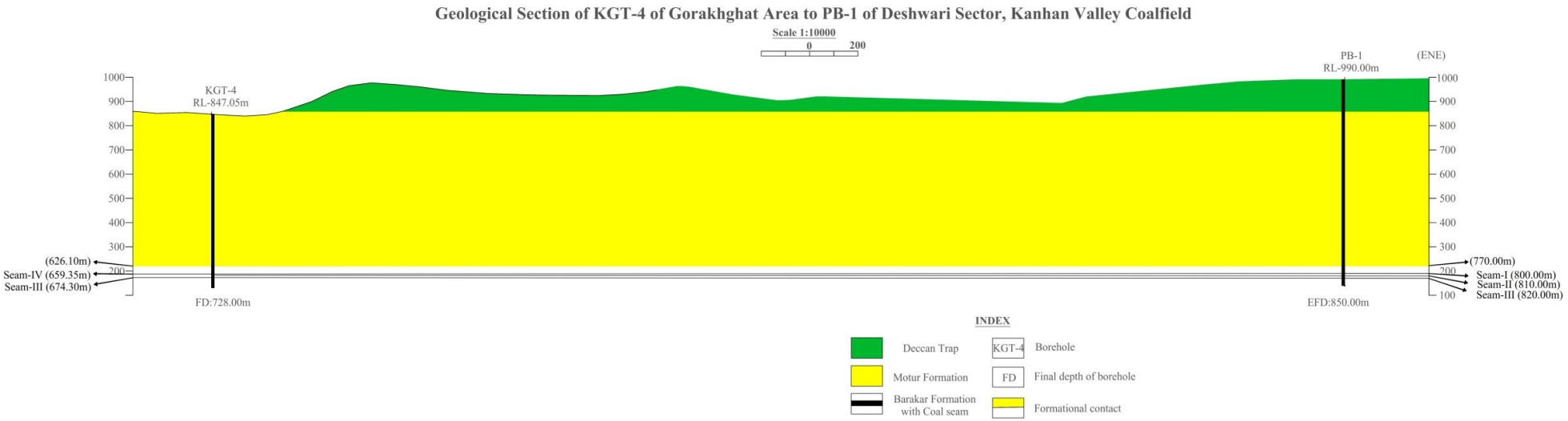

Fig. 4: Expected geological section of borehole KGT-4 (Gorakhghat Sector) and proposed borehole PB-1 (Deshwari Sector)