

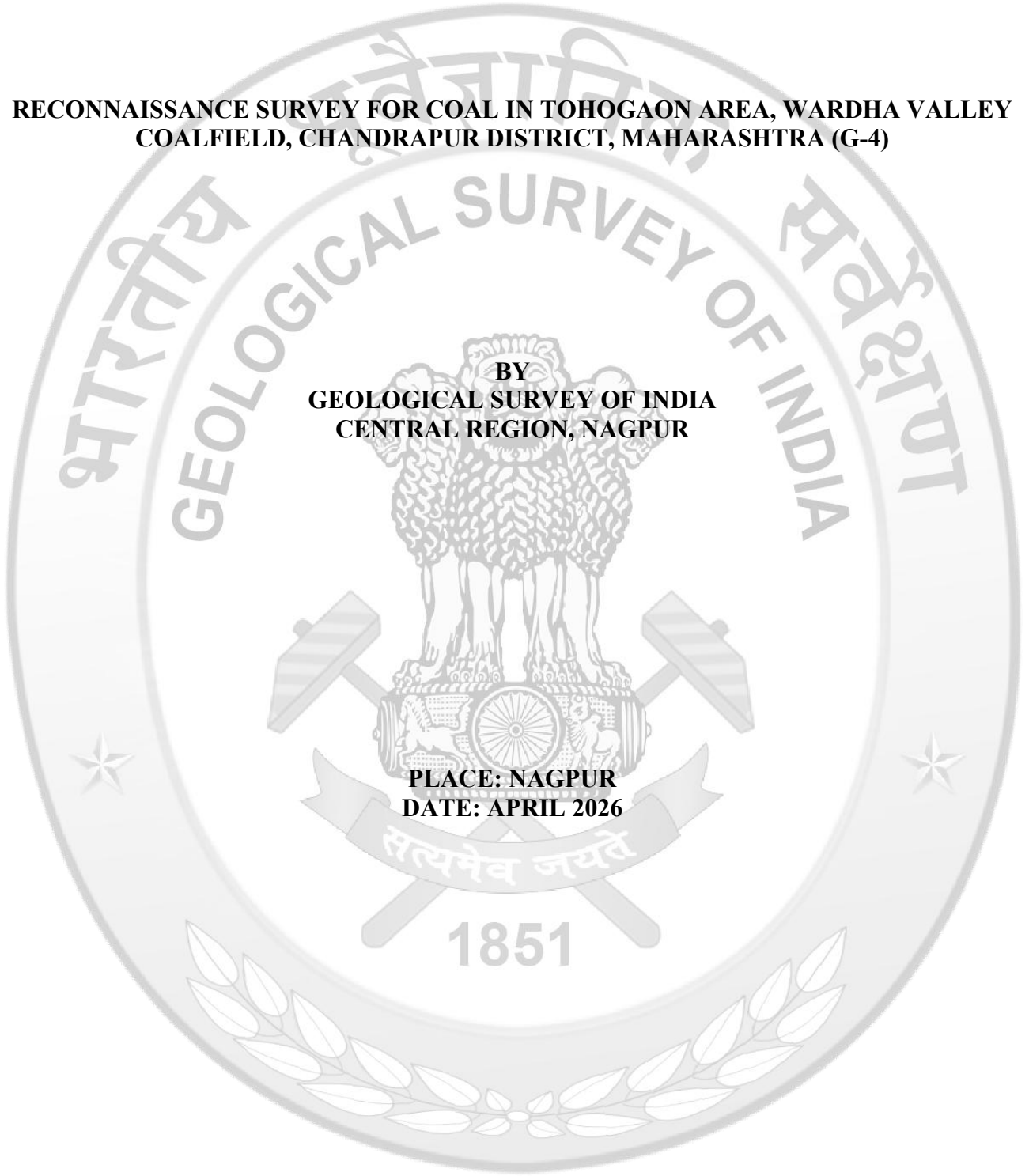
COMMODITY: COAL AND LIGNITE

**RECONNAISSANCE SURVEY FOR COAL IN TOHOGAON AREA, WARDHA VALLEY
COALFIELD, CHANDRAPUR DISTRICT, MAHARASHTRA (G-4)**

**BY
GEOLOGICAL SURVEY OF INDIA
CENTRAL REGION, NAGPUR**

**PLACE: NAGPUR
DATE: APRIL 2026**

1851



Summary of the Block for G4 Level Exploration

GENERAL INFORMATION ABOUT THE BLOCK

Feature	Details
Block ID	Tohogaon Area
Exploration Agency	Geological Survey of India, Central Region, Nagpur
Commodity	Coal and Lignite
Mineral Belt / Geological Domain	Wardha Valley Coalfield
Block Area	57 sq. km
Completion Period	One year
Objectives	1) To prove the strike and dip continuity of regional Barakar coal seams, already established in the Wihirgaon Area to the west, 2) To assess additional coal resources in the area
Projected Outcome	Reconnaissance survey 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	55M/5,6,9 & 10
District / State	Chandrapur / Maharashtra

1. Location

BLOCK

Cardinal Points	Latitude	Longitude
A	19° 48' 0.8"N	79° 28' 54.50"E
B	19° 48' 0.8"N	79° 30' 59.00"E
C	19° 39' 28.6"N	79° 30' 59.00"E
D	19° 39' 28.6"N	79° 28' 54.50"E
Tehsil/Taluka	Gondpipri	
District	Chandrapur	
State	Maharashtra	

2. Area

Block Area	57 sq. km.
Forest Area	NIL
Government Land Area	Data not available
Private Land Area	Data not available

3. Accessibility

Nearest town	Rajura town, about 38 km to the north west
District headquarters	Chandrapur about 55 km south of Tohogaon Area
Nearest Rail head	Ballarpur about 35 km northwest of Tohogaon Area
Nearest Airport	Nagpur, 190 km

4. Hydrography: Small seasonal streams and Wardha River

5. Climate: sub tropical

6. Topography: Plains.

7. Availability of baseline geoscience data

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

8. Justification for taking up G4 level exploration

During FS:2024-25, GSI carried out coal exploration in the Wihirgaon area (84 sq km) in TS No. 56M/05 & 06. The regional strike of the area is NW-SE with dips varying from 2° to 4° towards the north-east. The subsurface data revealed that the presence of Kamthi, Barren Measures and Barakar Formation having one coal seam with three split sections i.e. top, middle and bottom. The cumulative coal thickness intersected is 68.44m and it is found between ranges from 337.20m to 753.25m in depth. Borehole WWH-1 was drilled up to a total depth of 630 m and intersected a cumulative coal thickness of 13.20m. Based on the results of WWH-1, three more boreholes, namely WWH-2, WWH-

3 and WWH-4, were planned and drilled to final depths of 662 m, 764 m and 510 m, respectively. The cumulative coal thickness intersected in boreholes WWH-2, WWH-3 and WWH-4 is 5.27 m, 16.19 m and 15.93 m, respectively. The thickness of individual coal seams varies from 0.50 m (Middle Seam, WWH-3) to 4.12 m (Bottom Seam, WWH-1). Coal seams were intersected within the depth range of 337.20 m (WWH-4) to 752.40 m (WWH-4). Coal quality studies indicate that moisture content ranges from 4.71% to 9.03%, while ash content varies between 16.07% and 52.40%. The gross calorific value (GCV) of coal ranges from 2515 to 6277 kcal/kg having ranges from G4 to G16 coal grades. Coal petrographic analysis reveals vitrinite reflectance (VRo%) values between 0.12% and 0.76%, indicating a non-coking coal of lignite to sub-bituminous (B to C). The total reconnaissance coal resource of the area is 846.86 million tonnes.

RECONNAISSANCE SURVEY FOR COAL IN TOHOGAON AREA, WARDHA VALLEY COALFIELD, CHANDRAPUR DISTRICT, MAHARASHTRA.

1.1.0 INTRODUCTION

The Tohogaon Area is situated in the south-eastern part of Wardha Valley Coalfield and precisely in the east of previously explored Wihirgaon Area. The Tohogaon Area (FS: 2026-27), bounded by latitudes and longitudes 19°39'28.6"N ' to 19°48'0.8" N and longitudes 79°28'54.50"E to 79°30'59.0"E, covers an area of 57 sq. km and falls in part of Survey of India toposheet No. 55M/5,6,9 & 10.

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

2.1.0 BACKGROUND INFORMATION

The Tohogaon Area (FS: 2026-27), bounded by latitudes and longitudes 19°39'28.6"N to 19°48'0.8" N and longitudes 79°28'54.5"E to 79°30'59.0"E, covers an area of 57 sq. km and falls in part of Survey of India toposheet No. 55M/5,6,9 & 10. This area is situated in the south-eastern part of Wardha Valley Coalfield and precisely in the east of previously explored Wihirgaon Area. The regional strike of the area is NW-SE with dips varying from 3° to 10° towards the north-east.

The Wihirgaon Area, FS 2024-25 is located to the east of regional exploration block, Jogapur-Sirsi area, Chandrapur District, Maharashtra. The general strike of Gondwana sedimentary strata in Wihirgaon area is NW-SE with dip 4° to 5° towards NE. Large scale geological mapping of 84.00 sq.km area on 1:25,000 scale revealed that the area is covered by black cotton soil and exposures of Kamthi Formation at some places. Sub surface data reveals presence of Barren Measure and Barakar Formation. The Barren Measures is mainly represented by medium to coarse grained, occasionally pebbly/gritty, micaceous sandstone along with claystone and siltstone. Also having coal laminae and carbonaceous material. The Barakar formation is the main coal bearing formation and is dominated by arenaceous facies with subordinate argillaceous facies in the form of grey shale, carbonaceous shales and coal seams. The sandstones are fine to very coarse grained, gritty/pebbly at places, micaceous, poor to moderately sorted, laminated having pebbles of quartz and feldspar at places.

A total of 2566.00 m drilling has been done in four boreholes viz. WWH-1, WWH-2, WWH-3 and WWH-4 with borehole spacing more than 2 km and depth ranging from 510m to 764m to assess the coal potentiality the area. The subsurface data revealed that the presence of Kamthi, Barren Measures and Barakar Formation with coal seam with three split sections i.e. top, middle and bottom.

The total depth of this borehole WWH-1 is 630m and intersected 17.49m cumulative coal thickness. Accordingly, borehole WWH-2, WWH-3 and WWH-4 have been planned and reached the final depth of 662m, 764m and 510m respectively. The cumulative coal thickness of 10.07m, 19.83m and 21.05m have been intersected in boreholes WWH-2, WWH-3 and WWH-4 respectively. The

cumulative coal thickness in all borehole is 68.44m.

Band by band analytical results of 52 samples from WWH-1 have been received which shows that Ash% and Moisture % of coal seams varies from 10.16% to 82.83% and 2.05% to 6.19% respectively.

During FS 1991-94, GSI carried out coal exploration in the Jogapur-Sirsi area (40 sq km) in Toposheet No. 56M/6 by T. K. Chakrabarti, Hemraj, V. V. Mugal and G. Gonnade. A total of 4781.35m has been drilled in thirteen regional scout boreholes viz., WDJ-1 to 8, WDR-13, 14, 15, WDK-1, and WDP-12 during FS 1991-94 which proved the existence of the Kamthis, Barren Measures, Barakar and Talchir Formations. The area is covered by the Kamthi Formation and the subsurface data revealed that the total thickness of the Kamthi Formation varies from 41.12m (BH No. WDJ-6) to 89.05m (BH No. WDR-14). The total thickness of Barren Measures varies from 92.73m (BH No. WDJ-4) to 143.98m (BH No. WDJ-6). The Main Composite seam belongs to the Barakar Formation and the maximum thickness of the Barakar Formation is 310.35m in borehole No. WDJ-6. In the Jogapur-Sirsi block, the occurrence of the main composite seam of the Barakar Formation having two to three split sections has been recorded between 255.40m and 313.61m depths. A net reserve of 92.90 million tonnes of coal has been estimated, of which 10.61 million tonnes of coal reserve has been calculated at a depth range of 300-600m. Out of 10.61 million tonnes of coal reserves, 4.70 million tonnes are indicated and 5.91 million tonnes are inferred categories. Out of 81.59 million tonnes of coal reserves, 46.97 million tonnes belong to Indicated category and 34.62 million tonnes belong to an Inferred category.

In view of above, during F.S. 2026-27, two boreholes with inter-borehole spacing of more than 2000 m are proposed to be drilled in the Tohogaon Area to unearth the stratigraphic disposition of litho units with Barakar coal seams. The expected borehole depths will range from 700 m to 900 m, targeting the regional Barakar seams/zones, which are anticipated to occur between depths of 700 m to 850 m within the Barakar Formation. In addition to borehole drilling, an area of 57 sq. km will be covered through Geological Mapping at a scale of 1:25,000. The Tohogaon Area falls under leasehold of CBM. The results from these boreholes are expected to provide valuable insights, facilitating the delineation of potential future exploration areas for regional coal deposits in the north-western part of the Wardha Valley Coalfield.

3.1.0 LOCATION AND ACCESSIBILITY

The Tohogaon Area is located in the south-eastern part of the Wardha Valley Coalfield, Chandrapur District, Maharashtra, and is bounded by latitudes 19°39'28.6"N to 19°48'0.8" N and longitudes 79°28'54.50"E to 79°30'59.0"E. The area falls within Survey of India Toposheet Nos. 55M/5,6,9 & 10, forming parts of Gondpipri and Ballarpur Tahsils, Chandrapur District, Maharashtra. The Wihirgaon area lies to the east of the already explored Jogapur-Sirsi Block of the Wardha Valley Coalfield. The district headquarters, Chandrapur, is situated to the north-west of the study area. The study area is well connected by road and rail networks. It is accessible by all-weather motorable roads from Nagpur, Chandrapur, Ballarpur, Godpipri and Rajura. State Highway No. 264 passes through the area, connecting Chandrapur with Rajura, which is located at a distance of about 26 km from Chandrapur. Ballarpur, an important town situated on State Highway No. 264, lies at a distance of about 20 km from Chandrapur.

4.1.0 PHYSIOGRAPHY, DRAINAGE AND CLIMATE

The area underlain by Gondwana sediments forms a monotonous plain with gentle undulations, with elevations generally ranging from 148 m to 218 m above mean sea level (MSL). The entire study area is covered by Kamthi Sandstone of the Gondwana Supergroup.

The study area experiences a tropical to sub-tropical climate. Summers are extremely hot, with

temperatures generally ranging from 35°C to 45°C, occasionally reaching a maximum of about 49°C during May and June. During winter, temperatures may fall below 10°C, generally ranging between 7°C and 30°C, with a rapid drop in night-time temperatures. Although the cold season is of short duration, the climate during this period is generally pleasant.

The relative humidity remains high during the monsoon season, often exceeding 70%, but decreases rapidly after the monsoon and drops to around 20% during summer. The average annual precipitation varies between 125 cm and 150 cm, with the south-west monsoon, occurring from July to September, contributing the major share of the rainfall.

5.1.0 PREVIOUS WORK

During FS 1991-94, GSI carried out coal exploration in the Jogapur-Sirsi area (40 sq km) in Toposheet No. 56M/6 by T. K. Chakrabarti, Hemraj, V. V. Mugal and G. Gonnade. A total of 4781.35m has been drilled in thirteen regional scout boreholes viz., WDJ-1 to 8, WDR-13, 14, 15, WDK-1, and WDP-12 during FS 1991-94 which proved the existence of the Kamthis, Barren Measures, Barakar and Talchir Formations. The area is covered by the Kamthi Formation and the subsurface data revealed that the total thickness of the Kamthi Formation varies from 41.12m (BH No. WDJ-6) to 89.05m (BH No. WDR-14). The total thickness of Barren Measures varies from 92.73m (BH No. WDJ-4) to 143.98m (BH No. WDJ-6). The Main Composite seam belongs to the Barakar Formation and the maximum thickness of the Barakar Formation is 310.35m in borehole No. WDJ-6. In the Jogapur-Sirsi block, the occurrence of the main composite seam of the Barakar Formation having two to three split sections has been recorded between 255.40m and 313.61m depths. A net reserve of 92.90 million tonnes of coal has been estimated, of which 10.61 million tonnes of coal reserve has been calculated at a depth range of 300-600m. Out of 10.61 million tonnes of coal reserves, 4.70 million tonnes are indicated and 5.91 million tonnes are inferred categories. Out of 81.59 million tonnes of coal reserves, 46.97 million tonnes belong to Indicated category and 34.62 million tonnes belong to an Inferred category.

6.1.0 GEOLOGY OF THE AREA

The present area of exploration occupies the south eastern part of Wardha Valley Coalfield. Rock exposures in the proposed area mainly consist of Kamthi sandstone.

7.1.0 OBJECTIVES OF THE PROPOSED EXPLORATION PROGRAMME

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

- 1) To prove the strike and dip continuity of regional Barakar coal seams, already established in the Wihirgaon Area to the west,
- 2) To assess additional coal resources in the area

8.1.0 PROPOSED SCHEME OF EXPLORATION

The proposed G4 exploration programme comprises geological mapping (1:25,000), drilling, borehole geological and geophysical logging, coal sample collection and processing, and laboratory studies. The depth continuity, grade and thickness of coal seam/zone will be checked by drilling in 2 vertical boreholes with borehole spacing more than 2000m and depths ranging from 700m to 850m.

Borehole logging, core sampling, and laboratory analyses will support interpretation and reconnaissance resource appraisal. Selected samples will also be subjected to REE & Trace elements, Ge & Li studies.

9.1.0 QUANTUM OF WORK

Item of Work	Unit	Proposed Quantum
Large Scale Mapping (1:25,000)	Sq. Km	57
Subsurface exploration: drilling	m	1800
Borehole geophysical logging	m	900
Coal samples (m)	nos.	20 m
CPS (Nos.)	nos.	10 nos.
Coal samples for REE & Trace elements, Ge & Li (Nos)*	nos.	20 nos.
Resources Assessment	nos.	2 boreholes

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	143,55,000/-	NMEDT
3	Survey work	0	By GSI
4	Laboratory studies	0	By GSI
5	Geologist at HQ	0	By GSI
	Sub Total (1to 4)	143,55,000/-	
6	Exploration Report Preparation	0	By GSI
7	Proposal Preparation	0	By GSI
8	Peer review charges	0	By GSI
9	Sub Total (1to8)	143,55,000/-	By GSI
10	GST18%	25,83,900/-	
	Total:	169,38,900/-	
	Say Rs. In Lakh	169.38/-	

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 compulsory	Per Point of observation	1.3.2	24,000.00	6	₹ 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 decrease 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 decrease 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, the rate shall decrease by	m	2.2.1.1e	12,650.00	0	₹ 0.00

		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	1800	₹ 14,355,000.00
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	2	₹ 0.00
21		Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a		2,000.00	2	₹ 0.00
22		Borehole plugging with cement	per borehole	2.2.8		10,000.00	2	₹ 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 notified core repository.	per m	X		1,590.00	900	₹ 0.00
Total Cost D- outsourced								₹ 14,355,000.00
Total (Survey Work + Drilling)								₹ 14,355,000.00
GST 18%								₹ 2,583,900.00
Total Fund Required inclusive of 18% GST								₹ 16,938,900.00
								~ 1.69 Cr

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.

Scheduled Time for the exploration for coal in Tohogaon Area, Wardha Valley Coalfield, Chandrapur district, Maharashtra. G4 stage													
		April 2026	May 2026	June 2026	July 2026	Aug 2026	Sep 2026	Oct 2026	Nov 2026	Dec 2026	Jan 2027	Feb 2027	March 2027
S. No.		1	2	3	4	5	6	7	8	9	10	11	12
1	Surface Drilling (1 rigs)												



STATUS MAP OF WARDHA VALLEY COALFIELD

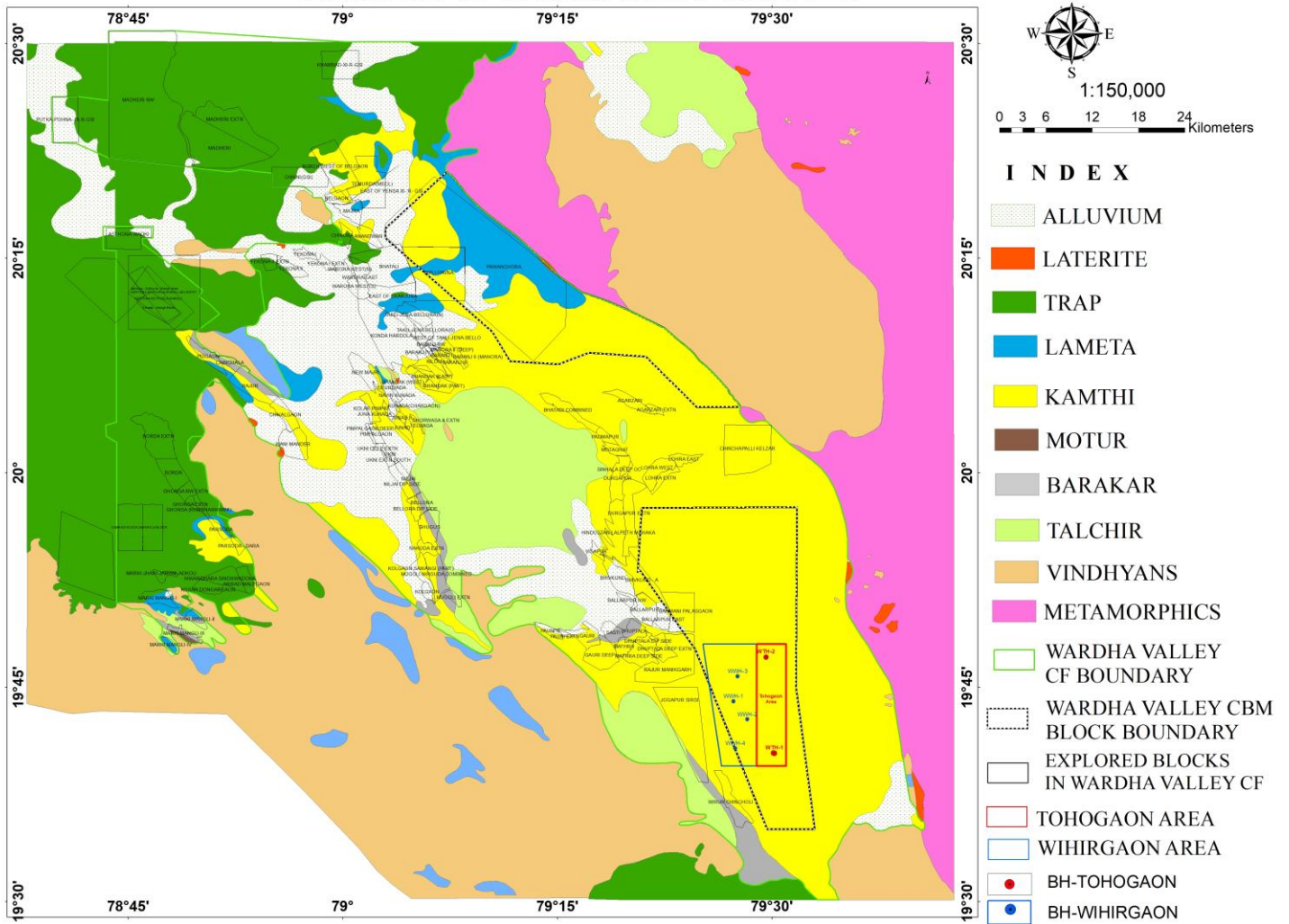
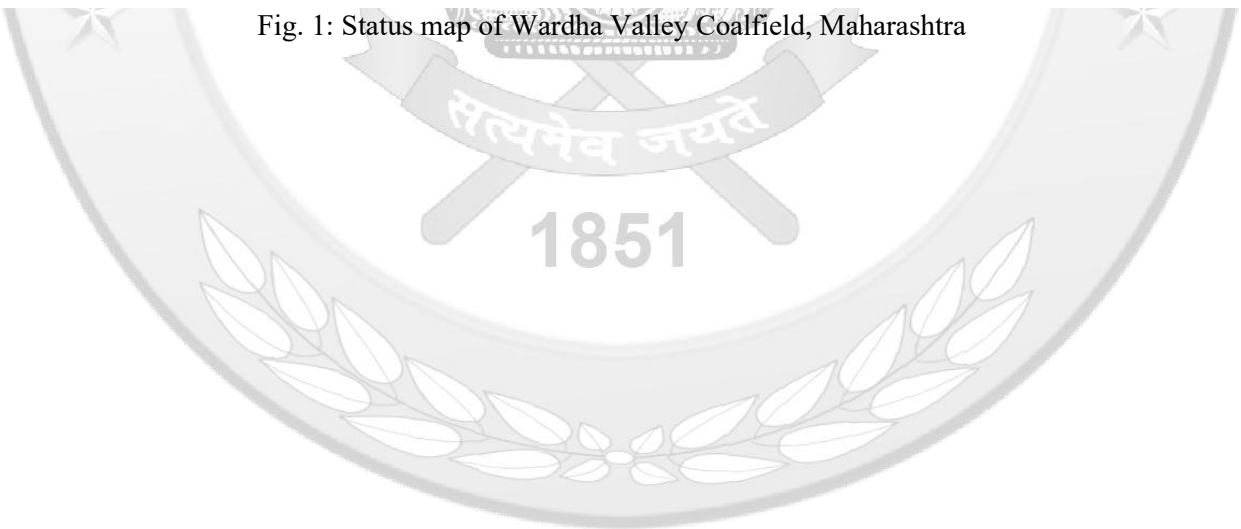


Fig. 1: Status map of Wardha Valley Coalfield, Maharashtra

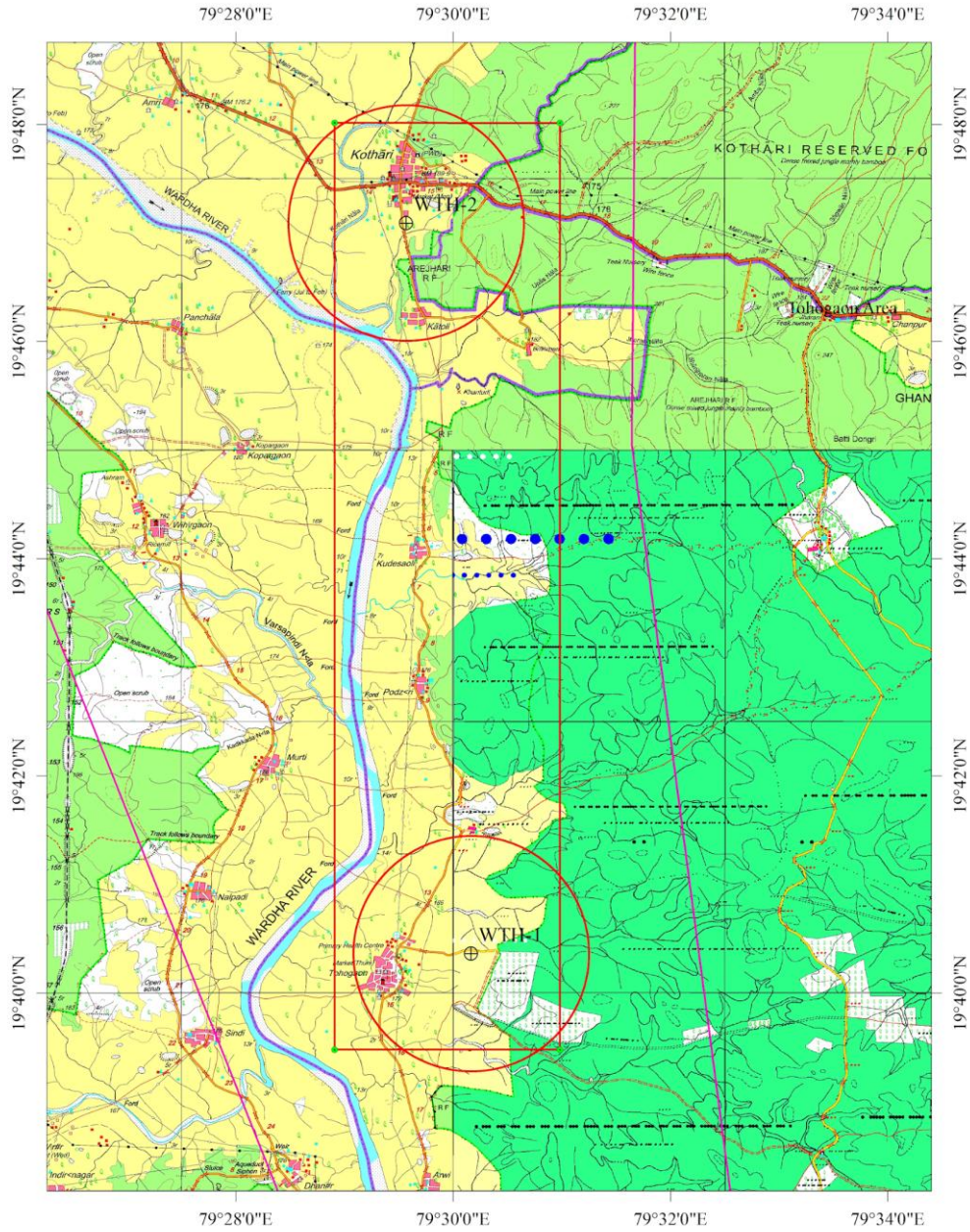




Location of Tohogaon Area, Wardha Valley Coalfield, Chandrapur district, Maharashtra



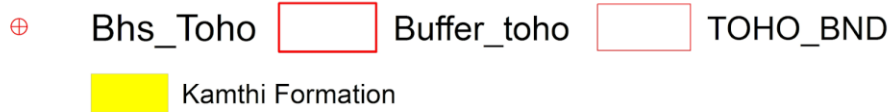
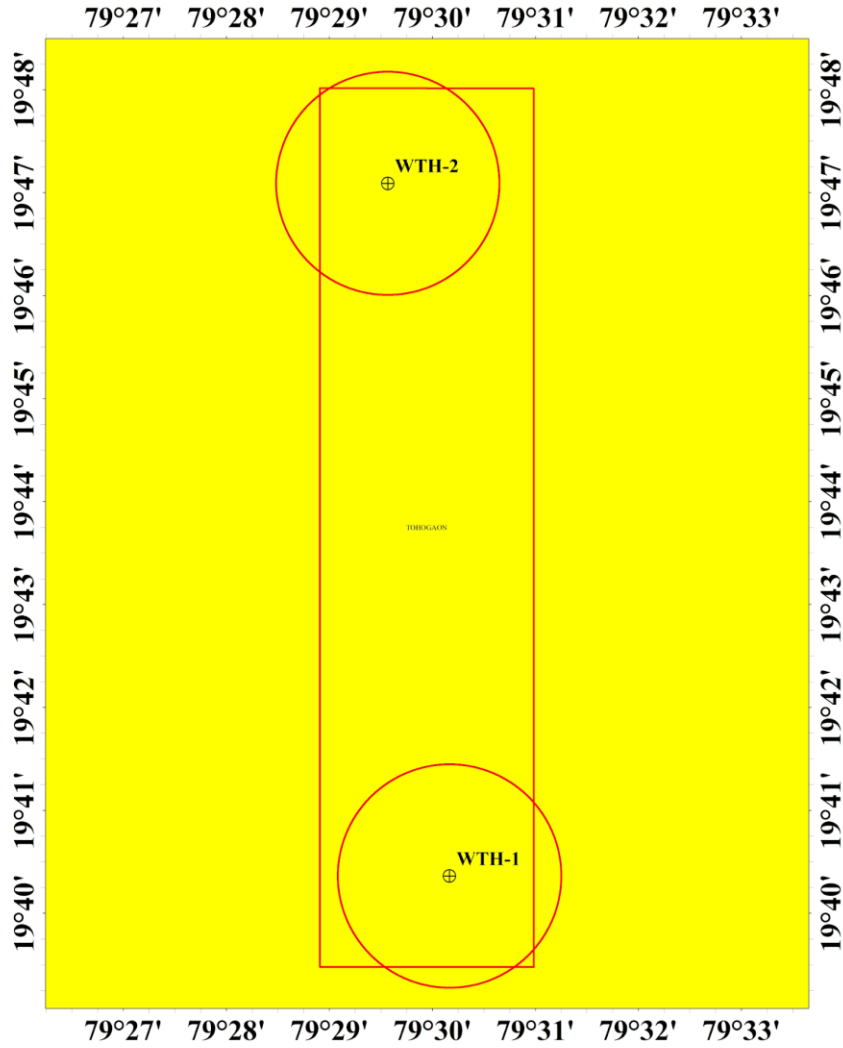
Scale: 1: 25000



TS. No. 56M/5, 56M/6, 56M/9, 56M/10



Geological map of Tohogaon Area, Wardha Valley Coalfield, Chandrapur district, Maharashtra



Expected Lithological Log of Borehole WTH-1 of Tohogaon Block, Wardha Valley Coalfield
Chandrapur District, Maharashtra w.r.t. WWH-4 of Wihirgaon Block

