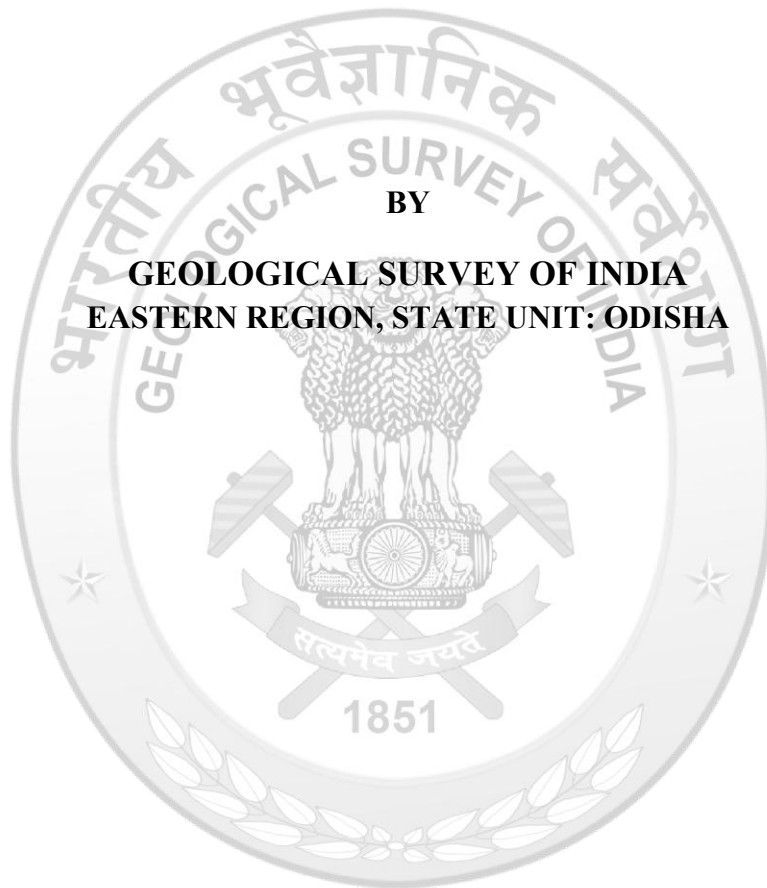


**PROPOSAL FOR PRELIMINARY (G-3) EXPLORATION FOR
GRAPHITE IN DALIPADAR BLOCK, NAYAGARH DISTRICT,
ODISHA**

COMMODITY: GRAPHITE



PLACE: BHUBANESWAR

DATE: 17.04.2026

Summary of the Block for G3 Level Exploration

GENERAL INFORMATION ABOUT THE BLOCK

Features	Details
Block ID	Dalipadar Block
Exploration Agency	Geological Survey of India, Eastern Region, State Unit: Odisha
Commodity	Graphite
Mineral Belt	Eastern Ghats Mobile Belt
Completion period with entire time schedule to complete the project	One year (FS 2026-27)
Objectives	To assess the potentiality of graphite in Dalipadar block and to estimate the resource
Whether the work will be carried out by the proposed agency or through outsourcing	Work is to be carried out by the proposed agency.
Name/Number of Geoscientists	Two geoscientists
Expected Field days	Officer1:100 days at field Officer2:100 days at field Supervisory officer: 7 field days

1. Location

Block

Cardinal Points	Latitud	Longitud
A	20°19'7.126"N	84°46'17.70"E
B	20°19'49.09"N	84°47'0.96"E
C	20°19'49.27"N	84°47'27.26"E
D	20°19'6.90"N	84°46'44.44"E
Tehsil/Taluk	Daspalla	
District	Nayagarh	
State	Odisha	

Topo sheet number	73D15
Villages	Dalipadar

2. Area

Block Area	1 sq. km.
Forest Area	NIL

Government Land Area	Data not available
Private Land Area	Data not available

3. Accessibility

Nearest town	Daspalla town, about 15 km to the east of the proposed block
District head quarters	Nayagarh, about 55 km to the east
Nearest Rail head	Daspalla, about 22 km to the east
Nearest Airport	Bhubaneswar, 155 km

4. Hydrography

Small seasonal streams and one perennial stream.

5. Climate

Hot summer with high humidity.

6. Topography

Flat area with minor undulations at places.

7. Availability of baseline geoscience data

Geological map	50K geological map carried out by GSI in and around the block and Large scale map is under preparation.
Geochemical data	NGCM data
Geophysical data	SP geophysical data

8. Justification for taking up G3 level exploration

1. The present exploration block falls within the Central Migmatite Zone (CMZ) of Eastern Ghats Mobile Belt (EGMB). It is located to the south of the Mahanadi Shear Zone. This zone comprises migmatitic charnockite and granitoids containing enclaves of khondalite which hosts graphite in the area.
2. The present block is the spin off item of G4 stage investigation in Dalipadar-Kaiandiha block (FS 2024-26) by Sahoo. et. al, GSI, SU-Odisha. During the FSP, one graphite band was delineated in proposed Dalipadar G-3 block with N30°E-S30°W strike and low to moderate northwesterly dip which have been identified through collection of BRS samples followed by trench work. FC values in BRS ranges from 4.14% to 13.06%, 5 nos. of trenches gave rise to the FC values in the range of 2.75% to 17.13%.
3. 12 L. Km of SP geophysical survey work has been carried out in proposed Dalipadar G-3 block, which is highly corroborating with the positive BRS locations as well as trench locations. SP geophysical values in the proposed block range from -149 mV to -240mV.
- 4) As per IBM latest guidelines, the threshold value for flaky graphite is 2% FC, hence the area warrants a systematic G-3 stage investigation.

PROPOSAL FOR PRELIMINARY(G-3) EXPLORATION FOR GRAPHITE IN DALIPADAR BLOCK, NAYAGARH DISTRICT, ODISHA

1.0 INTRODUCTION

Keeping a view on the demand positions of graphite, exploration of graphite and carbon bearing material in nature has been substantially highlighted by understanding the geological complexities and targeting the key horizons in nature to meet the requirements.

In response to a number of green energy initiatives and being declared as a part of critical mineral, the role of graphite has considerably increased. These include lithium-ion batteries, fuel cells, solar energy, semi-conductors, nuclear energy and many more where the demand for graphite has considerably increased.

2.0 BACKGROUND INFORMATION

2.1 Regional Geology

The present area falls in Toposheet nos. 73D/15 in parts of Nayagarh district, Odisha and forms a part of the "Daspalla Graphite Belt", in Odisha. The area falls within the Central Migmatite Zone (CMZ) of Eastern Ghats Mobile Belt (EGMB). The graphite occurrences of Odisha is mainly associated with khondalites, belonging to Precambrian Eastern Ghats Mobile Belt (EGMB), and occurs in form of bands, en-echelon veins and lenses usually disposed conformably to the foliation planes of the host rocks and at places, in shear zones and hinge zone of folds, indicating both lithological and structural controls of ore localization. In general, graphite is crystalline and flaky in nature. Khondalite, the metasedimentary unit, is medium to coarse grained, leucocratic and banded in nature and is migmatized showing folded and layered/stromatic structure. It occurs as isolated mounds, ridges and bouldery outcrops at very few places. It is composed of quartz, alkali feldspar, plagioclase, biotite, garnet and sillimanite. Alternate garnet - biotite - sillimanite mafic layer and quartzo-feldspathic felsic layers define the gneissic banding. Migmatized khondalite is the host rock for graphite. The host rock khondalite strikes N20W-S20E to N20E-S20W with moderate dip towards west.

2.2 Previous work on the proposed working area

G4 stage investigation work has been carried out by GSI, SU: Odisha in the proposed area by Sahoo, T.P. and Sahoo, M. during FS 2024-26 and the present G3 item is the spin off item of the said G4 block. During the work, one graphite band was delineated in the present Dalipadar G-3 block with N30°E-S30°W strike and low to moderate northwesterly dip which have been identified through collection of BRS samples followed by trench work. FC values in BRS ranges from 4.14% to 13.06%. 5 nos. of trench work have been carried out in proposed Dalipadar G-3 block. FC values of trench samples range from 2.75% to 17.13%. Moreover, in the surrounding area, graphite was reported in this Daspalla sector (around Tumandi village) by Moharana and Ghosh (2014) during geological mapping and subsequently reconnaissance survey, G4 work by Dass and Mondal (2021) and preliminary exploration, G3 work by Sahoo and Mitra (2023).

During FS 2018-19, Parhi & Som carried out National Geochemical mapping in Survey of India Toposheet no 73D/15 on 1:50,000 scale covering an area of 720 sq km with the main objective to generate a geochemical baseline database using multielemental analysis. It has been reported that graphite has been observed to be exposed in and around the area nearer to Senperi village.

3.0 OBJECTIVES

To assess the potentiality of graphite in Dalipadar block and to estimate the resource

4.0 BLOCK DESCRIPTION

4.1 Location and extent

The area is ~15 km west of Daspalla, which is a block headquarter in Nayagarh district, Odisha. The area is situated at a distance of approx. 155 km from Bhubaneswar and 55 km NW of Nayagarh district.

The study area is connected to Dashapalla via NH- 57, which further connects it to Nayagarh district headquarter, Khordha and Bhubaneswar.

The proposed block is defined by four corner coordinates as given below.

Point	Latitude	Longitude
A	20°19'7.126"N	84°46'17.70"E
B	20°19'49.09"N	84°47'0.96"E
C	20°19'49.27"N	84°47'27.26"E
D	20°19'6.90"N	84°46'44.44"E

5.0 METHODOLOGY / WORK PLAN

Detailed mapping on 1:2,000 scale is proposed for the block along with collection of surface samples, including bedrock and channel samples, in order to delineate graphite mineralised zones. A total of 1200m of drilling will be carried out in 12 boreholes, out of which 06 nos. are 1st level boreholes with a approximate depth of 80 mand will be spaced at 200 m strike interval followed by 06nos. of 2nd level boreholes with a approximate depth of 120 m at 200m strike interval. The 1st level boreholes are planned to intersect the graphite body at 30.0 m vertical depth whereas, the 2nd level boreholes will be planned to intersect the graphite ore body at 60.0 m vertical depth. Moreover, a couple of third level boreholes may also be carried out during the G3 stage of investigation to assess the depth continuity of graphite mineralization, if thicker mineralization will be intersected in boreholes.

6.0 NATURE AND QUANTUM OF WORK

Nature of Work	Work proposed for NE of Muthli Block
Geological Survey: Detailed Mapping (1:2,000)	1 sq. km
Subsurface Exploration: Drilling	1200 m
P & T	40 Cu m.
PTS	40 nos.
Bedrock Samples (BRS)	10 nos.
PCS	10 nos.
Core Samples (CS)	300 nos.
PS	10 nos.
ORM/OM	5 nos.
SEM	5 nos.
Chemical Analyses	360 nos.

7.0 TIMELINE

The proposed exploration programme is planned in such a way that all the activities like mapping, surface sampling, drilling, core sampling and associated geological work and laboratory work will be completed within 12 months. Report writing will take 3 months with 2 months overlapping with laboratory analysis. Thus, the total duration of the project for completion of the above exploration will be 15 months from the date of commencement of the project till final circulation of the report.

SCHEDULED TIME FOR G-3 LEVEL EXPLORATION FOR GRAPHITE IN DALIPADAR BLOCK, NAYAGARH DISTRICT, ODISHA													
		APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
S.No.	Activities	2026	2026	2026	2026	2026	2026	2026	2026	2026	2027	2027	2027
		1	2	3	4	5	6	7	8	9	10	11	12
1	Surface sampling		■	■				■	■	■	■		
2	Detailed Mapping (1:2000)		■	■				■	■				
3	Drilling (1200m)			■				■	■	■	■		
4	Core sampling							■	■	■	■	■	
5	Laboratory studies							■	■	■	■	■	■
6	Report writing/ Peer review												■
Rainy season													

*Time loss on account of monsoon/agricultural activity/forest clearance/ local law & order problems will be addition to above time line.

8.0 COST

Summary of the Cost estimates

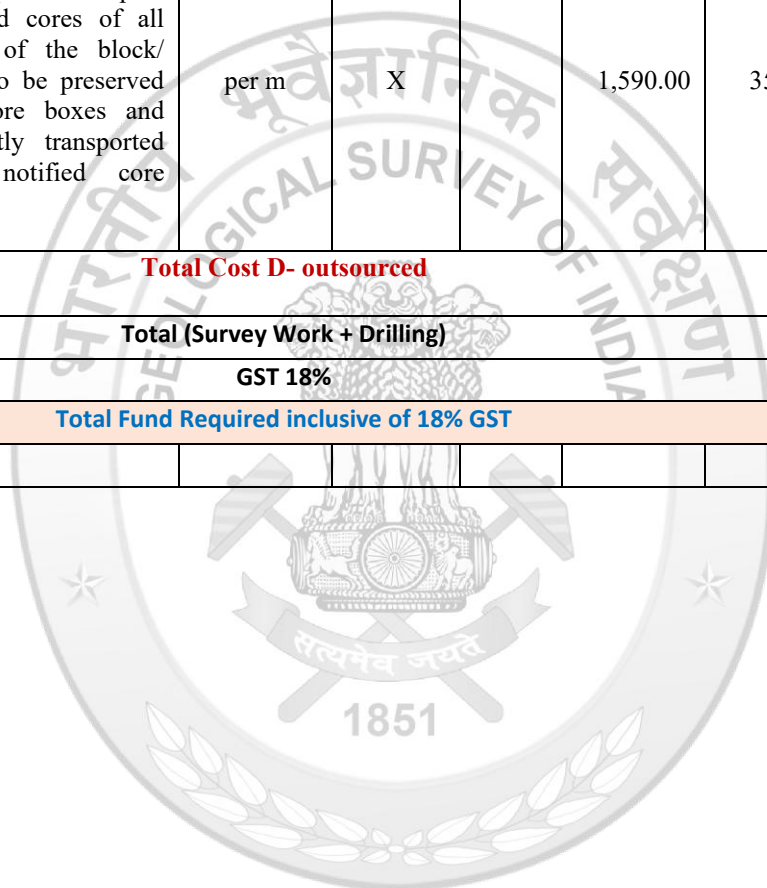
Sl. No.	Item	Total Estimated Cost (Rs.)	Funding
1	Geology and Survey	0	By GSI
2	Drilling	1,20,00,000.00/-	NMEDT
3	Survey work	7,65,720.00/-	NMEDT
4	Laboratory studies	0	By GSI
5	Geologist at HQ	0	By GSI
	Sub Total (1to 4)	1,27,65,720.00/-	
6	Exploration Report Preparation	0	By GSI
7	Proposal Preparation	0	By GSI
8	Peer review charges	0	By GSI
9	Sub Total (1to8)	1,27,65,720.00/-	By GSI
10	GST18%	22,97,829.60/-	
	Total:	1,50,63,549.60/-	
	Say Rs. In Lakh	150.64	



Item of Work	Unit	SoC-Item -SI 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 boreholes 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 system for all DGPS is compulsory	Per Point of observation	1.3.2	24,000.00	16	₹ 3,84,000.00
9	b	Charges of one qualified surveyor with Total station for carrying out topographical survey in different RF and surface contouring at different interval, fixation of borehole and determination of co-ordinates and reduced Level (RL) of the boreholes with total station etc. a) Charges of one surveyor per day (without labour) (Up to 4 labourers will be allowed per surveyor)	one surveyor per day	1.3.1	10,500.00	30	₹ 3,15,000.00
	c	Labour Charges for Survey work	Per day	As per Govt rates	556.00	120	₹ 66,720.00
Total Cost B (in case of out sourcing)							₹ 7,65,720.00
Item of Work	Unit	SoC-Item -SI 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 up to 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 up to 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	1200	₹ 1,20,00,000.00
18.c		Drilling in/ Drilling in Very Hard rock/ Strata: HQ size borehole up to 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	2.2.1.1e	12,650.00	0	₹ 0.00
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	0	₹ 0.00
18.a		Mechanised Auger Drilling for soft strata up to 30m depth	m	2.2.2.1	4,760.00	0	₹ 0.00
18.b		Hand Auger drilling in soft strata up to 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	Borehole Deviation Survey by Multishot survey tool (interval 6m; azimuth and inclination to be recorded)	per shot	2.2.5	330.00	80	₹ 0.00
20		Land / Crop Compensation (in case the BH falls in agricultural Land)	per BH	5.6	30,000.00	12	₹ 0.00
21		Construction of concrete Pillar (12"x12"x30")	per borehole	2.2.7a	2,000.00	12	₹ 0.00
22		Borehole plugging with cement	per borehole	2.2.8	10,000.00	12	₹ 0.00

23	Miscellaneous Charges (Transportation of Drilling Rig, accommodation for Drilling Camp, Camp setting and winding, construction of approach road)	Lumpsum	0	2.2.9.3	For Drilling cost >1 Cr: and less than 2 Cr 15 % of the Drilling Cost with a maximum ceiling of Rs.20 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 boxes and subsequently transported to the notified core repository.	per m	X		1,590.00	350	₹ 0.00
Total Cost D- outsourced							₹ 1,20,00,000.00
Total (Survey Work + Drilling)							₹ 1,27,65,720.00
GST 18%							₹ 22,97,829.60
Total Fund Required inclusive of 18% GST							₹ 1,50,63,549.60
							~ 1.51 Cr



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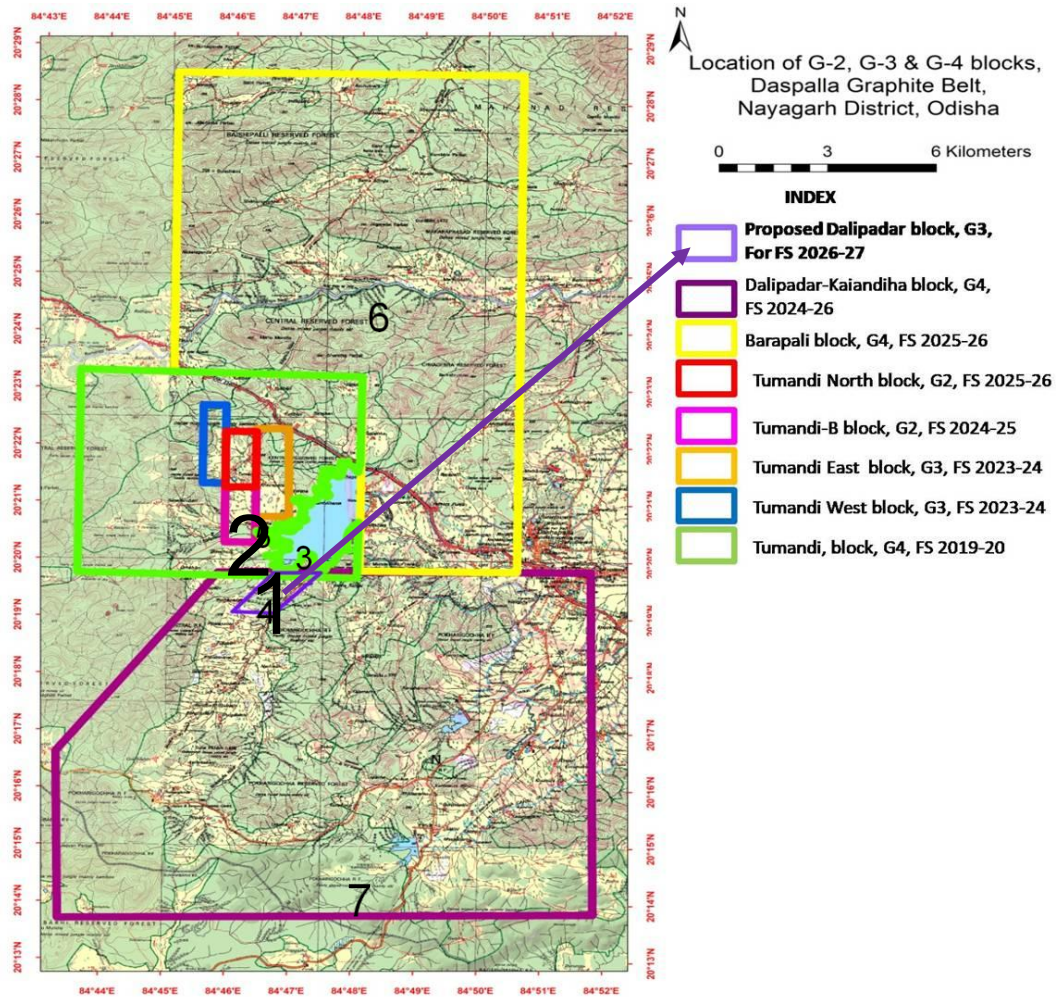
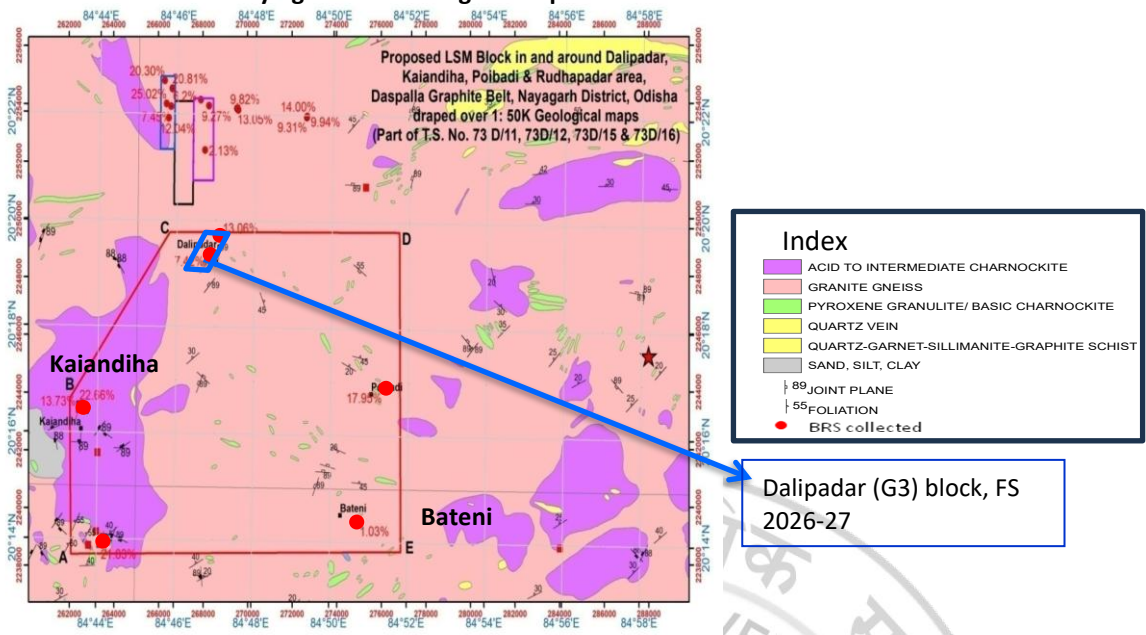


Fig 1A: Study area proposed for FS: 2026-27

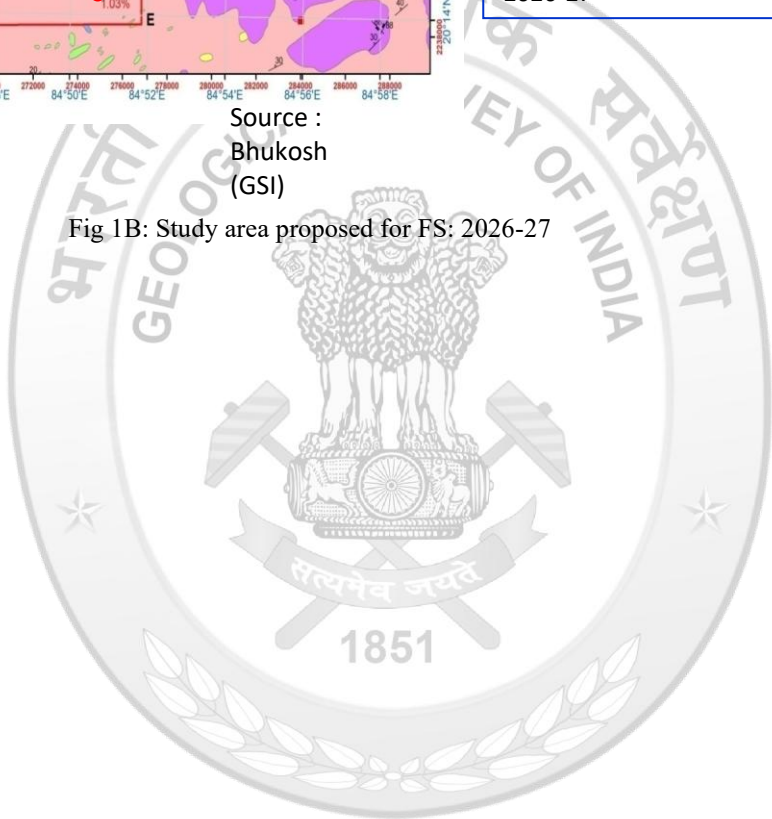


G3 Block overlying on 50K Geological map



Source :
Bhukosh
(GSI)

Fig 1B: Study area proposed for FS: 2026-27



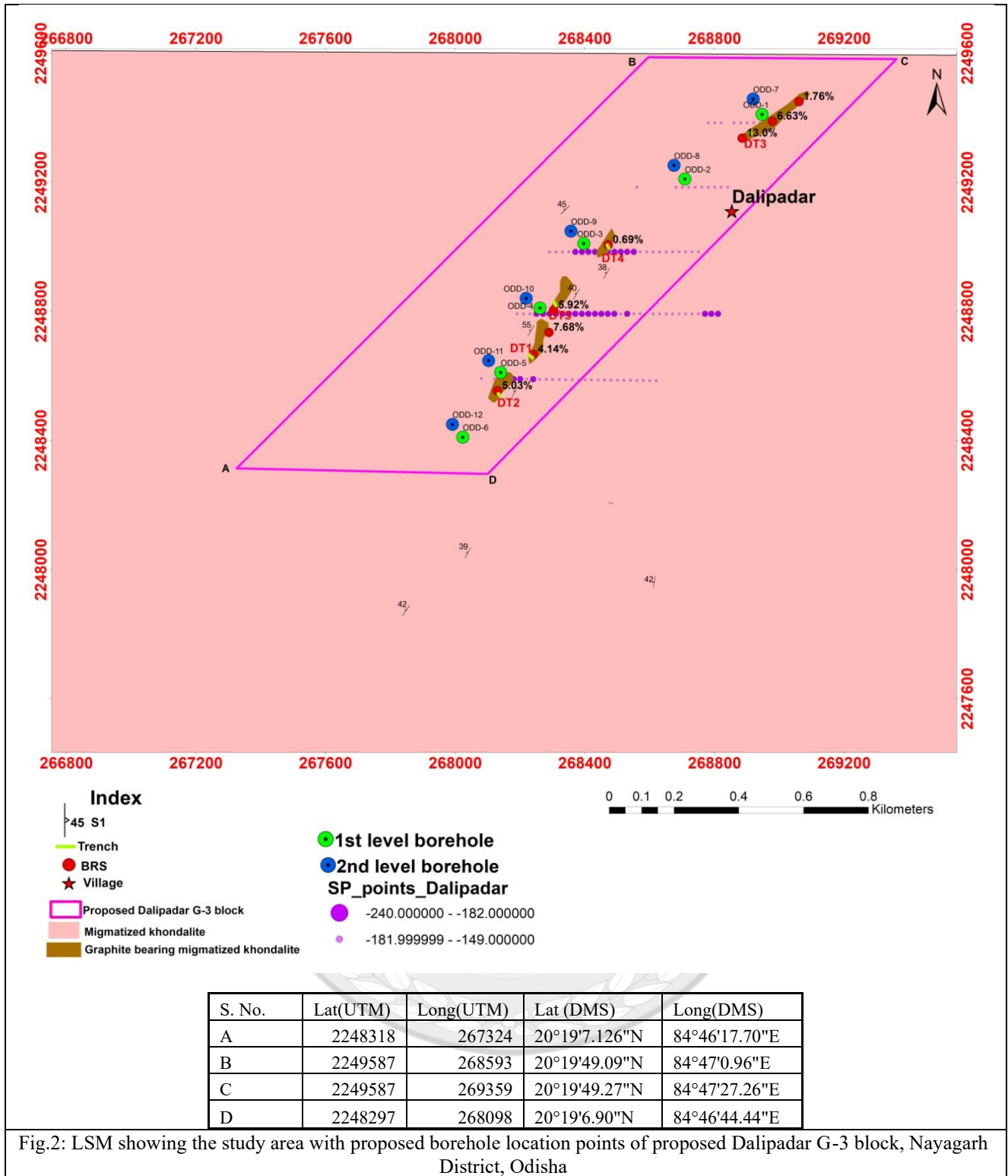


Fig.2: LSM showing the study area with proposed borehole location points of proposed Dalipadar G-3 block, Nayagarh District, Odisha

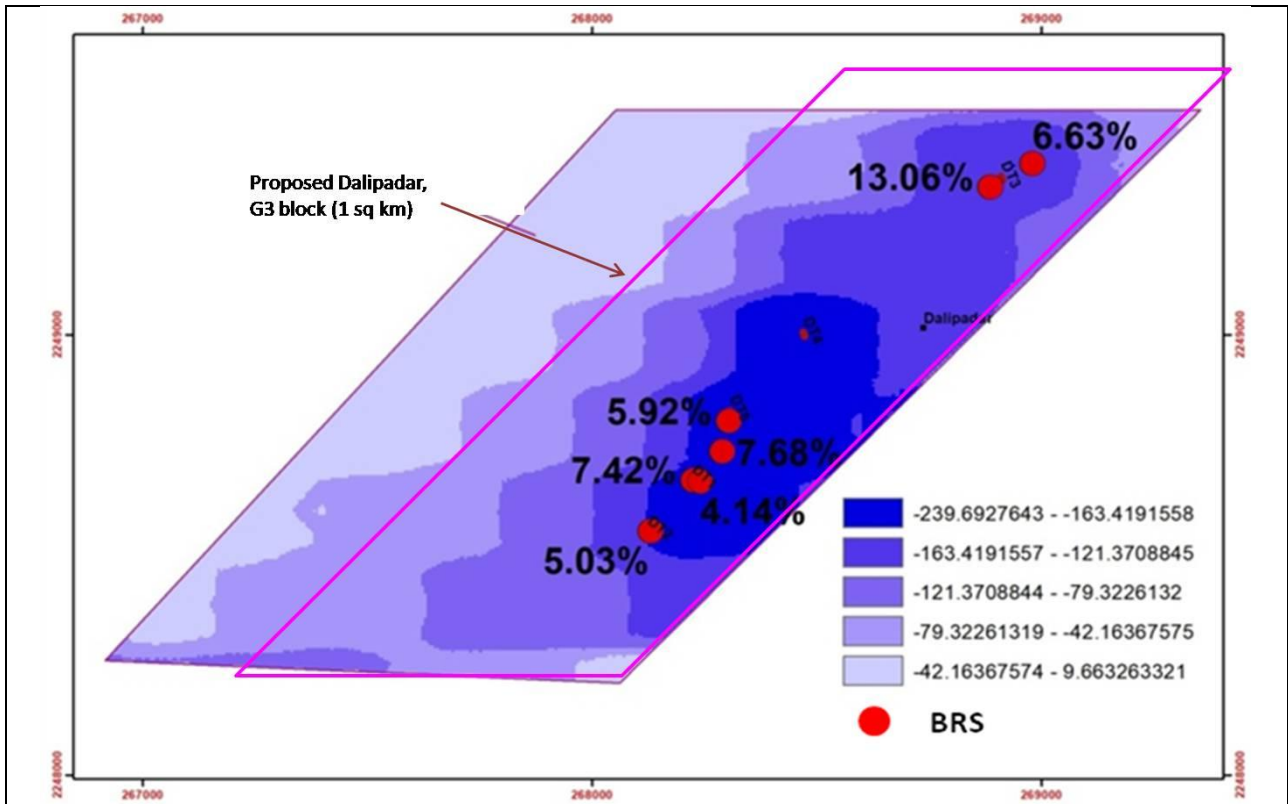


Fig. 3. SP Geophysical Survey carried out in the proposed Dalipadar G3 block during G4 stage, FS 2024-25

