Proposal for Madhyapur Block
(Area – 6.5 Sq. Km), Keonjhar District, Odisha
For G3 Level Exploration under NMET

Commodity: Iron

By

Odisha Mining Corporation Limited

Gopabandhu Marg, Unit 4, Keshari Nagar,
Bhubaneswar, Odisha 751001

Place : Bhubaneshwar

Date : 6th Dec 2023

Summary of the Madhyapur block for G3 Exploration

1. Features	Details
Block ID	Madhyapur
Exploration Agency	Odisha Mining Corporation Limited
Commodity	Iron
Mineral Belt	Tomka-Daitari IOG Belt
Completion Period with entire time schedule to complete the project	12 Months
Objectives	• To identify and demarcate the BIF bands, by geological mapping in 1:4,000 scale. • To understand the depth continuity of the limited Iron ore Exposures • To prove the mineralized zones and check the subsurface continuity by Exploratory drilling
Whether the work will be carried out by the proposed agency or through outsourcing and details thereof. Components to be outsourced and name of the outsource agency	The current exploration work will be carried out by OMC Limited.
Name/ Number of Geoscientists	Geologist/s: 01 Nos at HQ (50 days)
Expected Field days (Geology, Surveyor)	Geologist/s: 02 Nos at Field (150 days) Surveyor: 90 days
2. Location	
Latitude	21°18' 32.44"N, 21°16' 31.74"N
Longitude	85°45' 13.43"E, 85°43' 53.84"E
Villages	Madhyapur, Banbir, Kantala, Rohi, Jayapashi
Tehsil/ Taluk	Harichandanpur
District	Keonjhar
State	Odisha
3. Area (hectares/ sq. km)	
Block Area	6.5 Sq. Km
Forest Area	6.5 Sq. Km
Government Land Area	Not available
Private Land Area	Not available
4. Accessibility	
Nearest Rail Head	Nearest Rail Head: Harichandanpur, around 7

	km from Madhyapur
Road	The area is approachable from National Highway NH 720, around 8 km from the area.
Airport	Nearest airport is Bhubaneshwar Airport which is at the distance of ~170kms from Madhyapur village
5. Hydrography	
Local Surface Drainage Pattern (Channels)	The nalas are perennial and making sub dendritic drainage pattern, which ultimately join Mushala river in north and Bagira River in south. During rainy season, nalas are in full spate inundating village and forest roads, making the area difficult to access.
Rivers/ Streams	Mushala Nala and Bagira Nala are in the north and southeastern part of the area respectively.
6. Climate	
Mean Annual Rainfall	1500 mm/annum
Temperatures (December) (Minimum)	17°C
Temperatures (June) (Maximum)	36°C
7. Topography	
Toposheet Number	Part of Toposheet No. 73 G/11, G/15
Morphology of the Area	The area comprises of high ridges with stiff slopes and cliff surfaces at many places. The maximum height is 698m at Bramhanidei Mountain east of Banabiri. The general elevation ranges from 380m to 600m MSL
8. Availability of baseline geoscience data	
Geological Map	Geological Map (based on works of GSI) derived from Bhukosh website on scale 1:50,000
Geochemical Map	**Not Available**
Geophysical Map (Aeromagnetic, ground geophysical, Regional as well as local scale GP maps)	Aeromagnetic available (Sourced from Directorate of Geology, Odisha. Aeromagnetic Survey was carried out in the year 1995)
9. Justification for taking up G3 stage Mineral Exploration	a. GSI carried out work in this area from 2005-2009 (Report reference number UE14037, UE14769) b. Large scale mapping on 1:12,500 scale was carried out over 50 sq. km area around

	Burhipada-Madhyapur in parts of Toposheet No. 73 G/11, 12, 15 & 16, Kendujhar district, Odisha. c. During F.S-06-07, iron ore exploration programme was formulated in the Pongaposhi- Madhyapur area, for quick assessment of resource by preliminary test drilling. d. Madhyapur block is further divided into Madhyapur North and South sub-blocks because of the discontinuous lenses of iron ore bodies. e. Only drilling was continued at Madhyapur south sub-blocks. (2 BHs for cumulative 49m, Depth of occurrence 3.7m – 12.25m) f. The Fe content reported to vary from 45.89% to 65.83% based on 43 samples analysed from Madhyapur South block. g. No samples were analysed from Madhyapur North block. h. The proposed approach would entail detail geological mapping over the entire study area to locate possible areas of supergene enrichment if any, followed by drill testing to ascertain the lateral as well as depth continuity of the mineralization.
10. Preliminary Field Inspection by OMC	
	a. Technical Team of OMC visited the proposed Madhyapur block and undertook some reconnaitory traversing in and around the study block. b. Observations: • The ridges are very steep and covered with dense vegetation. • Mostly BHQ, BHJ are encountered in the ridges during the limited traverse. • The ridges are trending almost in N-S direction with steep dip towards west.

DETAILED DESCRIPTIONS:

1. Block Summary:

1.1. Physiography : The proposed study block is having highly rugged terrain with N-S trending steep linear ridges in the central part and flat plain covering the eastern and western parts of the area. The ridges run parallel with quartzite and metabasic rocks and are circumfered by the granite on north, west and south. The eastern ridge comprising BIF (mainly BMQ) having a lower elevation than the western ridge consisting of mostly BHQ/BHJ. The maximum altitude of the area is about 698m contour level, and the minimum altitude is 380m. The ridges are covered by dense vegetation and falls under Reserved Forest.

1.2. Background Geology (Regional Geology, Geology of the Block):
The Iron Ore Supergroup of rocks of Tomka-Daitari belt occur in the northeastern part of Singbhum Craton in north Odisha. The volcano-sedimentary rocks of the area is separated by granite from (i) 'Horse shoe' shaped basin of Bonai-Kendujhar belt and ii) Badampahar-Gorumahisani belt of Mayurbhanj district. The rocks exposed around Tomka-Daitari basin extend further towards Ghutang, Burhipada, Pangaposhi and Madhyapur area for about 50km length. The stratigraphic thickness of meta sedimentaries being conspicuously more around Daitari-Bali parbat sector gradually gets thinning down to the present working area. In the east it gets terminated by folding back at east of Tomka, thereby shows maximum thickness of the BIF at Tomka and Daitari. The litho assemblages occupying in this entire belt comprises actinolite chlorite schist, talc tremolite schist, BHQ/ BMQ/ BHJ with pockets of iron ore, lenticular patches of conglomerate, gritty quartzite, carbonaceous phyllite, ferruginous shale and phyllite which are surrounded by granite towards both east, west and north. Dolerite dykes are found to occur as the intrusive rock to all these litho units. They are also traversed by late-stage quartz veins. The litho-units extend ENE-WSW strike in the eastern part of the basin from Tomka to Daitari for about 15 km and gradually towards west it takes turn to N-S strike from Daitari to Talapada which again swerves to east-west trend near east of Kalisagar. Further north- west the change of strike of these litho-units in N NW-SSE to NNE-SSW direction from Ghutang - Burhipada - Madhyapur sector indicate the influence of fold structure in the area. The general stratigraphic succession of rocks in this belt as worked out by Prasad Rao and Dekhitulu can be summarized as mentioned below.

Second sequence	Banded hematite jasper, banded jasper, black chert
	BHQ with alternate shales
	Grits and conglomerates, phylites, ferruginous shale, and carbonaceous shale.
First Sequence	**---Unconformity---**
	Metavolcanics, chlorite schist, hornblende schist and amphibolites
	Quartzite, BHQ, etc.
	Mica schist, fuchsite quartzite, micaceous quartzite etc

The local stratigraphic succession is given as follows:

Quartz vein and dolerite dykes

Upper Sequence

Phyllites

Gritty and massive quartzite with siltstone and phyllite partings

Conglomerate (polymictic)

Lower Sequence

Meta basics and meta ultramafics

Tourmaline bearing meta chert

BMQ & BHQ with iron ore (mostly magnetite)

Banded cherty quartzite (Black& green)

Quartz-chlorite schist, talc-tremolite schist, Actinolite- chlorite schist etc.

Granite & Granite gneiss (Base not seen)

The litho assemblages of lower sequence is resembling similarity with the rocks of older Badampahar – Gorumahisani iron ore group enclosing predominantly magnetitic iron ore bodies. The rocks of upper sequence of the area can be correlated with the litho assemblages of younger iron ore group of Bonai- Kendujhar belt, having mostly hematitic iron ore body. Thus, the area under study represents the contact zone of two important iron ore basins of Orissa.

The important litho units are discussed below which are found to be exposed around the block.

i) **Granite/ Granite Gneiss:** Granite/ Granite Gneiss is exposed in the northeastern part of the area around Pathuripenth, Nardangipenth, Bareiguda and Palaspal villages. They occur as small mounds, isolated sheets and detached outcrops within the pedeplain. It is leucocratic, medium to coarse grained and is composed of mainly quartz and feldspars with mica. It is well foliated near the contact, with lower volcano- sedimentary sequence and is exposed in a linear fashion extending from west of Palaspal to Bareiguda along NW-SE direction which becomes non foliated type near Bareiguda. Isolated patches of layered quartzo- felspathic rocks are also found near the contact because of sheet joints.

Under microscope, it is composed of quartz, plagioclase, orthoclase + microcline as essential minerals and biotite, epidote, clinozoisite as accessories. Granites shows myrmekitic and perthitic textur. Quartz grains are found to be stretched along the foliation plane, in the granite gneiss.

ii) **Meta Basics:** These rocks are mainly exposed in the low-lying valley area and are represented by talc-tremolite/ actinolite schist and actinolite–chlorite schist with undigested and less metamorphosed basalt/ ultramafic patches. These two varieties of schistose rocks are so intimately associated with each other, it is difficult to map them as separate units. The talc–tremolite schist is soft, earthy/ greenish colour having greasy feel while actinolite-chlorite schist is light green in colour. In a single outcrop amygdular meta basalt is exposed and vesicles of varying dimensions are filled with silica. Under microscope, the schistose rocks composed of mainly tremolite, actinolite, and chlorite as major constituents, with clinozoisite and biotite as minor minerals. In some undigested metabasalt sections, altered plagioclase, actinolite- chlorite are found.

iii) **Quartzite:** Quartzite occur as discontinuous elongated bodies with NW-SE trend in Kalisager hill, east of Ghutang, west of Rebana, Sanjumei and around Kanjiapal, which abuts against upper sequence. It is exposed as four separate bands from east to west, alternate with metabasic rocks in the mapped area, may be due to folding. These are laminated / thinly beded, light grey to dark grey, greenish coloured rock. Cherty quartzite is found to traversed by milky white to smoky grey quartz veins along bedding/ foliation planes.

Under microscope, it contains quartz (95%) as very fine-grained precipitates, with sericite, muscovite, opaque minerals as

accessories. A few quartz grains show undulose extinction. West of Pathargada black coloured tourmaline veins are found within the cherty quartzite.

iv) **B.M.Q / B.H.Q:** These are well exposed as narrow, discontinuous band of BMQ & BHQ, along with thick cherty quartzite band which extend from Madhayapur in the North to Burhipada hill and Ghutang in the south and forms a N-S to NW-SE trending ridges. It is a thickly bedded rock in which each lamination of iron ore (major magnetite, minor hematite, martite and goethite) is separated by quartz. The contact of iron oxide wth silica band is sharp indicating cyclothemic changes in two types of physico-chemical conditions of deposition. Small iron ore bodies are associated with this unit.

1.3. Mineral Potentiality based on Geology, Geophysics and Ground Geo-Chemistry etc.

1.3.1 Recommendations of earlier investigation works

1.3.1.1 B.B. Swain et. al. (2005-06), detailed mapping (on 1:2,000 scale) was carried out in Burhipada, Pangaposhi and Madhypur blocks over 0.5, 0.5 and 1.0 sq km area respectively.

Exploratory drilling is suggested in the investigated areas near Burhipada, Pangaposi and Madhyapur to establish the structural disposition of the iron ore bodies and find out the economic viability of the individual iron ore bodies.

Detailed mapping followed by drilling is also suggested in west of Burhipada Juang as it is a better prospect for iron ore as brought out by large scale mapping.

1.3.1.2 Sarat Kumar Jena et. al. (2006-07), four boreholes were drilled at Pongaposhi and Madhyapur South sub-blocks for a total meterage of 131.60m. Chemical analysis of twenty-seven core samples of Pongaposhi and Madhyapur South sub-blocks were carried out to determine the grade of ore.

The resource for Pongaposhi block at cut-off grade of Fe-55%, was estimated around 43000 tonnes with avg. grade of Fe-57.10%. As the iron bands intersected in the Madhyapur block fall below cut-off grade, i.e., 55% the resource for said block was not estimated. No drilling was carried out in Madhyapur North sub-blocks.

1.3.2 Recommendations on basis of current study

1.3.2.1 VOXI 3D Geophysical modelling (a technique for converting potential field data to build a 3-dimensional inversion model) was carried out based on the legacy high resolution aeromagnetic and gravity datasets to find the depth and morphology of BIF sequences covering the entire Tomka-Daitari Greenstone belt. Two inversion models have been prepared; one is a regional model (250m resolution), another one is a detailed high-resolution model (50m resolution) over the area of interest to earmark potential exploration targets of Iron ore.

Due to low resolution of gravity model, it only gives the regional variation of earth densities in subsurface. The high gravity anomalies occurred at 500m-1000m depth ranges; these regional high densities are doubted for underlying mafic/meta volcanics or BIF in this region. Stratigraphically the mafic and meta volcanics are below the BIF rocks. Due to this ambiguity in gravity anomalies, the gravity model is not considered as primary source for interpretation.

The magnetic regional model shows three major high magnetic anomaly zones. One is over existing Daitari mine area another one is west of this Daitari mine over Tomka hill and another one is NW of Daitari mine near the Burhipada and Sunapentha areas. Apart from this some patches of moderate to high magnetic anomalies occurs, which are possibly the effect of ultrabasic presence in this area.

Two linear bands of high susceptibility volumes are identified, which are trended in N-S to NNW directions. The southern high susceptibility volume shows huge in size, which is probably the effect of data acquired over hill slope with the drape altitude. Some of these areas are already mapped by BIF bands. The magnetic model confirms the presence of magnetite rich BIF bands which may be present at depth.

1.4 Scope for Proposed Exploration

1.4.1 Several narrow & discontinuous BMQ/ BHJ bands associated with the volcano sedimentary sequence are reported further NW of Daitari deposit for a strike length of 20 kms up to Madhyapur in the North which encloses pockets and lenses of iron ore bodies are reported by GSI in FS 2005-2006. Limited drilling carried out in Pangaposhi & Madhyapur block during FS 2006-2007.

1.4.2 Initially a proposal for exploration of Budhipara block at G4 level covering 76 sq km was taken in to 58th TCC of NMET.

1.4.3 In the 58th TCC of NMET, the committee recommended to sub-divide the larger Budhipara block into 4 sub-blocks (Madhyapur, Kantala, Mankarahmunda, Burhipada Junag) and take up exploration of Madhyapur block initially covering an area of 6.5 Sq. Km at G3 level.

1.4.4 Hence a revised proposal for exploration of Madhyapur Block (6.5 Sq. Km) at G3 level is being submitted involving Large Scale Geological Mapping, Surveying, Sampling, and Exploratory drilling.

1.5 Objectives

1.5.1 To carry out Large Scale Geological mapping in 1:4000 scale to delineate the iron ore bodies/ BIF.

1.5.2 Carry out exploratory drilling to establish stratigraphic position of the BIF as well as possible extents of mineralization.

2. Previous Work

2.1. The area was mapped by M.N.Deekhitulu, 1950-51, G.H.S.V . Prasadrao 1951-54 and R.N.Benarjii 1961-62, on 1:63000 scale.

2.2. Prasadrao, Y.G.K.Murthy, M.N.Deekshitulu, 1964 grouped the schists, quartzite, BMQ etc under first sequence and conglomerate, shale, banded jasper, phyllite under 2nd sequence. In their view the shale and banded hematite jaspers, older to that of Bonai- Kendujhar belt (Iron ore stage of Dunn), have given rise to the iron ore deposits of Tomka- Daitari belt of Jajpur &Kendujhar district.

2.3. Acharya (1984), Benarjii(1974), Iyenger and Alwar (1965) regarded the Daitari iron ore formation as well as the Gorumahisani-Badampahar iron ore formation to be older than the west Singbhum-Kendujhar IOG sequence, based on presence of continental tholeitic lava overlying the Daitari IOG basin in the south, which spreads to the north upto the southern margin of Bonai horse shoe synclinorium.

2.4. A.K. Saha, 1994 has described the geology and structure of Daitari – Palaspal area and opined that there is no evidence to consider the IOG of Daitari basin is older to that of Bonai- Kendujhar belt.

2.5. B.B. Swain and Sri P.K. Jena Geologist (2005-06) carried out iron ore investigation in Burhipada-Madhyapur block covering about 50 sq km area involving LSM on 1:12,500 scale, DM on 1:2000 scale in Burhipada,

Pongaposhi and Madhyapur area, along with pitting and sampling (BRS &PTS).

2.6. Sarat Kumar Jena et. al., 2006-07 drilled four boreholes at Pongaposhi and Madhyapur South sub-blocks for a total meterage of 131.60m. Chemical analysis of twenty-seven core samples of Pongaposhi and Madhyapur South sub-blocks were carried out to determine the grade of ore. 43000 tonnes of resource (avg. grade of Fe- 57.10%) were estimated for Pongaposhi block. But the resource of Madhyapur block was not estimated intersected due less than 55% cut-off grade. No drilling was carried out in Madhyapur North sub-blocks.

3. Block Description

Block Boundary Cardinal Point of Proposed Madhyapur Block of G3 Exploration

Block Boundary Cardinal Point	Easting	Northing	Latitude	Longitude
A	369173.85	2356870.73	21° 18' 32.44"	85° 44' 19.61"
B	370264.33	2356807.62	21° 18' 30.67"	85° 44' 57.02"
C	370262.24	2355600.05	21° 17' 51.40"	85° 44' 57.28"
D	370751.59	2355637.69	21° 17' 52.75"	85° 45' 14.25"
E	370708.81	2353213.02	21° 16' 33.89"	85° 45' 13.43"
F	368414.42	2353165.18	21° 16' 31.74"	85° 43' 53.84"

4. Planned Methodology

The methodology involves the following:

4.1. Work allocation

Initial site visit by the Senior geologist/Project in-charge along with field geologist/s for preliminary assessment of the area and planning of work.

4.2. Large Scale Geological Mapping (LSM)

a. LSM in 1:4000 by traversing (total 6.5 sq km) to identify the iron ore bodies and mark the different litho contacts in the Blocks.

b. Representative rock chip sampling during the course of geological mapping from different lithologies to establish the litho contacts and locate possible surface indication of mineralization.

c. All the geological features / details of sample analysis data recorded will be plotted over the map.

d. Interpretation of observed details and other inputs shall be used in preparing Geological Map and locating mineralised /potential target areas.

e. Generate anticipated depth sections projecting the BIF bodies in the sub surface based on surface observations.

4.3. Survey

4.3.1. RL's and coordinates of exploration/ observation points will be determined using handheld GPS units.

4.3.2. DGPS survey will be carried out for fixing up/ locating the borehole collars on the ground. Tentatively, 12 nos DGPS survey points shall be required and may vary based on the site conditions.

4.4. Exploratory Drilling

Based on the outcome of LSM, Exploratory core drilling will be carried out to prove the subsurface continuity of mineralized lode with total meterage of 750 meters. The location, direction and closure of drill hole on ground will be decided by the field geologist on the basis of geological observations. The generated drill cores will be aligned in book pattern with proper depth markers and preserved in GI core boxes and transported to base camp for further processing.

PS: The position extent and number of boreholes shall be based on the recommendations of LSM works.

4.5. Core logging

The generated drill cores will be logged systematically run-wise, with consideration of lithology, colour, structure and mineralization. Recovery length of every run will be recorded and if less core is recovered, the core loss will be extrapolated with geological prudence. Rock Quality Designation (RQD) will be recorded for entire length of the core recovered.

4.6. Laboratory Studies

4.6.1. Chemical Analysis:

Core Samples collected will be crushed and powdered to -200 mesh. The powdered material will be mixed thoroughly and successively reduced to 100 gm by the coning and quartering method. This representative 100gm sample will be sent to the empanelled laboratory

for analysis of the following Fe, Mn, SiO_2, Al_2O_3, P, S, LOI, Cao & MgO. The rest of the powdered sample (-200 mesh) will be preserved for future reference.

4.6.2. Physical Analysis

Petrological studies like Preparation and study of Polished Thin Section will be done on BRS/Core samples.

4.7. Geological Report

4.7.1 Data generated from G-3 level exploration work, shall be presented in the Geological Report as per the guidelines laid down in provisions of MINERAL (EVIDENCE OF CONTENTS) RULES 2015 in the NMET prescribed format.

5. NATURE, QUANTUM, AND TARGET

Quantum of work proposed for G4 level of work is as below.

Components	G4 Stage	Unit	Quantity
Geological Survey	i) Detail Geological Mapping at 1:4,000 scale	Sq. km	6.5
	ii) Updating available geological maps; Collating and Ground truthing of available GSI and DoMG maps	Sq. km	6.5
Exploratory drilling	4 boreholes	Meters	750
Sampling and Analysis	Chemical Analysis (for Fe, Mn, SiO2, Al2O3, P, S, LOI, Cao & MgO) Rock– 5; Core-300; Check Samples-30	Nos	300
Geological Report	**Geological Report [As per Mineral (Evidence of Mineral Contents) Rule-2015] /UNFC**	Nos.	1

6. Time schedule of the project

Sl. No.	Activities	MONTHS											
		1	2	3	4	5	6	Review	7	8	9	10	11	12
1	Camp Setting													
2	Geological Mapping (1:4000 scale)													
3	Rock Chip Sampling													
4	Chemical analysis of Rock Chip Samples													
5	Review of Field data													
6	Exploratory core drilling													
7	Thin Section Preparation													
8	Survey													
9	Camp Demobilization													
10	Chemical analysis of core samples & Laboratory Studies													
11	Report Writing													
NOTE 1	**Commencement of project may be reckoned from the day the exploration acreage is available along with all statutory clearances.**													
2	**Time loss on account of monsoon/agricultural activity/forest clearance / local law & order problem/ lockdown etc will be additional to above timeline.**													

Estimated cost for Exploration of Madhyapur Block (G3 Level), Keonjhar district, Odisha. Area: 6.5 sq km. Timeline: 12 months, Review: after 6 months						
Sl. No.	**Sr. No. (SOC)**	**Work/Activity**	**Unit**	**Charges/ Cost (Rs.)**	**Total Unit**	**Total Cost (Rs.)**
		Mapping (1: 4000)				
		Inhouse				
1	**1.5.1b**	Geology HQ	Man days	9,000	50	4,50,000
2	**1.5.1b**	Geology Field	Man days	11,000	150	16,50,000
		Labour		504	300	1,51,200
		Outsourced Component				
	Lab. Studies					
		XRF (Major Oxides)	4.1.15a	4,200	300	12,60,000
		External Check (10%)	4.1.15a	4,200	30	1,26,000
		Preparation of thin section	4.3.1	2,353	5	11,765
		Study of thin section	4.3.4	4,232	5	21,160
		Digital Photography	4.3.7	280	5	1,400
3	**1.5.2**	Sampler	Per sampler	5,100	41	2,09,100
		Labour		504	164	82,656
4	**1.6.2**	DGPS Survey	Points	19,200	11	2,11,200
		Surveyor	Per day	8,300	30	2,49,000
5	**2.2.1.5**	Drilling in Hard Rock	Per Meter	12,650	750	94,87,500
		Total				**1,16,59,781**
		Drill core preservation	5.3		350	5,56,500
6		**Sub Total (1 to 8)**				**1,44,67,481**
5		Peer Review				**30,000**
		Preparation of Exploration Proposal	5.1			**2,89,350**
		Tender processing cost	2.3			**2,33,196**
		Operational Charges	6iv			**9,57,989**
9	**5.2**	Geological Reports with 5 copies		A minimum of Rs. 2.5 lakh or 5% of the Project Cost, whichever is more to a max amt of 20 Lakh		7,23,374
TOTAL					**1,67,01,389**	
GST 18%						**30,06,250**
Total with GST					**1,97,07,639**	
Rs. in Lakh						**197 lakh**
1	**Strict adherence to the Ministry of Finance's and GFR guideline is mandatory. Every transaction must adhere to GFR rule 21.**					
2	In case of delay/ non-performance, the appropriate action will be taken by competent authority against delinquent agency as per prevailing govt. of India rules/ guidelines on procurement.					
3	If any part of the project is outsources, the amount will be reimbursed as per the Paragraph 3 of NMET SoC and Item no. 6 of NMET SoC. In case of execution of the project by NEA on its own, a Certificate regarding non outsourcing of any component/ project is required.					

LOCALITY INDEX

Locality	Latitude			Longitude		
	Degree	Minute	Second	Degree	Minute	Second
Banbari	21	17	40	85	44	20
Bareiguda	21	11	15	85	46	10
Brahmandeihuri	21	17	35	85	44	30
Burhipada	21	13	28	85	45	2
Burhipada Juang	21	12	38	85	43	41
Chuttungu	21	14	40	85	44	45
Kanjiapal	21	11	10	85	45	45
Kantala	21	15	30	85	44	25
Madhyapur	21	17	51	85	45	15
Mankarahmunda	21	16	28	85	41	0
Nardangipenth	21	10	45	85	48	0
Nipania	21	15	45	85	45	0
Palashpal	21	14	11	85	45	22
Pangaposi	21	14	54	85	44	58
Pathargada	21	12	35	85	45	40
Raighatihuri	21	14	35	85	43	39
Rebana	21	9	10	85	47	0
Sunapentha	21	15	30	85	45	0

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Plate 2: Proposed Madhyapur block over Regional Geological Map of GSI
Plate 3: Proposed Madhyapur block over Geological Map in 1: 50,000 scale

Plate 4: Proposed Madhyapur block over Magnetic Anomaly Map
Plate 5: Proposed Borehole Plan

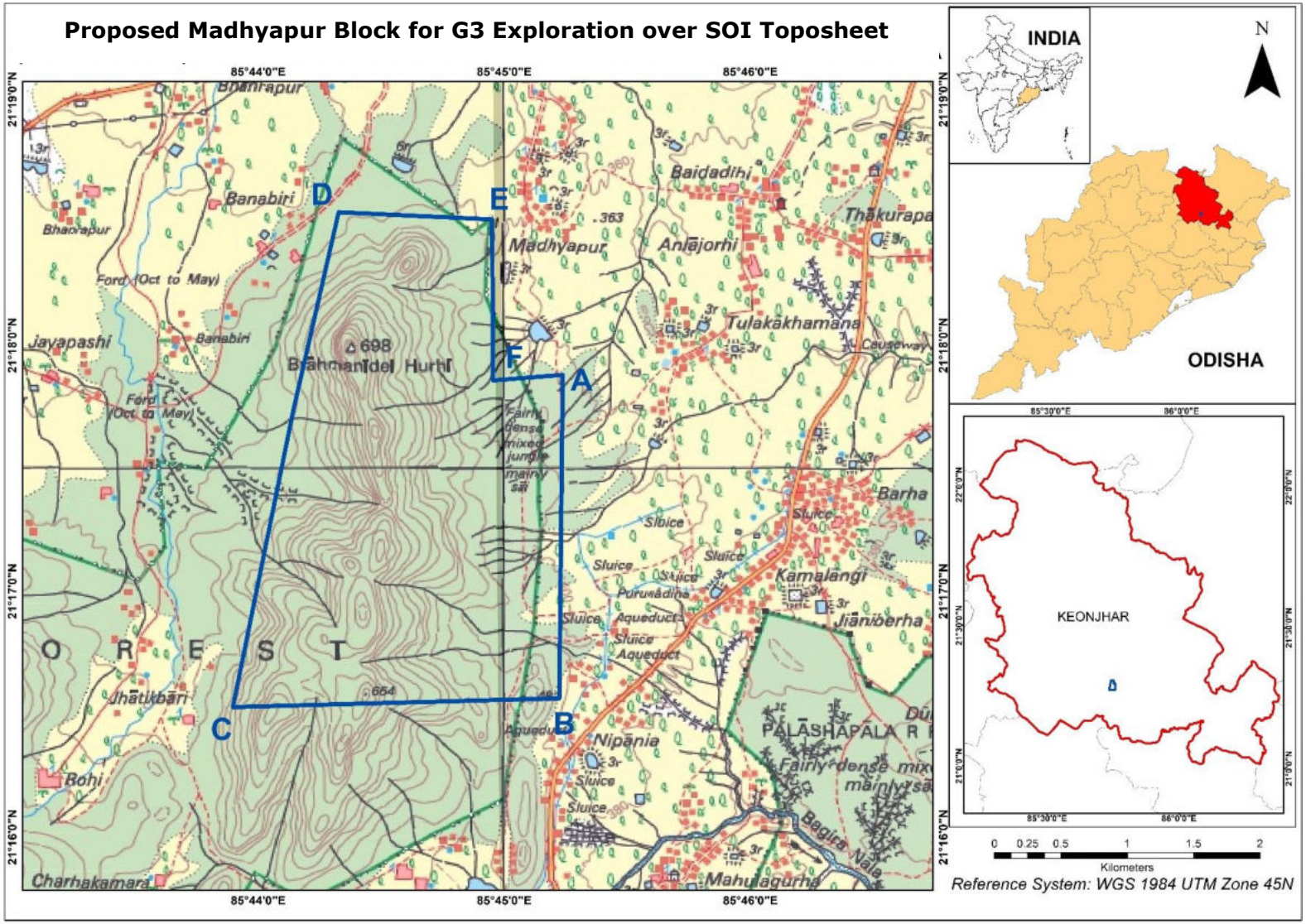

Plate 1: Proposed Madhyapur block (Revised as per NMET recommendation) on the SoI toposheet

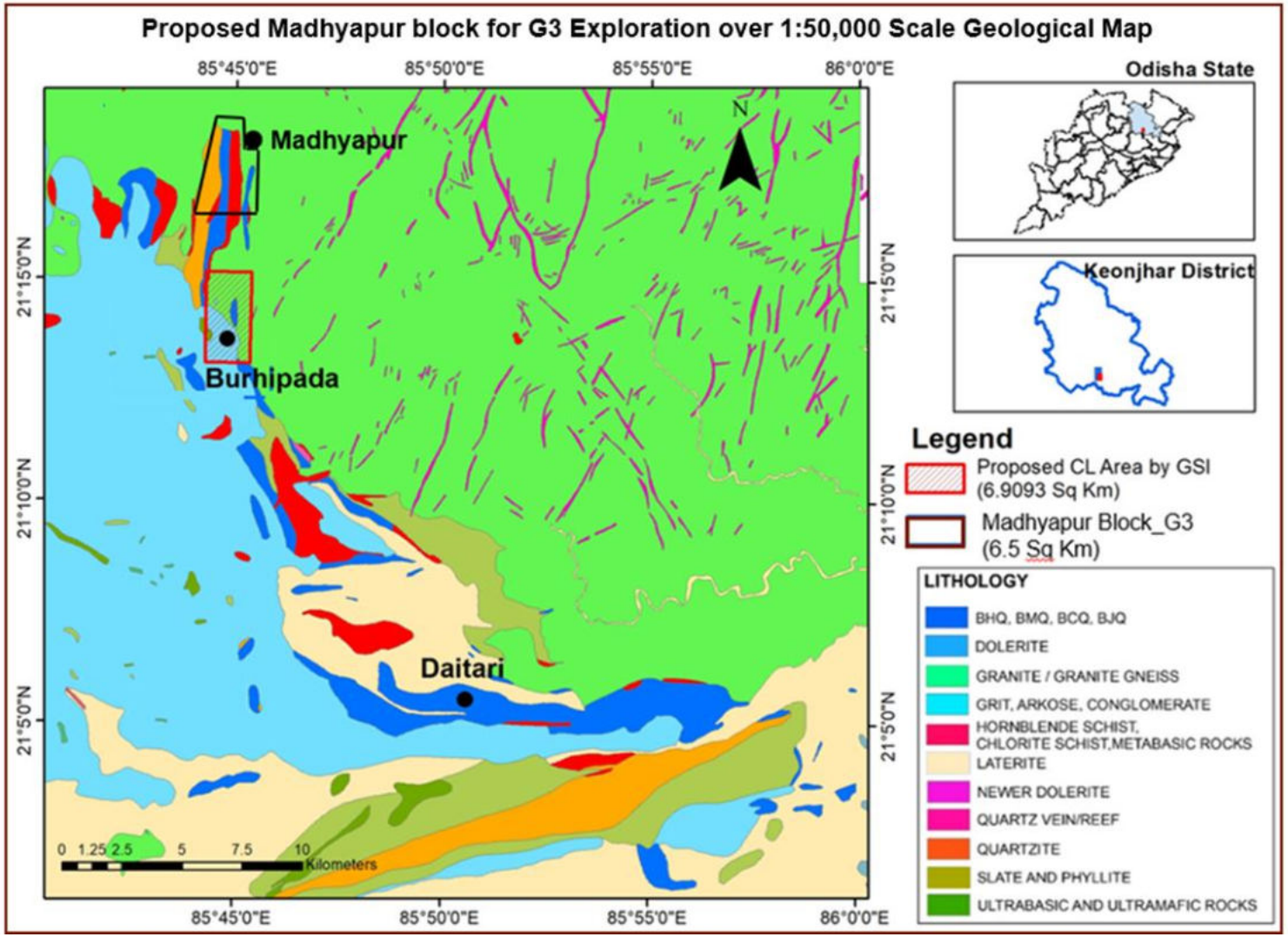

Plate 2: Proposed Madhyapur block (revised as per NMET recommendation) over Regional Geological Map of GSI

Proposed Madhyapur Block for G3 Exploration over 1: 50, 000 Geological Map

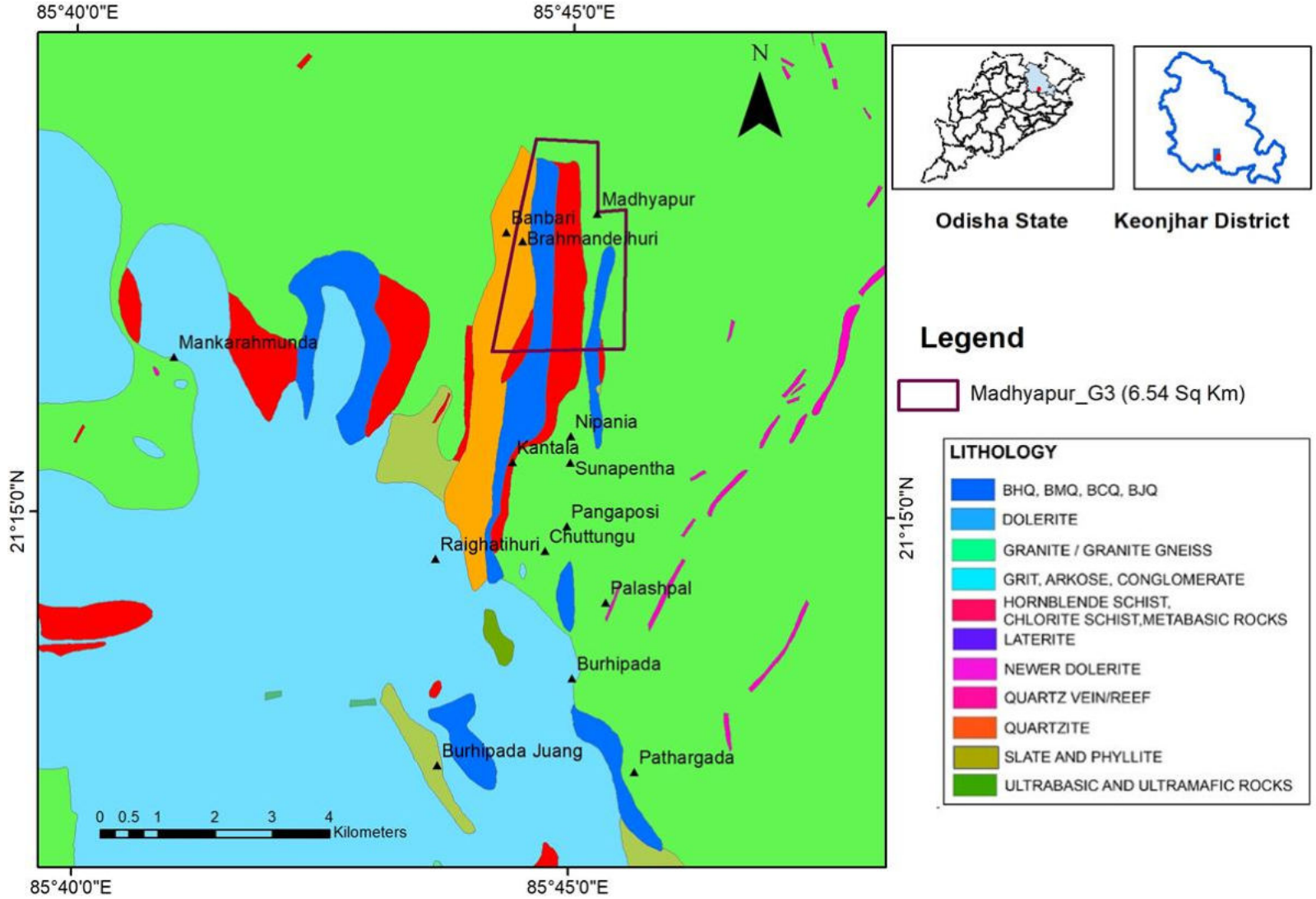

Plate 3: Geological Map at 1: 50,000 scale showing Madhyapur block (revised as per NMET recommendation)

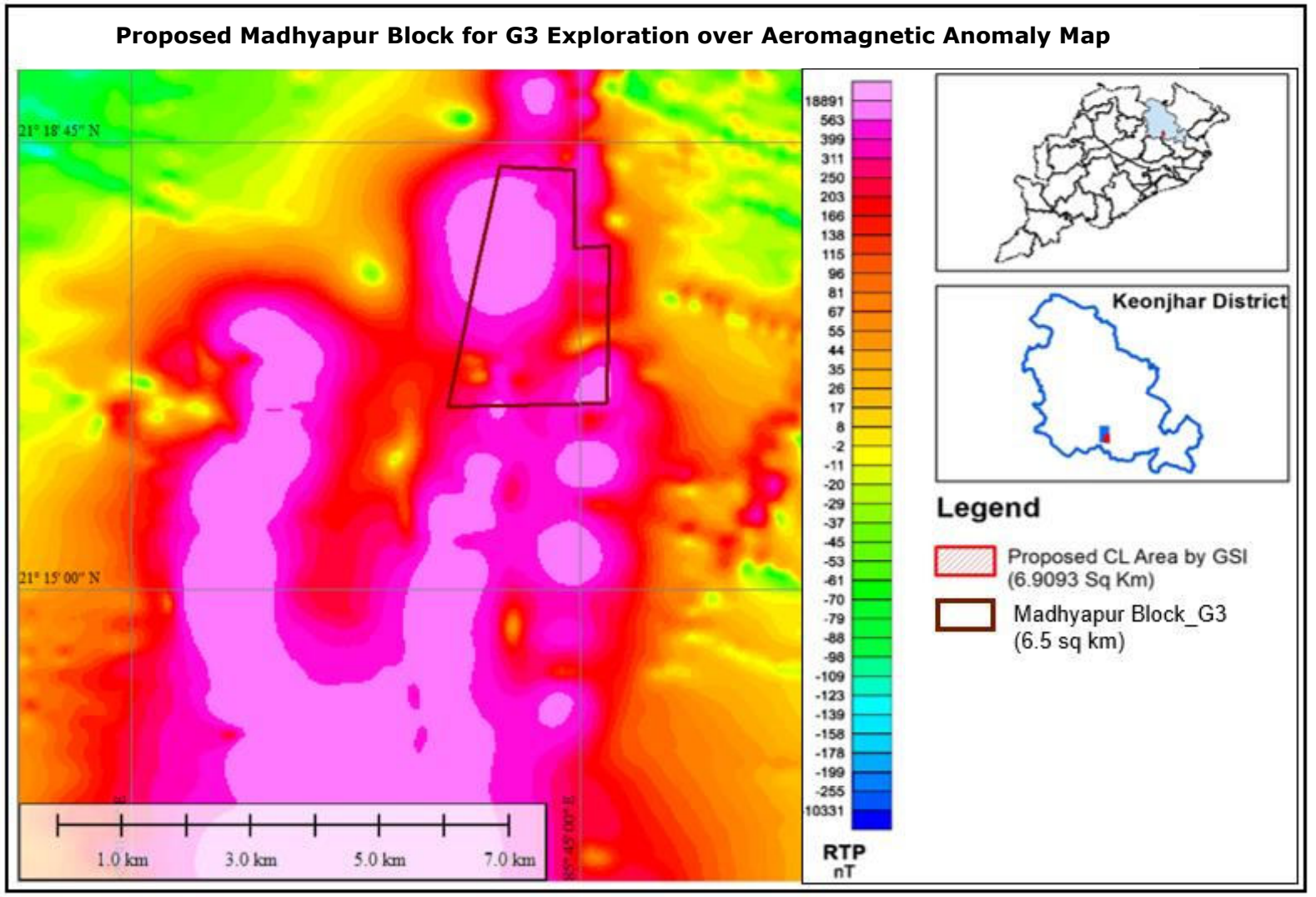

Plate 4: Proposed Madhyapur block over Aero Magnetic Anomaly Map

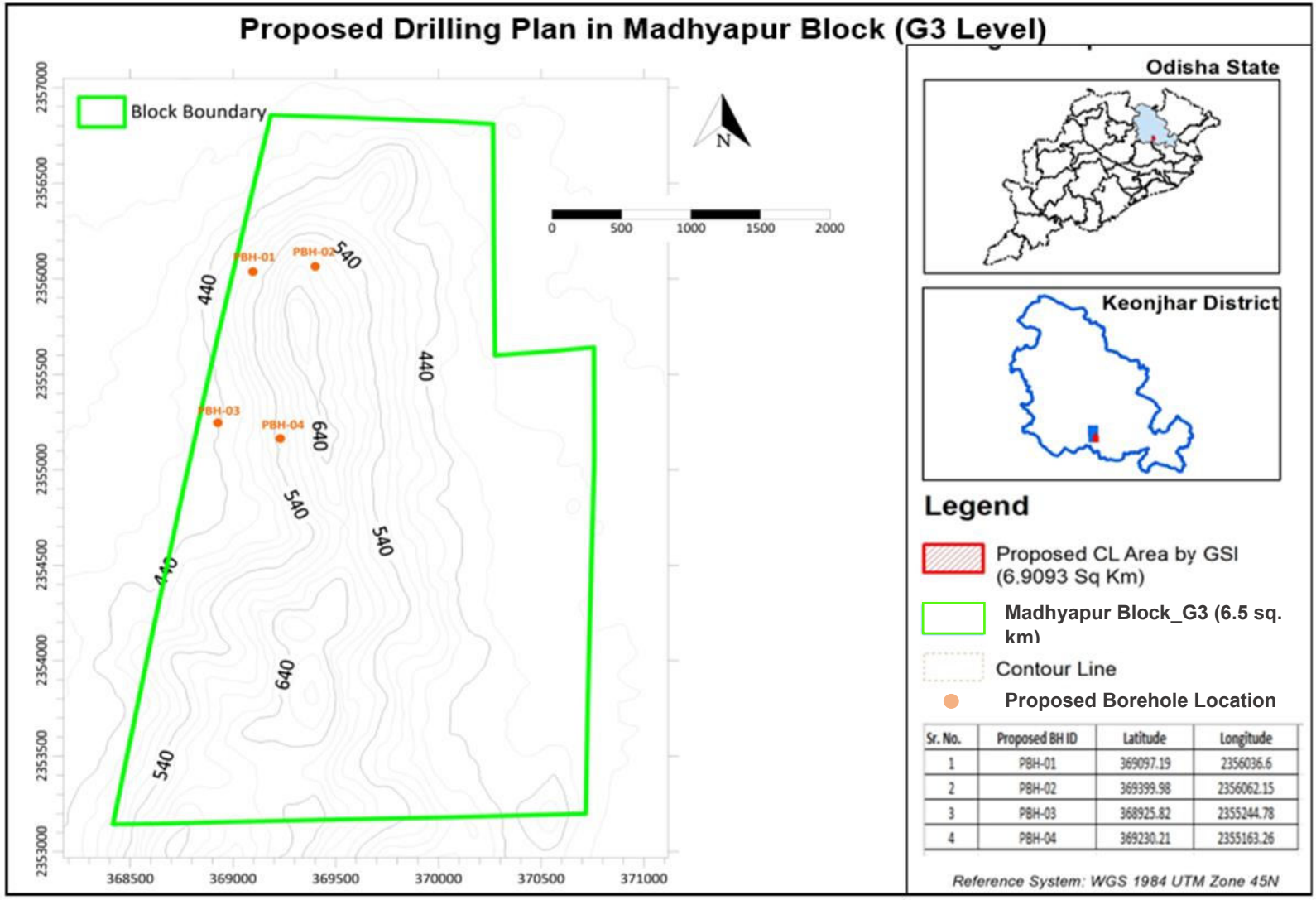

Plate 5: Proposed Drilling Plan over Madhyapur Block

References

i. B.B. Swain, Geologist (Sr.) & P.K. Jena, Geologist (Jr.) REPORT ON IRON ORE INVESTIGATION IN THE NORTH-WESTERN PART OF THE TOMKA-DAITARY BELT AROUND BURHIPADA-MADHYAPUR AREA IN PARTS OF TOPOSHEET NO. 73G/11, 12, 15 AND 16, KENDUJHAR DISTRICT, ODISHA, (P-1)

ii. Sarat Kumar Jena, Ambika Prasad Mishra, December – 2009, REPORT ON IRON ORE INVESTIGATION IN BURHIPADA, JUANG AND PONGAPOSHI BLOCKS, NORTH-WEST OF TOMKA-DAITARI BELT, KENDUJHAR DISTRICT ORISSA (E-I)

iii. D.B.Ghosh, S.S.Gouthke, K.C.Mishra, K.Ranganath, 1962-63, DETAILED REPORT ON THE DAITARI IRON ORE DEPOSITS IN ORISSA STATE

iv. Sarat Kumar Jena, Ambika Prasad Mishra, December – 2009, FINAL REPORT ON IRON ORE INVESTIGATION IN THE NORTH-WESTERN PART OF THE TOMKA- DAITARI BELT AROUND PATHURIPENTH- PATHARGADA AREA, KENDUJHAR DISTRICT, ORISSA(E-I).

Annexure 1

Ministry of Mines

National Mineral Exploration Trust

Minutes of the 58th Technical-cum-Cost Committee (TCC) meeting held on 30th October, 31st October and 01st November, 2023 through video conferencing

Agenda 58.1.10. Reconnaissance Survey (G4 stage) for Iron in Burhipada Block (Area – 75.8017 Sq. Km), District-Keonjhar, Odisha. [Implementing Agency: OMC]

a) The proposed block belongs to Tomka-Daitari IOG Belt. The litho assemblages occupying in this entire belt comprises actinolite chlorite schist, talc tremolite schist, BHQ/ BMQ/ BHJ with pockets of iron ore, lenticular patches of conglomerate, gritty quartzite, carbonaceous phyllite , ferruginous shale and phyllite which are surrounded by granite towards both east, west and north. Dolerite dykes are found to occur as the intrusive rock to all these lithounits.

b) The project proposal was send to GSI for comments. In response to this GSI has informed that as per the available information, about 80% of the proposed area is overlapping with the area earlier explored by GSI under G-4 stage during 2005-06. During FS 2005-06, LSM of 50.0 sq.km and detail mapping of 2.0 sq.km on 1:2000 scale around Burhipada, Pangaposhi & Madhyapur blocks have been carried out. During FS 2006-07, 04 BHs were drilled in Pongaposhi (02 BHs) and Madhyapur blocks (02 Bhs). Based on the above studies, two nos of Geological Memorandum (ER_OD_18_ Pangapashi_Burhipada_IV & ER_OD_18_Madhyapur_IV) of the DM blocks (Madhyapur and

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Burhipada_Pangaposhi) have been handed over to the State Govt. for auction as Composite License. As mentioned in their proposal, the CL block of Burhipada have been excluded from the proposed block. However, the CL block of Madhyapur have not been excluded from the proposed block for G-4 stage investigation under NMET funding.

c) The committee suggested to select block within the proposed area upgrade the block to G3 stage of exploration by tracing the band of BIF.

d) Accordingly, OMC has modified the proposal and identified 3 blocks out of which Madhyapur block has been recommended to be executed presently.

e) The committee agreed to take up the project at G3 Stage of exploration in Madhyapur block (6.5 sq.km), which involves detailed mapping at 1:4000 scale and boreholes are suggested to be drilled at 800 m spacing, vertical depth of intersection of the zone should be 30 m.

f) The project will be reviewed after 6 months

Recommendation of TCC:

The committee recommended the proposal for approval of EC for "Reconnaissance Preliminary Exploration (G-3 Stage) for Iron Ore in Madhyapura Block (6.5 sq.km) , Dist: Keonjhar, Odisha." with an estimated cost of Rs. 197 lakh (including GST)within time schedule of 12 months for carrying out the proposed work and submission of report as perannexure-5A &5B.

Annexure 5A

Estimated cost for Preliminary Exploration (G3) for Iron Ore in Madhyapura Block, Dist:Keonjhar, Odisha. Area:6.5 sq.km
Timeline:12 months, Review: after 6 months

Sl. No.	Sr. No. (SOC)	Work/Activity	Unit	Charges/ Cost (Rs.)	Total Unit	Total Cost (Rs.)
		Mapping(1:4000)				
		Inhouse				
1	**1.5.1b**	Geology HQ	Man days	9,000	50	4,50,000
2	**1.5.1b**	Geology Field	Man days	11,000	150	16,50,000
		Labour		504	300	1,51,200
		Outsourced Component				
	Lab. Studies					
		XRF (Major Oxides)	4.1.15a	4,200	300	1260000
		External Check (10%)	4.1.15a	4,200	30	1,26,000
		Preparation of thin section	4.3.1	2,353	5	11,765
		Study of thin Section	4.3.4	4,232	5	21,160
		Digital Photography	4.3.7	280	5	1,400
3	**1.5.2**	Sampler	Per Sampler	5,100	41	2,09,100
		Labour		504	164	82,656
4	**1.6.2**	DGPS Survey	Points	19,200	11	2,11,200
		Surveyor	Per day	8,300	30	2,49,000
5	**2.2.1.5**	Drilling in Hard Rock	Per Meter	12,650	750	94,87,500
		Total				**1,16,59,781**
		Drill core preservation	5.3	1,590	350	5,56,500
		Sub Total (1 to 8)				**1,44,67,481**
		Peer Review				**30,000**
		Preparation of Exploration Proposal	5.1			**2,89,350**
		Tender processing cost	2.3			**2,33,196**

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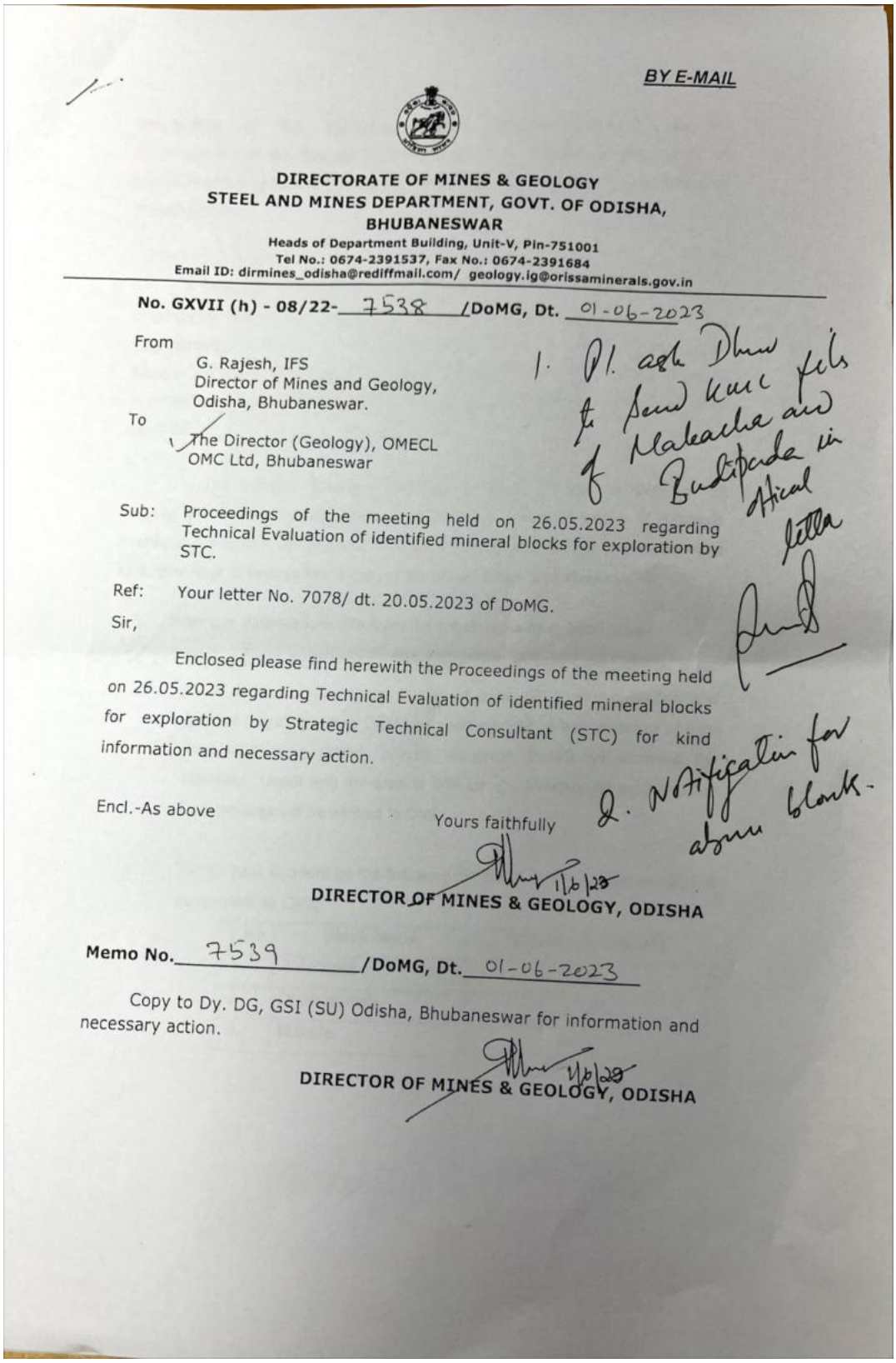
Annexure 2



BY E-MAIL

DIRECTORATE OF MINES & GEOLOGY
STEEL AND MINES DEPARTMENT, GOVT. OF ODISHA,
BHUBANESWAR

Heads of Department Building, Unit-V, Pin-751001
Tel No.: 0674-2391537, Fax No.: 0674-2391684
Email ID: dirmines_odisha@rediffmail.com/ geology.ig@orissaminerals.gov.in

No. GXVII (h) - 08/22- 7538 **/DoMG, Dt.** 01-06-2023

From
G. Rajesh, IFS
Director of Mines and Geology,
Odisha, Bhubaneswar.

To
The Director (Geology), OMECL
OMC Ltd, Bhubaneswar

1. Pl. ask Dhuu to send kml files of Malkacha and Budipada in Hical letter

Sub: Proceedings of the meeting held on 26.05.2023 regarding Technical Evaluation of identified mineral blocks for exploration by STC.

Ref: Your letter No. 7078/ dt. 20.05.2023 of DoMG.

Sir,

Enclosed please find herewith the Proceedings of the meeting held on 26.05.2023 regarding Technical Evaluation of identified mineral blocks for exploration by Strategic Technical Consultant (STC) for kind information and necessary action.

2. Notification for above block-

Encl.-As above

Yours faithfully

1/6/23

DIRECTOR OF MINES & GEOLOGY, ODISHA

Memo No. 7539 **/DoMG, Dt.** 01-06-2023

Copy to Dy. DG, GSI (SU) Odisha, Bhubaneswar for information and necessary action.

1/6/23

DIRECTOR OF MINES & GEOLOGY, ODISHA

Proceeding of the Technical meeting held on 26.05.2023 under the Chairmanship of the Director of Mines & Geology, Odisha for discussion on blocks recommended by Strategic Technical Consultant (STC) for further level of exploration.

A Technical Evaluation meeting was held on 26.05.2023 at 3:00 PM in Conference Hall of the Directorate of Mines & Geology, Odisha under the Chairmanship of the Director of Mines & Geology, Odisha with the agenda to discuss the blocks identified by STC and finalize the blocks for further level of exploration as a part of MRM. The list of participants present in the meeting is Annexed.

The Director (Geology), OMECL welcomed all the members to the meeting and briefed the objective of the meeting. Representatives of Strategic Technical Consultant (STC) made a detailed presentation on the blocks identified for further level of exploration. A copy of the presentation is at Annexure -2.

1. After due deliberations, the following conclusions have been drawn:

i. A part of Mankarchua block (Gold) has already been notified under Rule-67 in favour of Geological Survey of India (GSI) for exploration and Mineral targeting where DEM has been completed and evidence of gold mineralization is already proved. However, DoMG will examine the identified target with the area of GSI for any overlapping area and the balance area will be allotted to OMC.

ii. DoMG gave consent for the following identified blocks for further level of exploration by OMC

S.No	Block Name	Mineral Commodity
1.	Salaikena	Gold
2.	Dimirimunda	Gold
3.	Malada	Iron

iii. On the proposal of Tentulikana padar bauxite block It was appealed to the Representatives of OMECL to prioritise the already identified potential bauxite blocks for further level of exploration.

iv. DoMG suggested that they have already identified potential blocks which should be reviewed by OMC and prioritized for further exploration.

v. Budipada Iron block has been explored by GSI at G4 level. Government of India has handed over the Geological Report of G-4 to Government of Odisha for grant of Composite license. Director of Mines & Geology advised STC to share the block details, so that the issue of overlapping will be examined and a decision in this regard will be taken subsequently

The meeting ended with vote of thanks to the Chair and other participants.

1/6/23

DIRECTOR OF MINES & GEOLOGY, ODISHA

DIRECTORATE OF MINES & GEOLOGY
STEEL AND MINES DEPARTMENT, GOVT. OF ODISHA,
BHUBANESWAR
Heads of Department Building, Unit-V, Pin-751001
Tel No.: 0674-2391537, Fax No.: 0674-2391684
Email ID: dirmines_odisha@rediffmail.com

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15.09.23

No. GXVII(h) -8/22 11519 **/DoMG., Dt.** 13-09-2023

From

G. Rajesh, I.F.S
Director of Mines & Geology,
Odisha, Bhubaneswar

To

The Director (Geology),
OMC Ltd., Bhubaneswar.

Sub: Block boundaries of Mankarchua (Gold) and Budhipada (Iron) blocks

Ref: i) Proceedings of the Technical Committee meeting held on dt.26.05.23 vide letter No.7538/DoMG., dt.01.06.2023

ii) You letter No.436/OMECL dt.06.06.23

Sir,

In reference to the letter on the subject cited above, I wish to inform you that as per Para-I & Para-V of the proceedings of the Technical Commiittee held on dt.26.05.23, both the Mankarchuan Gold exploration block of Angul & Deogarh District and Budhipada Iron Ore block of Keonjhar District have been examined along with overlapping issues. The maps of aforesaid blocks are enclosed herewith for further needful action.

Encl: Maps

Yours faithfully,

12/9/23
DIRECTOR OF MINES & GEOLOGY (O)

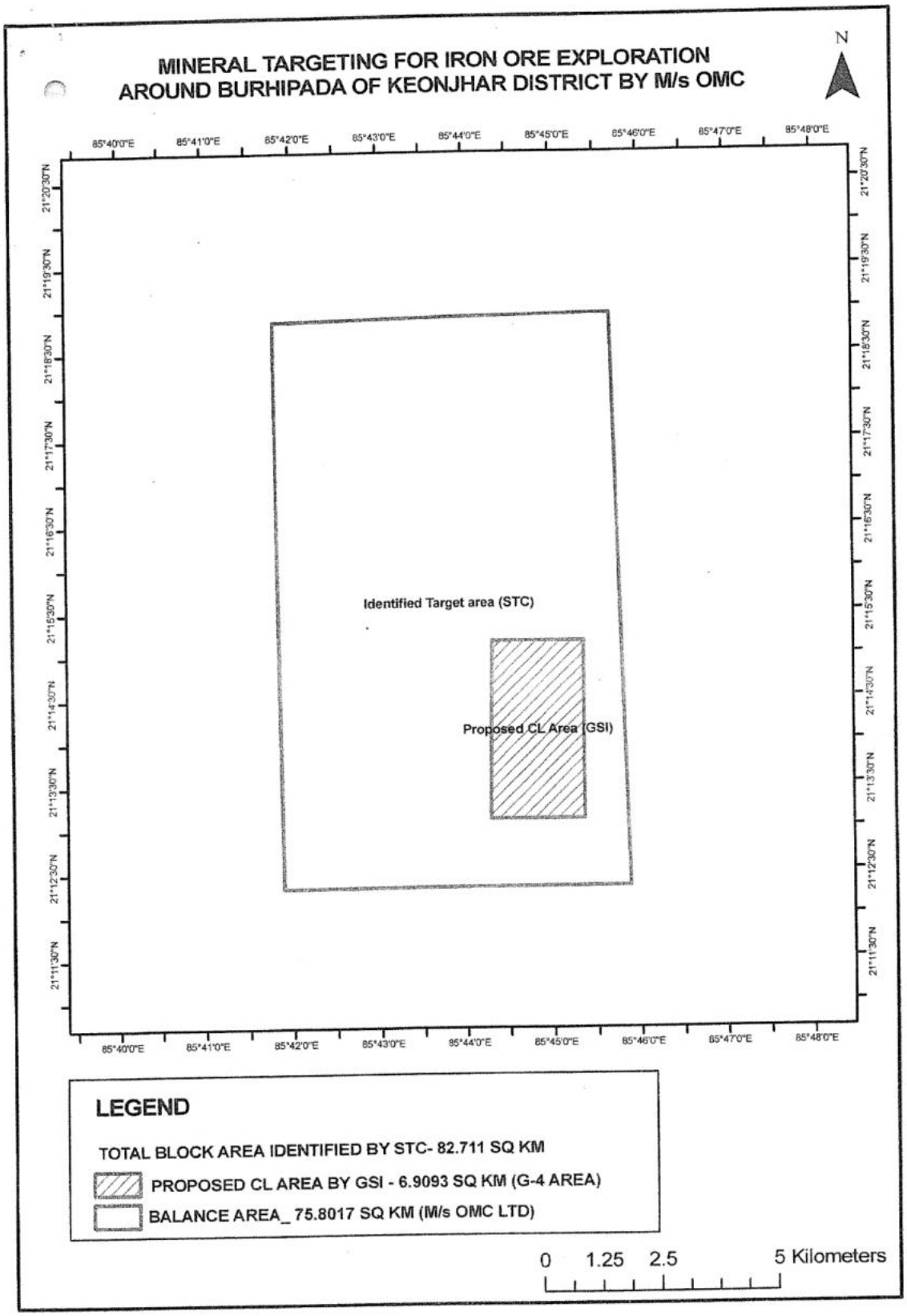
GM (E)

Pl. discuss this along with PD/PM of STC accordingly & lets Communicate.

15/9/23

15/9/2023

DGM (GP)


MINERAL TARGETING FOR IRON ORE EXPLORATION
AROUND BURHIPADA OF KEONJHAR DISTRICT BY M/s OMC
N
85°40'0"E
85°41'0"E
85°42'0"E
85°43'0"E
85°44'0"E
85°45'0"E
85°46'0"E
85°47'0"E
85°48'0"E
21°20'30"N
21°19'30"N
21°18'30"N
21°17'30"N
21°16'30"N
21°15'30"N
21°14'30"N
21°13'30"N
21°12'30"N
21°11'30"N
Identified Target area (STC)
Proposed CL Area (GSI)
LEGEND
TOTAL BLOCK AREA IDENTIFIED BY STC- 82.711 SQ KM
PROPOSED CL AREA BY GSI - 6.9093 SQ KM (G-4 AREA)
BALANCE AREA_ 75.8017 SQ KM (M/s OMC LTD)
0 1.25 2.5 5 Kilometers