PROPOSAL OF RECONNAISSANCE SURVEY (G-4 stage)

FOR BAUXITE, ALUMINOUS LATERITE AND ASSOCIATED CRITICAL MINERALS

IN GOLARDIH AREA, TEHSIL- SALHEWARA

DISTRICT-KHAIRAGARH-CHHUIKHADAN-GANDAI, CHHATTISGARH

STRATEGIC & CRITICAL MINERALS/ INDUSTRIAL

DIRECTORATE OF GEOLOGY AND MINING
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(Part of Toposheet No. 64C/14)

STRATEGIC & CRITICAL MINERALS/ INDUSTRIAL

DIRECTORATE OF GEOLOGY AND MINING
CHHATTISGARH

Submitted By

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RECONNAISSANCE SURVEY (G-4 LEVEL) FOR BAUXITE, ALUMINOUS LATERITE AND ASSOCIATED VANADIUM, GALLIUM & SCANDIUM (STRATEGIC AND CRITICAL MINERALS) IN GOLARDIH AREA,

TEHSIL- SALHEWARA, DISTRICT-KHAIRAGARH-CHHUIKHADAN-GANDAI, CHHATTISGARH

SUMMARY OF THE BLOCK:

S.No.	Features	Details
	Block ID	Golardih Block
	Current Exploration Agency	DGM, Chhattisgarh
	Commodity	Bauxite, Laterite & associated Vanadium, Gallium and other strategic and critical minerals
	Mineral Belt	Chilpi Group of rock
	Completion Period with entire Time Schedule to complete the project	10 month
	Objectives	To explore the area of bauxite, laterite and associated Vanadium, Gallium, Scandium and other strategic and critical minerals, areal extension, quality bauxite, grade and assessment of the mineral resources of the block.
	Whether the work will be carried out by Proposed agency or through outsourcing and details thereof. Components to be outsourced and name of the outsourcing age	The project will be taken up by Directorate of Geology and Mining, Chhattisgarh
	Name/Number of Geoscientists	02 Geologist
	Expected Field days(Geology) Geological Party Days	Geologist 1. Field- 150 days + 30 days HQ.
1-	Location	
	Latitude	21° 39' 58.987" N to 21° 44' 23.807" N
	Longitude	80° 46' 35.664" E to 80° 53' 27.612" E
	Toposheet No.	64 C/14
	Village	Golardih
	Taluk/Tehsil	Sahlewara
	District	Khairagarh-Chhuikhadan-Gandai
	State	Chhattisgarh
2-	Area (hectares/square kilometers)	
	Block area	70 Km^2.
	Forest area	Under forest area

	Government land area	Not assess
	Private land area	Not assess
3-	Accessibility	
	Nearest Rail head	Rajnandgaon Railway station is 108 Km away.
	Road	The area is located about 80 km in the north-west direction of the Khairagarh district headquarter and easily accessible by all-weather road. It is also approachable by Gandai(Narbada) to Malanjkhand state highway.
	Airport	Raipur Airport is 185 km
4-	Hydrography	
	Local surface drainage pattern (Channels)	The drainage pattern of the area is of sub-dendritic to dendritic type.
	River/streams	The general slope of the area due east is indicated by northerly flowing drainage. The streams and streamlets emerging from the hilly area controls the main drainage of the area viz. Kerapani Nala (perennial) and its streamlets. The Kerapani Nala flows towards east
5-	Climate	Tropical, Hot & Humid
	Mean annual rainfall	1000-1200mm/Annum
	Temperatures (December) (Minimum) Temperatures (June) Maximum	8^0C 45^0C
6-	Topography	
	Toposheet number	64 C/14
	Morphology of the area	The area is a hilly terrain with a broad valley in the eastern part flanked by steeply rising N-S trending ridges on either side.
7-	Availability of baseline Geoscience data	
	Geological map (1:50K/25K)	Available
	Geochemical map	Not available
	Geophysical map (Aeromagnetic, Ground Geophysical, Regional as well as local scale)	Not available

8-	Justification for taking up reconnaissance survey /regional exploration	i. The proposed area falls under Chilpi Group of rock. During the reconnaissance survey of Bhajidongari area F.S. 2023-24, **12 no. of bauxite samples with max 60.82% Al_2O_3 and min 37.04% Al_2O_3** were marked in the area. **ii.** The analytical data of the samples collected from the area **shows V_2O_5 ranging from 0.109% to 0.512% with average 0.29%, Ga_2O_3 ranging from 0.009% to 0.018% with average 0.0136% and Sc ranging from 24.37 ppm to 42.28 ppm in the proposed area**. iii. In the nearby Gopaltola Nmet explored block, on the basis of surface sample, approximately **0.86 MT** iron ore and **0.90415 lakh tonne** bauxite is estimated in the area and Bauxite is encountered upto a thickness of 10.50 m in one Scout Borehole and a total of **2.023 lakh tonne (Avg.: Al_2O_3% 42.04)** of bauxite is estimated. iv. Also as per draft of upcoming amendment to MMDR 1957, 1.4 para, **laterite is to be removed from minor mineral list and would be regulated in accordance with the rules of major minerals.** v. A recent exploration by GSI has found reserves of vanadium in Arunachal Pradesh. Concentration of Vanadium have been found in the Paleoproterozoic carbonaceous phyllite rocks in the Depo and Tamang areas of Papum Pare district in Arunachal Pradesh. This is the first report of primary deposit of vanadium in India with an average grade of 0.76% V_2O_5 (Vanadium Pentoxide) vi. The exploration will be helpful in estimation of reconnaissance resources (334) of Bauxite and associated strategic & critical accessory minerals in the block area. vii. If the results of the reconnaissance survey will be positive, it will helping planning of preliminary exploration programme which will further facilitate the state govt. for auctioning of block.

Detailed description on the following titles

1. BLOCK SUMMARY

PHYSIOGRAPHY:

Prominent river of the area is Banjar that is flowing towards west along Chhattisgarh-Madhya Pradesh State border. The maximum elevation of this area is 741 MSL (approx). The physiography of the exploration block is mostly hilly terrain. The area lies in protected forests of Khairagarh forest division.

CLIMATE:

The area receives about 90% of its total rainfall during SW monsoon which extends from June to October. The average rainfall is around 1200 mm. The temperature rises upto 45°C during summer. During pleasant winter months (November to February) the temperature goes down to 8°C.

FLORA AND FAUNA:

The area consists of protected forests. Major crop of this area is paddy however some amount of wheat, pulses vegetables and oilseeds are also grown at places.

In the forest, the chief floral species are Sal (Bosewellia Serrate), Saja (Tharaminalia_tomantosa), Mahua (Basialatifolia), Bija (Pterocarpusmarsupium), Tendu (Diospyrosmalapokyon), Bahera (ThamanalirBelerica), Mango (MangaferaIndica) etc.

The wild life at present is scanty and important fauna are Monkey - emipithecusentekus (Bendra), Spotted deer - Cervus axis (Chital), Wild Boar, Leopard (Pantherapardusfusca), Bear, Hyena etc.

BACKGROUND GEOLOGY

Regional Geology:

Regionally the area is dominantly occupied by the rocks of Chilpi Group forming the northern part of Kotri - Dongargarh Belt. Chilpi Group is underlain by Nandgaon Group of rocks and a major part of older rocks are covered under the blanket of Deccan Trap. UnmetamorphosedChandarpur and Raipur Groups of rock are juxtaposed with Chilpi Group in eastern part along the down-dip direction.

The stratigraphy of the area after Tripathi et al. (1974) and modified later by Das Gupta et al. (1981) is as follows :-

Age	**Supergroup/Group/ Formation**		**Lithounits**
Recent			Alluvium
Cenozoic			Laterite with bauxite
Up. Cretaceous to Lr. Palaeocene	Deccan Trap		Basaltic lava flows
Cretaceous	Lameta Group		Limestone, arkosic sandstone, calcareous & conglomeratic sandstone and clay at places.
Meso to Neo Proterozoic	Chhattisgarh Supergroup: Raipur Group	Maniari Fm.	Siltstone and shale with lenses of dolomite, dolomitic limestone and gypsum.
		Hirri Fm.	Grey bedded dolomite with chert layers and nodules.
		Tarenga Fm.	Shale, argillaceous limestone and dolomitic limestone.
		Chandi Fm.	Stromatolytic limestone, dolomitic limestone and shale intercalation
		Gunderdehi Fm.	Calcareous shale with feldspathic sandstone intercalations
	Chhattisgarh Supergroup: Chandarpur Group		Glauconitic arenite, arkose and conglomerate.
Meso-Proterozoic	Intrusives		Quartz veins/reefs
			Basic dyke
	Chilpi Group		Quartzite, shale, slate, phyllite, argillite, ferruginous sandstone, limestone, jasperoid, BHQ, BMQ, jaspilite, ferruginous shale, crystalline limestone & dolomite with basal conglomerate
Palaeo-Proterozoic	Malanjkhand Granitoids		Hornblende bearing granodiorite, biotite granite
	Nandgaon Group		Meta-basalt, meta-andesite and meta-rhyolite
Basement rock: Amgaon Gneiss (?)			

Local Geology:

The local geology of the proposed area is tabulated as under: -

Age	Supergroup/ Group/Formation	Lithounits
Recent to Sub-recent		Laterite/Bauxite/Lateritic Iron ore/ Ferruginous Laterite
Meso-Proterozoic	Chilpi Group	Slaty shale
	Nandgaon Group	Rhyolite

Mineral potentiality based on geology, geophysics, ground geochemistry etc.

In the proposed area, during the reconnaissance survey of Bhajidongari area F.S. 2023-24, **12 No. of bauxite samples with max 60.82% Al_2O_3 and min 37.04% Al_2O_3** were marked in the area as per the "**Geological Report on exploration of Iron Ore in Bhajidongari Area (G-4 level) Tehsil-Salhewara, District-Khairagarh-Chuuikhadan-Gandai, 2024".**

Whole rock analysis of these 12 No. of bedrock samples collected during Reconnaissance survey around Bhajidongari block shows **Sc ranging from 24.37 ppm to 42.28 ppm, V_2O_5 ranging from 0.109% to 0.512% with average 0.29% V_2O_5 and Ga_2O_3 ranging from 0.009% to 0.018% with average 0.0136% Ga_2O_3 in the area**.

Scope for proposed exploration

The exploration will be helpful in estimation of reconnaissance resources (334) of bauxite and associated vanadium, gallium and other critical and strategic minerals present in the area. Based on potential resources available in the area, the block can be upgraded to G-3 stage.

Observation and recommendation of previous work-

The previous data available of the area indicate the presence of bauxite in the area.

The Objective of the proposed exploration program

i. Work will start with Large scale mapping (LSM) within the block with 1: 12500 scale.
ii. Surface sampling will be done during the course of mapping.
iii. Enriched zones of bauxite and other associated critical & strategic minerals will be demarcated.
iv. Scout drilling will be carried out after detailed geological mapping as per "The Mineral (Evidence of mineral content) Rule 2015.
v. Chemical analysis of all the samples will be done.
vi. 10% of the total samples will take as check samples will be analyzed at other laboratory.
vii. Further drilling will be carried out at G-3 level of exploration as per "The Mineral (Evidence of mineral content) Rule 2015.

2. PREVIOUS WORK

Previous exploration in the proposed block area -

In the proposed area, bauxite was demarcated in the area as per the the "**Geological Report on exploration of Iron Ore in Bhajidongari Area (G-4 level) Tehsil-Salhewara District-Khairagarh-Chuuikhadan-Gandai, 2024".** A total of 12 no. of bauxite samples were drawn with max 60.82% Al_2O_3 and min 37.04% Al_2O_3. Reconnaissance survey on 1:25000 scale is done. Analytical results of bedrock samples collected during Reconnaissance survey around Bhajidongari block is tabulated below:

S. No.	Sample No.	Lithology	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%	Total
1	RBD-5	Bauxite	1.68	**60.82**	3.20	3.10	30.38	99.18
2	RBD-6	Bauxite	8.92	**42.80**	23.60	2.80	21.20	99.32
3	RBD-7	Bauxite	4.86	**49.78**	17.00	1.90	25.88	99.42
4	RBD-12	Bauxite	2.22	**42.02**	21.40	9.70	24.12	99.46
5	RBD-13	Bauxite	3.40	**38.98**	23.20	9.60	24.09	99.27
6	RBD-14	Bauxite	1.90	**38.12**	30.40	6.20	22.81	99.43
7	RBD-15	Bauxite	2.78	**38.26**	26.80	9.00	22.56	99.40
8	RBD-27	Bauxite	2.54	**37.04**	31.40	8.30	20.10	99.38
9	RBD-28	Bauxite	1.24	**53.95**	9.40	9.80	24.81	99.20
10	RBD-38	Bauxite outcrop	3.00	**49.44**	14.60	7.40	24.80	99.24
11	RBD-40	Bauxite outcrop	0.98	**55.08**	3.80	11.30	28.38	99.54
12	RBD-41	Bauxite outcrop	2.48	**55.12**	4.20	10.00	27.76	99.56

Whole rock analysis of these 12 no. of bedrock samples collected during Reconnaissance survey around Bhajidongari block shows **V_2O_5 ranging from 0.109% to 0.512% with average 0.29% V_2O_5, Ga_2O_3 ranging from 0.009% to 0.018% with average 0.0136% Ga_2O_3 and Sc ranging from 24.37 to 42.28 ppm in the area**. The whole rock analytical is tabulated below:

S. No.	Sample No.	Lithology	V_2O_5%	Ga_2O_3%	Sc (ppm)
1	RBD-5	Bauxite	**0.109**	**0.012**	**24.37**
2	RBD-6	Bauxite	**0.131**	**0.009**	**30.33**
3	RBD-7	Bauxite	**0.059**	**0.010**	8.522
4	RBD-12	Bauxite	**0.293**	**0.016**	0.000
5	RBD-13	Bauxite	**0.294**	**0.013**	0.000
6	RBD-14	Bauxite	**0.359**	**0.012**	**34.86**
7	RBD-15	Bauxite	**0.350**	**0.015**	0.000
8	RBD-27	Bauxite	**0.512**	**0.010**	0.000
9	RBD-28	Bauxite	**0.389**	**0.017**	**42.28**
10	RBD-38	Bauxite	**0.355**	**0.015**	**32.79**
11	RBD-40	Bauxite	**0.383**	**0.018**	**27.44**
12	RBD-41	Bauxite	**0.242**	**0.016**	0.000

As per the the "**Report on Mineral Inventory of Rajnandgaon district, F.S. 2007-08-09** by **S.K.Singh, V.K.Saxena, B.Minj, C.S. Bhardwaj"** three samples of bauxite samples were marked in the Golardih area. Analytical Results of the samples are mentioned below-

S. No.	Sample No.	Lithology	SiO_2%	Al_2O_3%	Fe_2O_3%	TiO_2%	LOI%	Total
1	336	Bauxite outcrop	0.80	50.17	9.20	9.00	30.43	99.60
2	337	Bauxite outcrop	1.02	55.10	5.50	7.00	31.12	99.74
3	338	Bauxite outcrop	0.82	57.50	4.30	6.00	31.00	99.62

3. BLOCK DESCRIPTION

Coordinates of corner points of Golardih block

Corner Point	Latitude	Longitude
A	21° 44' 20.090" N	80° 46' 35.664" E
B	21° 44' 21.339" N	80° 47' 53.924" E
C	21° 42' 44.528" N	80° 47' 53.557" E
D	21° 42' 47.286" N	80° 50' 25.974" E
E	21° 44' 23.655" N	80° 51' 21.364" E
F	21° 44' 23.807" N	80° 53' 27.612" E
G	21° 40' 0.603" N	80° 52' 0.076" E
H	21° 39' 58.987" N	80° 46' 36.811" E

4. PLANNED METHODOLOGY

In accordance to the objectives for the block, the exploration programme is formulated. The exploration shall be carried out as per Minerals (Evidence of Mineral Contents) Rule-2015 as amended. Accordingly, the following scheme of exploration is formulated in order to achieve the objectives. The following work component have been included in their respective heads as mentioned below: -

A. Reconnaissance geological survey, Large Scale Mapping and Detailed Geological Mapping:

Large Scale Geological Mapping will be done on l: 12,500 scale in the Golardih proposed area. Rock types, their contact and structural features will be mapped. Surface manifestations of the mineralized zones will be marked on map. Samples of various litho-units for petrological studies and chemical analysis from outcrops will be taken during the course of geological mapping.

B. Surveying:

The block boundary will be surveyed by Total Station or DGPS in WGS-84 datum for demarcation of block boundary points. Survey party will be associated with bed rock sample collection by taking up the points and plotting its location on map for proper interpretation of the sample data and will also be associated with Geological Mapping and the litho-contacts will be plotted for finalization of Geological map on 1:12500 scale. During drilling scout borehole fixation and determination of reduced level and co-ordinates of the boreholes will be undertaken. Contouring of the surrounding areas of ore bodies would be done on 5m contour intervals along with survey of surface features if mineralized zones are identified.

C. Drilling: 05 Scout BH after LSM

C.1 Drill Core Logging: 75 meter
C.2 Drill Core Sampling: 75 Nos.

D. Sample collection and analysis

D.1 Whole Rock Analysis: 75 Nos.

D.2 Petrological & Mineralogical Studies:

From the samples collected during the course of LSM, 05 samples from various lithounits will be studied for petrography and 05 samples from mineralized zones will be studied for the ore mineral assemblages, their distribution, alteration and enrichment etc. in polished sections.

5. NATURE, QUANTUM AND TARGET

Following work component are proposed in the Golardih block, District – K.C.G., Chhattisgarh.

S. No.	ITEM OF WORK	QUANTUM OF WORK
1.	LSM, 1:12500 scale	70 km^2
2.	Topographic survey, 1:12500 scale	70 km^2
2.	Drilling (coring)	05 B.H. After LSM 75 metres
3.	Geological work	
	a) Core logging	75 metres
	b) Core samples	75
	c) Surface sample	280
4.	Laboratory studies	
	Surface sampling (Rock)	280
	Core samples with analysis	75
	Check sample	10% of check samples (35 samples)
5.	Physical studies	
	Petrological studies	5 No.
	Mineralogical studies	5 No.

	Bulk density/Specific Gravity study	5 No.
	Report preparation	As per Minerals (Evidence of Mineral Contents) Rules 2015 (as amended)

6. TIME SCHEDULE FOR THE PROPOSED WORK

Time Schedule (in month) for Reconnaissance Survey(G-4) of Bauxite, Aluminous Laterite & associated Critical minerals in the Golardih Block of K.C.G., District C.G.											
Item of work	**1**	**2**	**3**	**4**	**Review**	**5**	**6**	**7**	**8**	**Review**	**9**	**10**
Camp setup												
Geological mapping												
Surveying / Contouring												
Sample Analysis												
Review for drilling												
Forest Permission for Drilling												
Drilling												
Sample preparation												
Geologist party days for mapping and sampling												
Analytical work												
Camp winding												
Geological report												

References:

1. Geology and Mineral Resources of Chhattisgarh, miscellaneous publication no. 30 part XXI, Third revised edition, 2013.
2. Report on exploration of Iron Ore in Bhajidongari Area (G-4 level) Tehsil- Salhewara District-Khairagarh-Chuuikhadan-Gandai, 2024, DGM Chhattisgarh (F.S.2023-24) by Narendra Nishad and Mandeep Singh (A.G.)
3. Report on Mineral inventory of Rajnandgaon district, DGM C.G. unpublished report by S.K.Singh, V.K.Saxena, B.Minj, C.S. Bhardwaj (F.S.2007-08-09)

List of Enclosures:

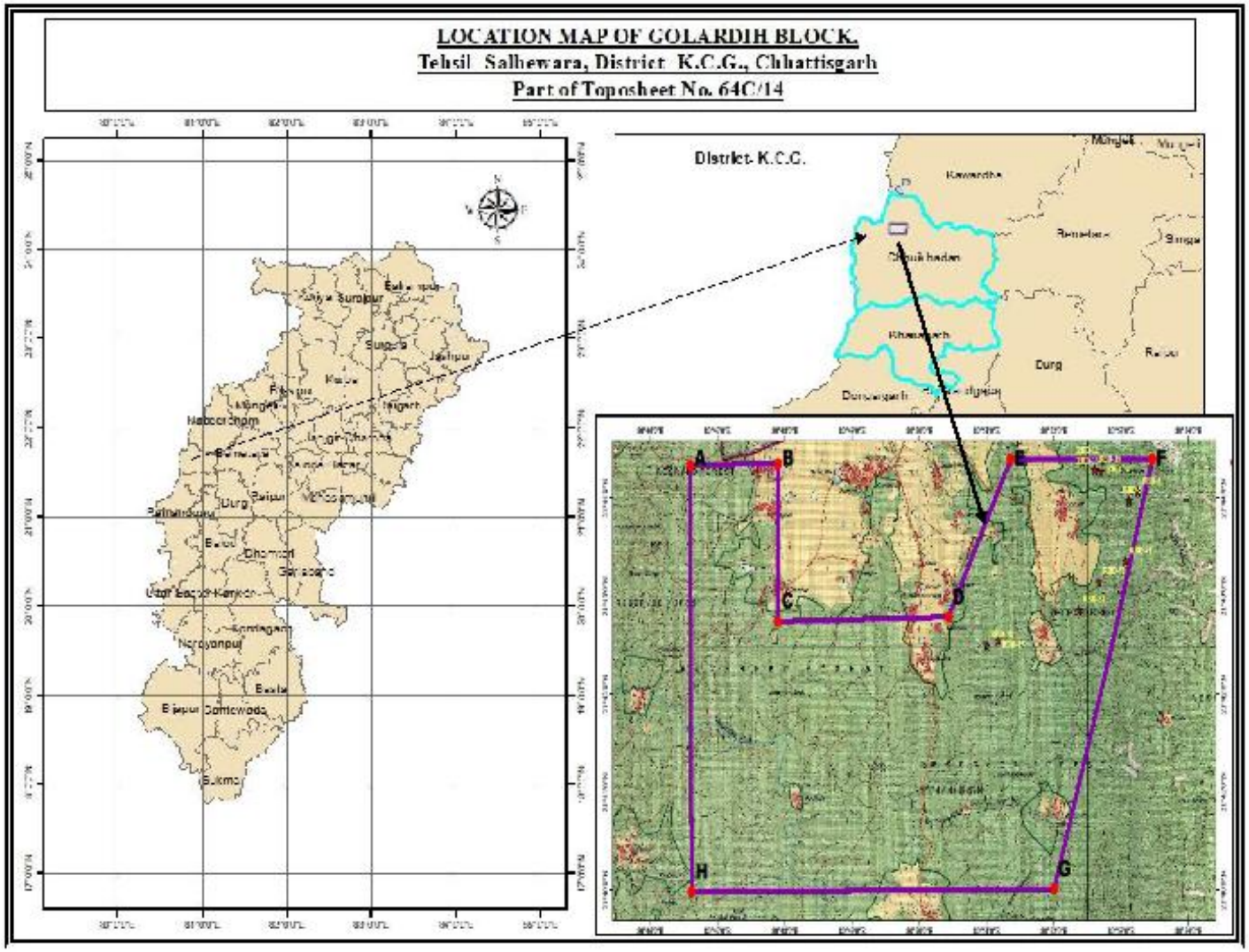
1. Location Map of Golardih Block, Tehsil- Salhewara, District- K.C.G., Chhattisgarh (Part of Toposheet No. 64 C/14)
2. Toposheet Map of Golardih Block, Tehsil- Salhewara, District- K.C.G., Chhattisgarh (Part of Toposheet No. 64 C/14)
3. 50K Map of Golardih Block, Tehsil- Salhewara, District- K.C.G., Chhattisgarh (Part of Toposheet No. 64 C/14)
4. Cost Estimation for Reconnaissance Survey (G-4 stage) in Golardih Block.

Estimated cost for Reconnaissance Survey (G-4 stage) for Bauxite, Aluminous Laterite and associated Critical Minerals in Golardih area, Khairagarh-Chhuikhadan-Gandai districts, Chattisgarh(Area: 70 sq. km.), Timeline: 10 months, Review after: 4 and 8 months

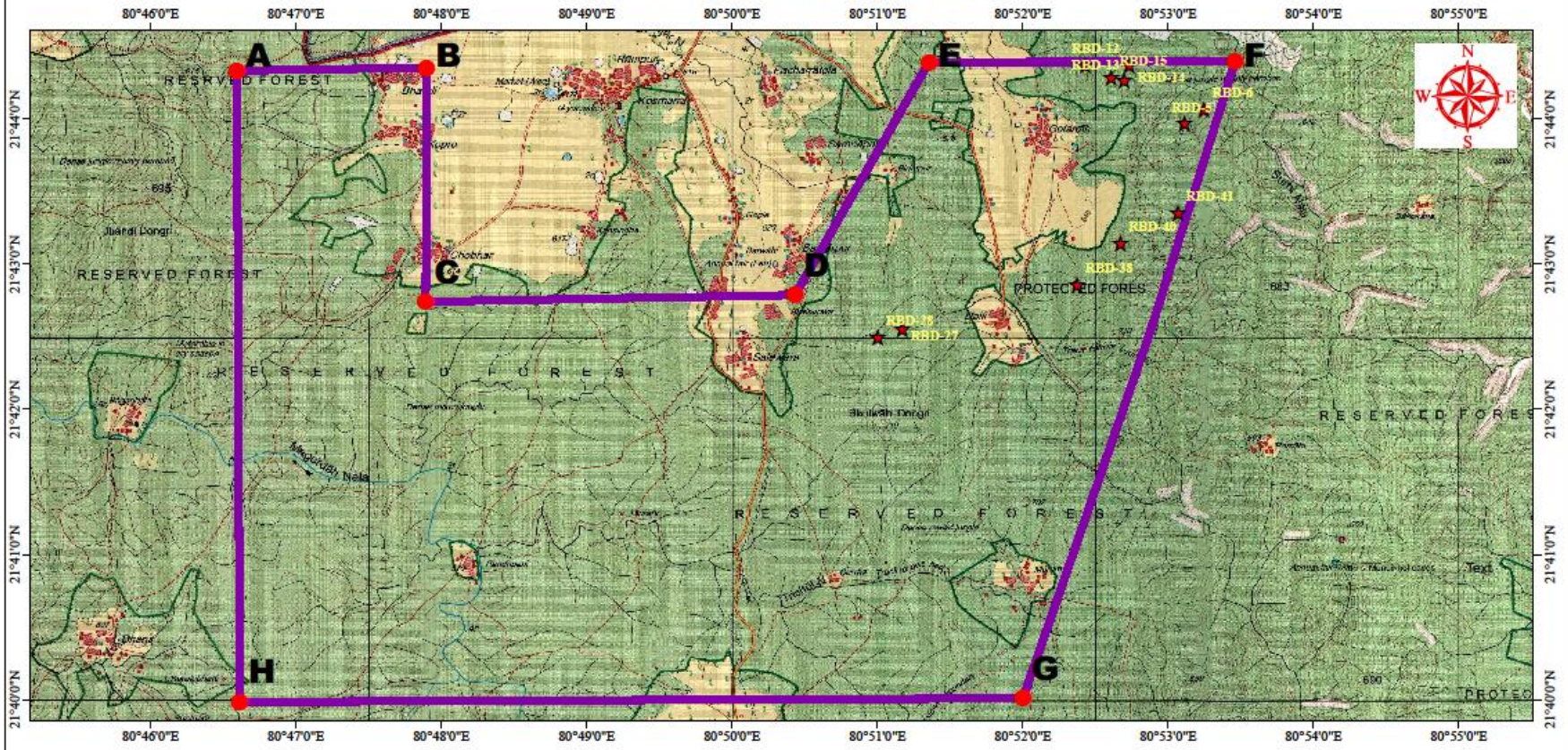
S. No.	Item of work	Unit	Rates as per NMET SoC 2020-21		Total		Remark
			SoC Item - S. No.	Rates as per SoC	Qty.	Amount	
A.	**GEOLOGICAL WORK**						
1	Survey Party Days (1 party)	Day	1.6.1a	8300	0	0	
2	Labour charges for Survey work	Per Labour	5.7	541	0	0	
3	Geologist Party Days (1 Party) Field	Day	1.3	11000	0	0	
4	Geologist Party Days (1 Party) HQ	Day	1.3	9000		0	
5	Labour charges for Geological Field work	Per Labour	5.7	541	300	162300	
6	Sampler	Day	1.5.2	5100	76	387600	
7	Labour for Sampling	Per Labour	5.7	541	304	164464	
8	DGPS for borehole fixation	per point of observation	1.6.2	19200	5	96000	
	Sub Total A					**810364**	
B.	**DRILLING**						
1	Surface drilling (1 rigs)	Meter	2.2.1.3a	10100	75	757500	
2	Road making (Rugged-Hilly terrain)	Per km	2.2.10b	32200	10	322000	
3	Transportation (2 rigs)	Per km	2.2.8	36	325	11700	
4	Monthly Accommodation charges for drilling camp	Monthly basis	2.2.9	50000	2	100000	
5	Camp Establishment cost	Per Drill	2.2.9a	250000	1	250000	
6	Camp Winding	Per Drill	2.2.9b	250000	1	250000	
7	Drill Core Preservation	Per Meter	5.3	1590	75	119250	
	Sub Total B					**1810450**	
C.	**LABORATORY STUDIES**						
a	Bulk density	per sample	4.8.1	1605	5	8025	
b.	Chemical Analysis						
1	Primary + Check Samples						
	(i) Primary Samples (Al2O3,TiO2, MgO%, SiO_2, , Fe_2O_3%, P2O5, & LOI, V, Ga,)	per sample	4.1.15a	4200	355	1491000	280 BRS + 75 core samples

	(ii) For Check Samples (Al2O3,TiO2, MgO%, SiO2, , Fe2O3%, P2O5, & LOI, V, Ga,)	per sample	4.1.15a	4200	35	147000	10% of total samples
	(iii) For Composite samples (Al2O3,TiO2, MgO%, SiO2, , Fe2O3%, P2O5, & LOI, V, Ga,)	per sample	4.1.15a	4200	0	0	
	(iv) Combined determination of Trihydrate alumina (THA-144° C), Monohydrate alumina (MHA-240° C) & reactive silica	per sample	4.1.17a	6700	15	100500	20% of samples of boreholes
	(v) Analysis for 34 elements (REE and others including Sc) by ICPMS (by outsourcing)	per sample	4.1.14	7,731	200	1546200	Analysis for Scandium for all samples
	(vi) Preparation of standard thin section	per sample	4.3.1	2353	10	23530	
	(vii) Petrological study	per sample	4.3.4	4232	10	42320	
	Sub Total C					**3358575**	
D.	**Total A + B + C**				-	**5979389**	
E.	Peer review					**30000**	
	Preparation of exploration proposal	One Number (5 Hard copies along with soft copy)	5.1	2% of the project cost or Rs 3.8 lakh whichever is lower	1	1,19,588	
	Geological Report Preparation	Copy per 5 Hard copies of report along with soft copy	5.2	For the projects having cost upto Rs 150 lakhs : A Minimum of Rs.2.5 lakhs or 5% of the value of work whichever is more	1	2,98,969	
	Sub Total F					**448557**	
	Grand Total D+F					**6427946**	
	GST 18%					**1157030**	
	Grand Total: with GST 18%					**7584977**	
						Say 75.85 Lakhs	

LOCATION MAP OF GOLARDIH BLOCK.
Tehsil Saihewara, District K.C.G., Chhattisgarh
Part of Toposheet No. 64C/14



TOPOSHEET MAP OF GOLARDIH AREA, DIST- KHAIRAGARH-CHHUIKHADAN-GANDAI, CHHATTISGARH
TOPOSHEET NO. 64 C/14



0 1 2 4 Km

Legend

- corner point
- Block Boundry
- Sample location

CornerPoint	Latitude	Longitude
A	21° 44' 20.090" N	80° 46' 35.664" E
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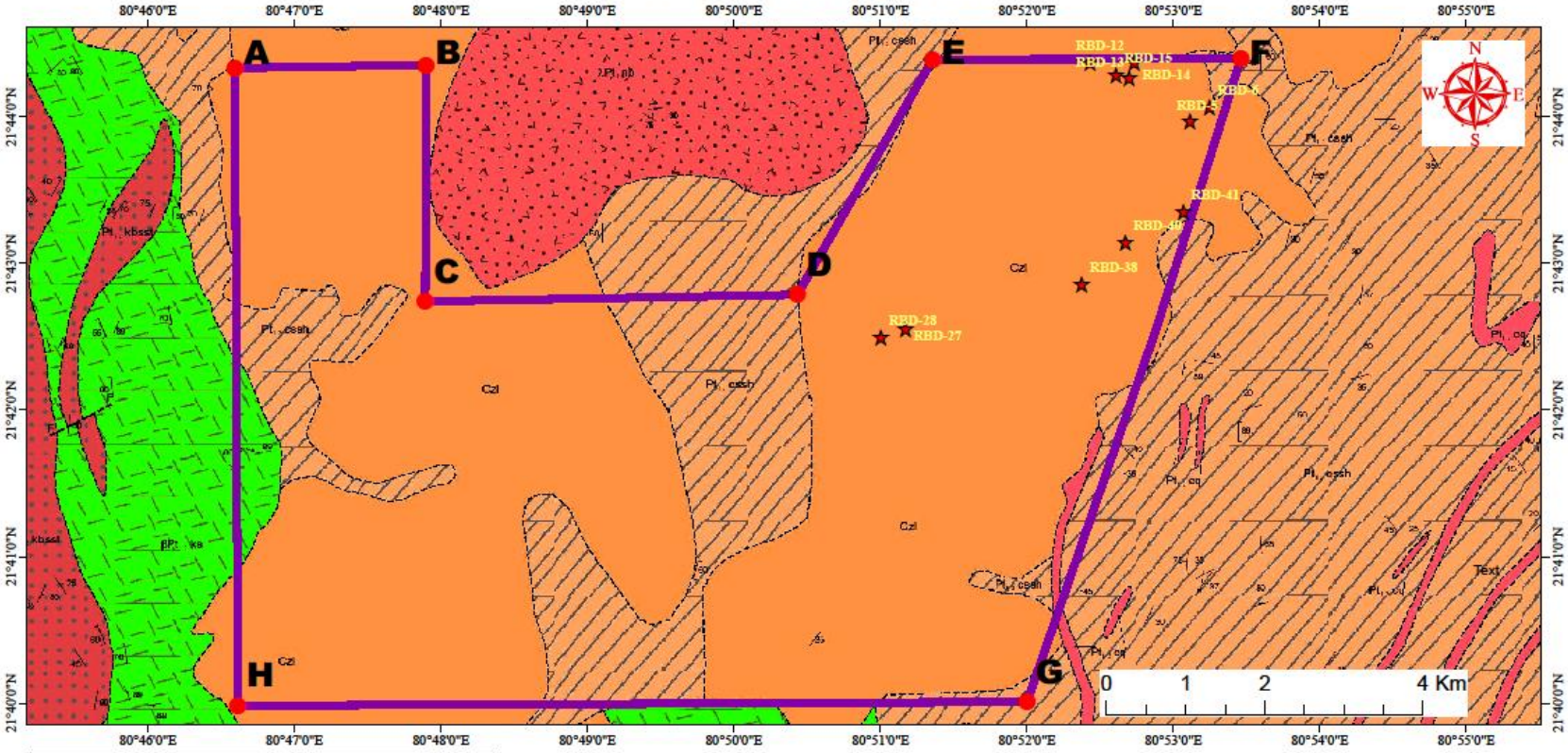
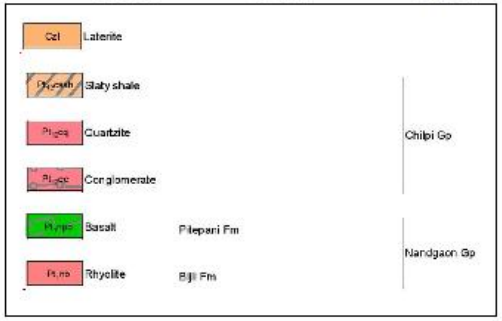
G	21° 40' 0.603" N	80° 52' 0.076" E
H	21° 39' 58.987" N	80° 46' 36.811" E

50K MAP OF GOLARDIH AREA, DIST- KHAIRAGARH-CHHUIKHADAN-GANDAI, CHHATTISGARH
TOPOSHEET NO. 64 C/14





Legend

- corner point
- Block Boundry
- Sample location

CornerPoint	Latitude	Longitude
A	21° 44' 20.090" N	80° 46' 35.664" E
B	21° 44' 21.339" N	80° 47' 53.924" E
C	21° 42' 44.528" N	80° 47' 53.557" E
D	21° 42' 47.286" N	80° 50' 25.974" E
E	21° 44' 23.655" N	80° 51' 21.364" E
F	21° 44' 23.807" N	80° 53' 27.612" E
G	21° 40' 0.603" N	80° 52' 0.076" E
H	21° 39' 58.987" N	80° 46' 36.811" E