

DETAILED PROPOSAL REPORT (DPR)

**PRELIMINARY EXPLORATION (G3-STAGE) FOR
ALUMINOUS LATERITE, TITANIUM, VANADIUM AND
ASSOCIATED MINERALS IN HASALLI BLOCK,
SANGAREDDY DISTRICT, TELANGANA (3.8 Sq.Km)**

**COMMODITY: Aluminous Laterite, Titanium, Vanadium
and Associated Critical Minerals**

By

M/S GMMCO Technology Services Ltd (GTS)

Hyderabad, Telangana



FOR SUBMITTING PROPOSAL FOR UNDERTAKING PRELIMINARY EXPLORATION

From:	To:
Dr. Akkala Surendra Babu	The Director & HoD
Chief of Technical Services	National Mineral Exploration Trust, Secretariat, Ministry of Mines,
GMMCO Technology Services Ltd ("GTS")	Room No-325 & 326, Wing-F, Udyog Bhawan,
9th Floor (9A/2), Vaishnavi Cymbol, Puppalaguda, Gandipet Mandal,	Rajpath Area, Central secretariat
Rangareddy District, Hyderabad – 500089	New Delhi – 110011.

1. Name and address of the Applicant		
(a)	Name	GMMCO Technology Services Ltd ("GTS")
(b)	Postal address	GTS Ltd, 9th Floor (9A/2), Vaishnavi Cymbol, Puppalaguda, Gandipet Mandal, Rangareddy District, Hyderabad, Telangana, India–500089
(c)	Telephone No(Office)	+91-7032711678
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(g)	E-mail address	pundarikarao.d@gts-india.com

2. Detail of Accreditation as Private Exploration Agencies and Notification under the Provision to Section 4(1) of the MMDR Act.		
(a)	Date of accreditation granted by QCI-NABET	20th May – 2024
(b)	Date of expiry of accreditation	15th May – 2027
(c)	Date of Notification under the provision to Section 4(1) of the MMDR Act.	13th September - 2024
(d)	Date of expiry of notification	12th September - 2027
(e)	Category of the Exploration agency (Category A or B) under Notification	Category – A
3. Location details of the area proposed		
(a)	State	Telangana
(b)	District (s)	Sangareddy
(c)	Nearby village (s)	Hasalli, Naimatabad, Hadnur and Gunjetti
(d)	Survey of India (SOI) Topo sheet No(s)	56G/9
(e)	Area in Sq. Km	3.8

(f)	Boundary co-ordinates of the Proposed Block (in Decimal Degree)	Corner point	Latitude	Longitude
		A	17.804083° N	77.592748° E
		B	17.818347° N	77.580675° E
		C	17.829039° N	77.594686° E
		D	17.815064° N	77.606306° E

4. Mineral Potential of the area

(a)	Name of Mineral(s) identified/expected in the area/block	Aluminous Laterite, Titanium, Vanadium and Associated Critical Minerals
(b)	Title of the Project	Preliminary Exploration (G3 Stage) for Aluminous Laterite, Titanium, Vanadium and associated Minerals in Hasalli Block, Sangareddy District, Telangana (3.8 Sq.Km)
(c)	Stage of Exploration	G3
(d)	Basis on which mineral potential of the area has been identified	Please refer enclosed "Summary proposal"

5. Documents enclosed with the application

(i)	Location of the proposed block demarcated on Survey of India (SOI) Toposheet No. 56G/9
(ii)	Documents mentioned in item 4(d) above.

Signature of the applicant



Dr. Akkala Surendra Babu
Chief of Technical Services
GMMCO Technology Services Ltd
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Place: Hyderabad

Date: 17.09.2026

Preliminary Exploration (G3-Stage) For Aluminous Laterite, Titanium, Vanadium and associated minerals in Hasalli Block, Sangareddy District, Telangana (3.8 Sq.Km)

GENERAL INFORMATION ABOUT THE BLOCK

S.No	Features	Details															
	Block ID	Hasalli Block															
	Exploration Agency	M/s GMMCO Technology Services Limited Hyderabad, India.															
	Commodity	Critical Minerals															
	Mineral Belt	Deccan trap volcanism															
	Completion Period with entire Time schedule to complete the project	Eight (12) months															
	Objectives	i. Detailed geological mapping (1:4,000 scale) to delineate Aluminous Laterite mineralization. ii. Surface sampling (BRS/channel) and trenching to establish continuity and grade variation. iii. Exploratory drilling at 600 m spacing up to 30 m depth to prove lateral and vertical continuity. iv. Estimation of Inferred Resources (UNFC 333) for Aluminous Laterite, TiO₂, V, Sc and associated minerals as per UNFC and MEMC Rules, 2015.															
	Whether the work will be carried out by the proposed agency	M/s GMMCO Technology Services Limited Hyderabad, India															
	Name/Number of Geoscientists	Two Senior Geologists															
	Expected Field Days (Geology) Geological Party Days	Two Senior Geologists (2X60 days each) = 120 days															
1.	Location																
	Latitude and Longitude	<table border="1"> <thead> <tr> <th>Corner point</th><th>Latitude</th><th>Longitude</th></tr> </thead> <tbody> <tr> <td>A</td><td>17.804083° N</td><td>77.592748° E</td></tr> <tr> <td>B</td><td>17.818347° N</td><td>77.580675° E</td></tr> <tr> <td>C</td><td>17.829039° N</td><td>77.594686° E</td></tr> <tr> <td>D</td><td>17.815064° N</td><td>77.606306° E</td></tr> </tbody> </table>	Corner point	Latitude	Longitude	A	17.804083° N	77.592748° E	B	17.818347° N	77.580675° E	C	17.829039° N	77.594686° E	D	17.815064° N	77.606306° E
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	Villages	Hasalli, Naimatabad, Hadnur and Gunjetti															
	Tehsil /Taluk	Nyalkal Mandal															
	District	Sangareddy															
	State	Telangana															

2.	Area (Hectares/Square kilometers)	
	Block Area	3.8 Sq.Km
	Forest Area	Nil
	Government Land Area	Nil
	Private Land Area	Data not available
3.	Accessibility	
	Nearest Rail Head	Medak Railway station
	Road	The village Hasalli is located It is located 61 KM towards west from District headquarters Sangareddy. 3 KM from Nyalkal.
	Airport	The nearest airport is Rajiv Gandhi International Airport (RGIA), Hyderabad
4.	Hydrography	
	Local Surface Drainage Pattern (Channels)	The proposed area represents a plateau geomorphic setting characterized by an undulating terrain, with a moderately to highly dissected upper plateau developed in the north western part of Toposheet No. 56G/9. The regional physiography and drainage pattern, governed by prevailing tropical climatic conditions, have played a significant role in the development of laterite cover and the residual enrichment of alumina, primarily through prolonged processes of chemical weathering, oxidation, and leaching.
	Rivers/Streams	First order Nalas present in proposed area
5.	Climate	
	Mean Annual Rainfall	Sangareddy district, part of Telangana's Central Telangana Zone, receives an average annual rainfall of around 978 mm
	Temperatures (December) (Minimum) Temperatures (June) (Maximum)	Tropical climate with hot summers, mild winters, and southwest monsoon rainfall.
6.	Topography	
	Topo sheet Number	56G/9
	Morphology of the Area	The proposed area is gentle undulations and low lying areas
7	Availability of baseline geosciences data	
	Geological Map (1:50K/25K)	1:12,500 (LSM map, G4 stage, Naimatabad block, GSI, 2024) 1: 50,000 (Bhukosh)
	Geochemical Map	NGCM data available

	Geophysical Map (Aeromagnetic, ground geophysical, Regional as well also Local scale GP maps)	NGDR															
8.	Justification for taking up Reconnaissance Survey / Regional Exploration	In the proposed block, Geological Survey of India (GSI, 2024) carried out Large Scale Mapping (LSM) on 1: 12,500 scale under G4 stage in the Naimatabad block and delineated four potential zones within aluminous laterite, recommending the area for detailed investigation. Analytical results obtained from bed rock samples (BRS), channel samples, and pit samples indicate appreciable enrichment of Al₂O₃ (up to 29%), TiO₂ (up to 3.42%), V (up to 1239 ppm), Sc (up to 87 ppm), and Ga (up to 37 ppm). The multi-element association of aluminium, titanium, vanadium, scandium, and gallium suggests favourable potential for establishing critical and strategic mineral resources within the proposed G3 block. The elevated values reflect intense lateritisation and residual concentration processes. The mineralisation is genetically related to deep weathering of Deccan Traps basalts, resulting in residual enrichment of alumina and iron along with concomitant concentration of vanadium, titanium and scandium Considering the promising analytical results, identified potential zones, and favourable genetic model, the block warrants systematic G3 stage exploration to establish Inferred Resources and assess its economic viability. Analytical Results of Proposed G3 Block - Aluminous Laterite (GSI, 2024) (Plate: 5,6,7& 8) <table><tr><th>Sample</th><th>Al2O3 (%)</th><th>TiO2 (%)</th><th>V (ppm)</th><th>Sc (ppm)</th></tr><tr><td>BRS</td><td>2.63-29.73</td><td>2.5-3.42</td><td>636-1239</td><td>83-87</td></tr><tr><td>PTS</td><td>24 -26</td><td>1.43-2.29</td><td>504-640</td><td>23-29</td></tr></table>	Sample	Al2O3 (%)	TiO2 (%)	V (ppm)	Sc (ppm)	BRS	2.63-29.73	2.5-3.42	636-1239	83-87	PTS	24 -26	1.43-2.29	504-640	23-29
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Proposal for Preliminary Exploration (G3-Stage) For Aluminous Laterite, Titanium, Vanadium and Associated Minerals in Hasalli Block, Sangareddy District, Telangana (3.8 Sq.Km)

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Block Summary

1. Introduction

Laterite and bauxite formations developed under tropical climatic conditions constitute important repositories of aluminium and associated critical elements such as vanadium (V), titanium (Ti), scandium (Sc) and gallium (Ga). These deposits are formed through intense lateritisation and residual concentration processes, leading to enrichment of alumina along with economically significant trace elements.

In Telangana, reconnaissance investigations by the Geological Survey of India (GSI) have demonstrated the potential of aluminous laterite in the Zaheerabad–Sangareddy region. During G4 stage Large Scale Mapping (1:12,500 scale) in the Naimatabad block, four potential zones were delineated and recommended for detailed investigation.

GSI analysed 160 laterite samples from the block, which revealed Al_2O_3 values ranging from 10.99% to 45.51% (avg. 24.25%), TiO_2 from 0.87% to 5.89% (avg. 2.34%), and Fe_2O_3 from 7.86% to 53.30% (avg. 24.59%). Trace element concentrations show significant enrichment, with V ranging from 106 to 2363 ppm

(avg. 589.53 ppm), Sc from 7 to 138 ppm (avg. 50.56 ppm) and Ga from 16 to 49 ppm (avg. 33.91 ppm). These geochemical signatures indicate intense lateritisation of Deccan Trap basalts and residual enrichment of aluminium and associated critical elements. The encouraging analytical results, delineation of potential zones and favourable genetic model warrant systematic G3 stage exploration to establish lateral and depth continuity of mineralisation and to estimate Inferred Mineral Resources (UNFC 333) as per prevailing norms.

Location and details of the area

The proposed block falls in Survey of India Toposheet No. 56G/9 and lies within the administrative jurisdiction of Sangareddy district, Telangana (Plate-1). The block is situated near Hasalli village, which is located about 61 km west of the district headquarters at Sangareddy and approximately 3 km from Nyalkal.

Physiography

The proposed block is characterised by a plateau-dominated physiography with gently to moderately undulating terrain, developed as part of the Deccan plateau region. The area comprises laterite-capped uplands, intervening shallow valleys, and locally dissected plateau remnants, reflecting prolonged subaerial exposure and tropical weathering.

Regional Geological setup

The proposed G3 stage Hasalli Block (3.8 Sq.Km) in Sangareddy district forms part of the Peninsular Gneissic Complex (PGC), which is overlain by the extensive basaltic flows of the Deccan Traps. The block lies along the eastern margin of the Deccan Trap province, emplaced during the Late Cretaceous (~67-65 Ma). This large igneous province represents one of the most voluminous continental flood basalt events on Earth, comprising extensive, step-like basaltic lava flows with cumulative thickness of several thousand metres and aerial spread exceeding 1,000 km across peninsular India. Studies by Chenet et al. (2007, 2008) recognised three major eruptive phases, with the voluminous Phase-2 coinciding with the Cretaceous–Tertiary Boundary, underscoring its global geological significance.

Prolonged tropical subaerial exposure of the Deccan basalts under warm and humid climatic conditions has resulted in intense chemical weathering and development of thick lateritic profiles. Laterite, characterised by enrichment of Fe and/or Al and depletion of Si, represents a residual product of advanced weathering of basaltic parent rocks (Schellmann, 1986). Although classification based on the $\text{SiO}_2\text{-Al}_2\text{O}_3\text{-Fe}_2\text{O}_3$ system is widely adopted, subsequent studies suggest that lateritic duricrusts may include both autochthonous and allochthonous components, thereby complicating strict genetic interpretations (Bourman&Ollier, 2002; Widdowson, 2008).

In the local geological context, the lateritic profiles display a systematic upward increase in weathering intensity, comprising saprolite, core-stone horizons, mottled zones and ferruginous/aluminous duricrust caps, with fresh basalt encountered at depths generally exceeding 30-40 m. Such well-developed lateritisation has facilitated residual concentration of alumina, iron, titanium, vanadium and allied elements. The geological setting of Deccan Trap-hosted laterites in the area is therefore highly favourable for aluminous laterite, bauxite and associated critical mineral exploration, providing strong justification for undertaking G3 stage investigation.

Regional Stratigraphy

The regional geological framework is dominated by Archaean granitoid-gneissic assemblages, comprising granite, adamellite, granodiorite, quartz-monzonite, alkali feldspar granite, quartz syenite, and alkali feldspar granite, collectively forming a composite batholith with diapiric emplacement (Condie, 1981). These granitoids constitute more than 80% of the area and enclose enclaves of amphibolite and banded gneiss, referred to as Gneiss-I, derived from tonalite, granodiorite, diorite, and amphibolite protoliths and metamorphosed under amphibolite facies conditions (Sarvothaman et al., 1983). Subsequent deformation and metamorphism of quartz-monzonite, adamellite, and granite under greenschist facies conditions led to the development of Gneiss-II assemblages (Sarvothaman et al., 1983). Alkali feldspar granites, representing the youngest phase of granitic intrusion, transect all earlier litho-units. The basement complex is intruded by multiple generations of basic dykes, including amphibolitic, doleritic, and pyroxenitic dykes, emplaced both prior to and subsequent to alkali feldspar granite intrusion. Pegmatite and quartz veins/reefs cut across all lithological units. The Deccan Trap volcanic sequence, comprising five basaltic flows, unconformably overlies the Archaean gneiss-granite complex, with conglomeratic horizons marking the basal unconformity. Intertrappean beds, predominantly chert with subordinate marl, occur between the lower basalt flows, notably between Flows I-II and III-IV. The volcanic sequence is capped by laterite, formed due to prolonged subaerial weathering under tropical climatic conditions.

Table.1 Regional stratigraphy of the proposed area (Source.GSI)

Group	Lithology
DECCAN TRAP	Laterite
	Basalt flow No. V
	Intertrappean bed-D: Chert
	Basalt flow No. IV
	Intertrappean bed-C: Chert with marl
	Basalt flow no. III
	Intertrappean bed-B: Chert with marl
	Basalt flow no. II
	Intertrappean bed-A: Chert with marl
	Basalt flow no. I
	Infratrappean bed: Conglomerate
----- Unconformity -----	
ARCHAEAN GNEISS GRANITE COMPLEX	Granitoids

Geology of the Block

The proposed block forms part of the extensive volcanic terrain of the Deccan Traps and is characterised by well-developed lateritic profiles overlying basaltic flows. The lithological assemblage comprises soil, pisolitic laterite, laterite, aluminous laterite, limonite and lithomarge, with laterite constituting the dominant unit. The basaltic flows unconformably overlie the Archaean Gneiss Granite Complex of the eastern Dharwar Craton and are locally associated with intertrappean beds of chert and marl.

Laterite occurs both as isolated cappings and extensive blanket deposits over the trap flows, with thickness varying from about 1 m to 30 m. The laterite profile typically consists of a duricrust at higher elevations, underlain by aluminous laterite and saprolite zones. Aluminous enrichment is mainly observed below the duricrust within the aluminous laterite and saprolite horizons, where alumina mineralisation occurs as patchy concentrations and vermicular structures. The development of laterite appears to be controlled by topography and prolonged tropical weathering, resulting in residual concentration of iron, alumina and associated elements such as vanadium and titanium. The overall geological setting is favourable for aluminous laterite and low-grade bauxite mineralisation.

Scope for proposed exploration

The proposed G3 stage exploration in the Hasalli Block, Sangareddy district aims to systematically evaluate the aluminous laterite horizons identified during G4 stage investigations by the Geological Survey of India. The programme envisages detailed geological mapping on 1:4,000 scale to delineate the lateral extent and thickness variation of mineralisation, followed by systematic surface sampling and trenching to establish strike continuity and grade variation. To prove subsurface continuity, exploratory drilling comprising 5 boreholes, each to a depth of 35 m, is proposed. The drilling will facilitate lithological logging, core sampling and chemical analysis for Al_2O_3 , TiO_2 , V, Sc and Ga, enabling correlation of mineralised zones and estimation of Inferred Mineral Resources (UNFC 333) as per UNFC guidelines and MEMC Rules, 2015.

Mineral Potentiality based on Geology

Mineralisation within the proposed Hasalli Block is closely associated with intense lateritisation of the Deccan Traps basalts. Prolonged tropical weathering has resulted in extensive leaching of silica and alkalis, while relatively immobile elements such as Al, Fe, Ti, V and Sc have undergone residual concentration within the lateritic profile.

Analytical results generated by the Geological Survey of India substantiate this enrichment, with Al_2O_3 values reaching up to 45.51%, TiO_2 up to 5.89%, V up to 2363 ppm, Sc up to 138 ppm and Ga up to 49 ppm. Such geochemical signatures reflect advanced lateritisation and favourable conditions for multi-element concentration.

Vanadium is preferentially enriched through adsorption and substitution within iron oxides and hydroxides, whereas titanium occurs largely as resistant Ti-bearing phases and lattice-bound components in the weathered basalt. Gallium, due to its geochemical affinity with aluminium, is commonly incorporated within aluminous laterite and bauxite horizons. The development of thick, mature lateritic profiles, particularly over the upper basaltic flows, thus provides favourable conditions for the formation of Al-V-Sc-Ti-Ga bearing laterite and bauxite, warranting systematic G3 stage investigation for resource evaluation.

2. Previous Work (Plate-4)

Systematic geological investigations in and around the proposed block have been carried out from time to time by various agencies, primarily the Geological Survey of India (GSI). Early regional geological mapping established the presence of Deccan Trap basalts, intertrappean sediments and lateritic caps, thereby delineating the broad stratigraphic framework of the area. These studies recognised extensive lateritisation of basaltic flows, particularly over plateau surfaces, indicating favourable conditions for the development of aluminous laterite and bauxite.

Majji et al. (2024) carried out a Reconnaissance Survey (G4 stage) for aluminous laterite in the Naimatabad area of Sangareddy district, Telangana. Analytical data of surface samples and vertical profile samples collected at 2 m intervals revealed that about 77.5% of the samples contain more than 20% Al_2O_3 , while nearly 12% of the samples contain more than 30% Al_2O_3 . Based on large-scale mapping and analytical results, four potential sectors for low-grade bauxite/aluminous laterite along with associated Vanadium, Scandium and TiO_2 were delineated.

The Mamadgi Sector shows Al_2O_3 values ranging from 13.23% to 45.51%, Vanadium from 317 ppm to 1239 ppm, Scandium from 36 ppm to 95 ppm, and TiO_2 from 1.77% to 4.23%, with average Al_2O_3 and Vanadium values of 31.66% and 587 ppm, respectively. The Shamshallapur Sector records Al_2O_3 between 10.99% and 40.80%, Vanadium from 420 ppm to 920 ppm, Scandium from 52 ppm to 115 ppm, and TiO_2 from 2.18% to 3.69%. The Rukmapur Sector exhibits Al_2O_3 ranging from 15.88% to 29.81%, Vanadium from 195 ppm to 1108 ppm, Scandium from 29 ppm to 115 ppm, and TiO_2 from 0.87% to 3.64%. The Yalgul Sector shows Al_2O_3 values between 23.09% and 29.81%, Vanadium from 293 ppm to 632 ppm, Scandium from 28 ppm to 138 ppm, and TiO_2 from 1.15% to 3.62% (Plate: 5, 6, 7 & 8).

Based on the above findings, systematic geochemical sampling at regular intervals followed by drilling was recommended to assess the resource potential of Alumina, Vanadium, Scandium, TiO_2 and associated elements. In view of its favourable analytical results and geological continuity, the Hasalli Block has been selected for G3-stage (General Exploration) investigations to establish subsurface continuity, grade distribution and enable preliminary resource estimation in accordance with UNFC guidelines

3. Block description

Corner point	Latitude	Longitude
A	17.804083° N	77.592748° E
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C	17.829039° N	77.594686° E
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4. Planned Methodology

The proposed investigation will be carried out at the G-3 stage through an integrated programme of surface mapping, drilling, sampling, and laboratory studies, aimed at generating UNFC-compliant baseline data in accordance with the Minerals (Evidence of Mineral Contents) Rules.

i) Geological and Structural Mapping

Detailed geological and geomorphological mapping on 1:4,000 scale will be undertaken to delineate laterite cover, basalt flows (II-V), intertrappean horizons, and associated structural features such as fractures, joints, lineaments, and flow contacts that influence lateritisation and mineral enrichment.

ii) Surface Sampling

Systematic grab, channel, and groove sampling will be carried out from laterite profiles, bauxite horizons, vesicular flow tops, and other favourable zones. Sampling will be designed to assess lateral and vertical variation in Al_2O_3 , Fe_2O_3 , TiO_2 , V, Scand Ga content.

iii) Subsurface Investigation

Subsurface investigation will be carried out through core drilling supplemented by limited pitting/trenching to establish the subsurface continuity and grade characteristics of manganese mineralisation. A total of 9 boreholes, each to a vertical depth of 30 m, aggregating to 270 m of drilling, are proposed. Core drilling will be undertaken to establish the lateral and vertical continuity and to determine true thickness and grade variation, and study the structural controls of mineralisation. Detailed core logging will be carried out for lithology, mineralisation, structural features, core recovery and RQD, followed by systematic core sampling based on lithological and mineralogical variations. In addition, limited shallow pits/trenches, wherever feasible, will be excavated to study laterite thickness, profile development, and grade variation with depth, and to collect representative samples from different horizons.

iv) Laboratory Analysis

Selected samples will be analysed for major oxides by XRF and trace and critical elements by ICP-MS. Petrographic, ore microscopic, and XRD studies will be carried out to characterise mineralogy, textural relationships, and host rock-mineral associations.

v) Data Integration and Assessment

All geological, drilling, sampling and analytical data generated during the course of exploration will be systematically compiled, validated and interpreted to develop a comprehensive geological model of the mineralised zone. The integrated assessment will form the basis for evaluation of continuity, thickness, grade distribution and resource potential of the deposit. The deliverables of the programme will include an updated Geological Map on 1:4,000 scale, detailed borehole logs and geological cross-sections, analytical data tables with quality control details, and preliminary resource estimation, wherever feasible, in accordance with prevailing UNFC guidelines.

5. Nature Quantum and Target

The following work components are proposed for the reconnaissance (G-3) stage exploration programme in the proposed block:

Table No. 2 Proposed works in Hasalli Block

S. No	Activities	Unit	Target
1	Geological Mapping		
	Detailed Geological Mapping (on 1:4000 Scale)	Sq. Km	3.8
2	Survey		
	i) Topographic Survey (on 1:4,000 Scale)	Sq. Km	3.8
	ii) DGPS survey for Block Boundary and Boreholes	Sq. Km	13
3	Drilling		
	i) Drilling (9 nos. of BH x 30 m vertical depth)	m	270
	ii) Core logging	Nos.	270
4	Pitting	Cu m	10
5	Sampling		
	i) Bed Rock Samples (BRS)	Nos.	0
	ii) Drill core Samples (CS)	Nos.	190
	iii) Pitting (PTS)	Nos.	10
6	Laboratory Studies		
	i) Preparation of polished thin section	Nos.	5
	ii) Study of polished thin section	Nos.	5
	iii) Bulk Density / Sp. gravity studies	Nos.	5
7	Chemical Analysis (Oxides, Traces and REE) (3 ii + 5 i, ii, iii)	Nos.	200
8	Report Preparation (5 Hard copies with a soft copy)	Nos.	1

6. Manpower deployment

The following manpower is proposed for systematic execution of the G-4 stage exploration programme in the Hasalli block:

Table No. 3 Manpower deployment for Hasalli block

S.No	Category	Number	Role / Responsibility
1	Geologists	2	Overall supervision, planning and execution of geological mapping, structural studies, and data integration
2	Field Labour	2	Collection, labeling, preparation, and dispatch of bedrock, trench and pit
3	Sampler	1	Collection, labeling, preparation, and dispatch of bedrock, trench, pit, and core samples.
4	Supporting Labour for core Sampling	2	Assist sampler in sample collection, handling, and processing.

7. Time Schedule

Time Schedule for Preliminary Exploration (G3-Stage) For Aluminous Laterite, Titanium, Vanadium and Associated Minerals in Hasalli Block, Sangareddy District, Telangana (3.8 Sq.Km) Schedule timeline: Ten (12) months.

Table .4 Time Schedule for Preliminary Exploration

Cost estimate for Preliminary Exploration (G3) for Aluminous Laterite, Titanium, Vanadium and Associated Critical Minerals in Hasalli block, District, Sangareddy, Telangana. Area- 3.8 sq.km, Drilling: 270 m; 9 BHs (30m each);																
S. No	Activity	Unit	Months													
			1	2	3	4		5	6	7	8		9	10	11	12
1	Camp Establishment	Months														
2	Geological mapping	Months														
3	Pitting	Months														
4	DGPS Survey (Boundary points, Drill collars & Topography)	Months														
5	Drilling	Months														
6	Core logging & sampling	Months														
7	Sampling analysis (BRS, Pit & Drill core samples) including WD-XRF and ICP-MS analysis	Months														
8	Laboratory analysis (Petrography & Bulk Density)	Months														
9	Camp winding	Months														
10	Report preparation and submission	Months														

8. Break-up of expenditure

Cost Estimate - Proposal for Preliminary Exploration (G3-Stage) For Aluminous Laterite, Titanium, Vanadium and associated minerals in Hasalli Block, Sangareddy District, Telangana (3.8 Sq. Km) No. of boreholes: 05, Borehole depth range-35 m; Schedule timeline: Ten (10) months		
S. No.	Item of Work *	Estimated Cost of the Total Amount (Rs)
A	Geological Mapping	34,40,040
B	Survey work	8,52,200
C	Drilling	16,51,625
D	Pitting/Trenching	2,36,250
E	Laboratory Studies	15,54,800
F	Geological Report Preparation (5 Hard copies with a soft copy)	2,50,000
G	Preparation of Exploration Proposal	1,47,350
H	Total Estimated Cost without GST	81,69,613
I	Provision for GST (18% of I)	14,70,530
J	Total Estimated Cost with GST	96,40,144
Say Rs. in Lakhs		96.40

Details Break-up of expenditure

Cost estimate for Preliminary Exploration (G3) for Aluminous Laterite, Titanium, Vanadium and Associated Critical Minerals in Hasalli block, Sangareddy District, Telangana. Area- 3.8 sq.km, Drilling: 270 m; 9 BHs (30m each); Timeline:12 months, Review After 4 & 8 months						
S. No.	Item of Work *	Unit *	Rates as per NMET SoC 2025		Estimated Cost of the Proposal	
			SoC-Item No.	Rates as per SoC (a)	Qty. (b)	Total Amount (Rs) (a*b)
A	Geological Mapping Other Geological Work					
i	Geological mapping, (1:4000 scale)	Sq.km	1.1	18,300	3.8	69,540
ii	Charges for Geologist per day (Field) for geological mapping & trenching work	day	1.2.1a(b)	14,500	120	17,40,000
iii	Charges for Geologist per day (HQ)	day	1.2.1a(a)	10,500	30	3,15,000
iv	Labours Charges for field work	day	5.8	556	240	1,33,440
v	Charges for one Sampler per day (1 Party)	one sampler per day	1.2.1b	7,850	29	2,27,650
vi	Labours Charges; Bedrock, Core sampling and preparation of sample	Per day	5.8	556	116	64,496
	Sub Total - A					25,50,126
B	Survey Work					
i	DGPS Survey for BH fixation & RL determination (5 BH + 4 Boundary points)	Per Point of observation	1.3.2	24000	13	3,12,000
ii	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 & Reduced Level (RL) of the boreholes	Per day	1.3.1	10500	30	3,15,000
iii	Labours Charges for survey work		5.8	556	120	66,720

	Sub Total - B					6,93,720
C	Pitting/Trenching					
i	Pitting	per cu.m	2.1.2	4725	10	47,250
	Sub Total - C					47,250
D	Drilling (Inhouse)					
i	Drilling (In-house)	per m	2.2.1.1c	5,500	270	14,85,000
ii	Land / Crop Compensation (in case the BH falls in agricultural Land)	per BH	5.6	30,000	9	2,70,000
iii	Construction of concrete Pillar (12"x12"x30")	Per BH	2.2.7	2,000	9	18,000
iv	Borehole plugging by cement	Lump sum per BH	2.2.8	10,000	9	90,000
v	Miscellaneous Charges (Transportation of Drilling Rig, Accommodation for Drill Camp, Camp setting and winding, construction of Approach Road)	Drilling cost	2.2.9	0.25		3,71,250
vi	Core Preservation	m	5.3	1590	150	2,38,500
	Sub Total - D					24,72,750
E	LABORATORY STUDIES					
1	Chemical Analysis					
a	Major oxides (WD XRF)- (oxides+ traces -24 elements)	Per Sample	4.1.17a	4,200	200	8,40,000
b	External Check (10%)	Per Sample	4.1.17a	4,200	20	84,000
c	Analysis of one rock/ soil sample for quantitative analysis of 14 REE elements + 9 trace element(U,Ta,Ge,Be,Sn,As,Rb,Th,Ga) by ICP-MS (sequential technique)	Per Sample	4.1.15	7,400	30	2,22,000
d	External Check (10%)	Per Sample	4.1.15	7,400	3	22,200
ii	Physical & Petrological Studies					
a	Preparation of polished thin section	Per Sample	4.3.2	800	5	4,000
b	Study of polished thin section	Per Sample	4.3.4	2800	5	14,000
c	Bulk Density	Per Sample	4.8.3	2500	5	12,500
						Sub Total - E
						11,98,700
						Total A to E
						69,62,546
D	Geological Report Preparation	5 Hard copies with a soft copy	5.2			2,50,000
E	Peer review Charges	As per EC decision				30,000
F	Preparation of Exploration Proposal	5 Hard copies with a soft copy	5.1	2% of the Cost or Rs. 5.0 Lakhs whichever is less		1,39,251
G	Total Estimated Cost without GST					73,81,797
H	Provision for GST (18% of G)					13,28,723
I	Total Estimated Cost with GST					87,10,520
						Say Rs. In Lakhs
						87.10

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Plates

Plate -1: Location map of the proposed block on toposheet 56G/09

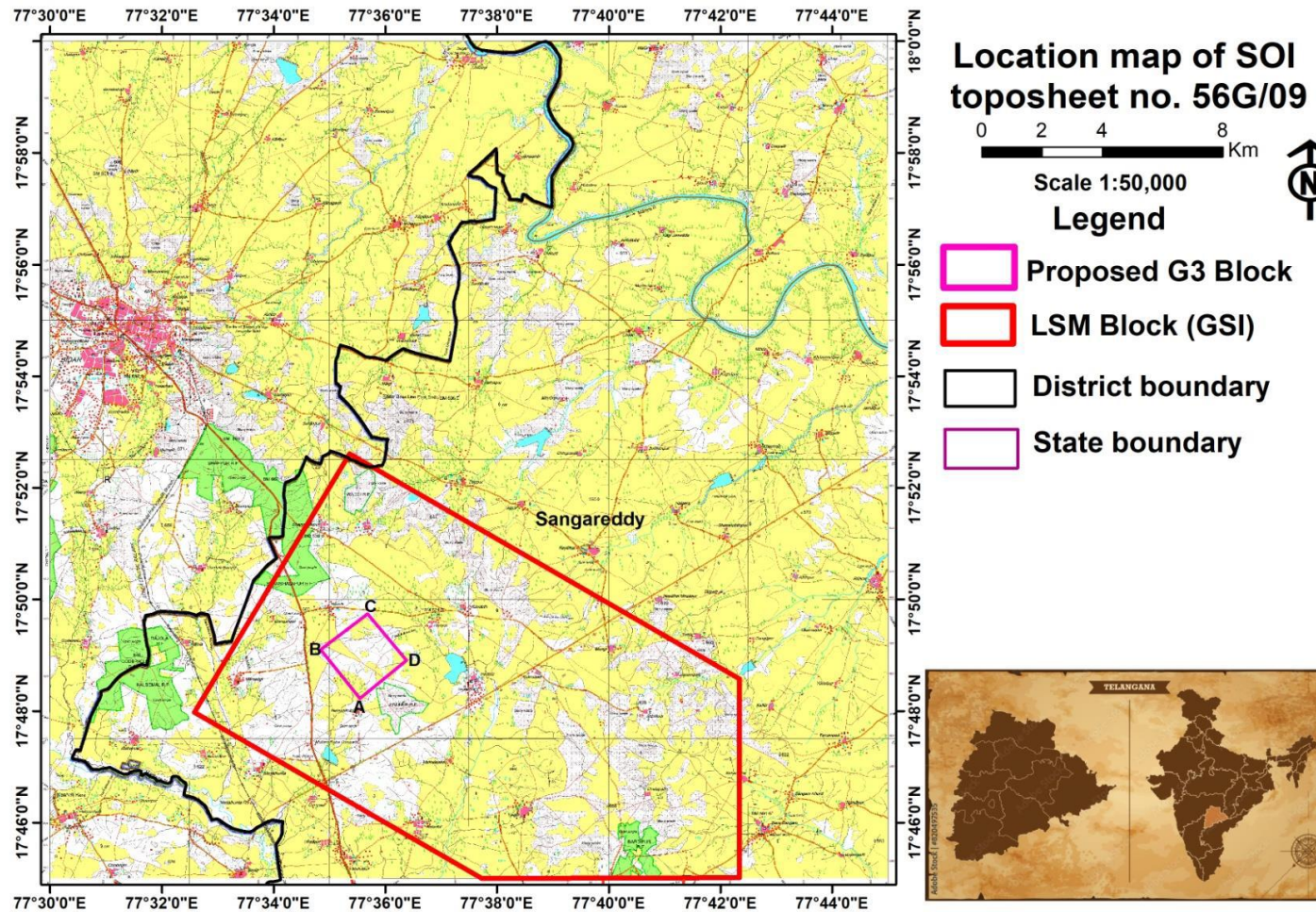


Plate-2: Survey of toposheet No. 56G/9 showing the Hasalli proposed block

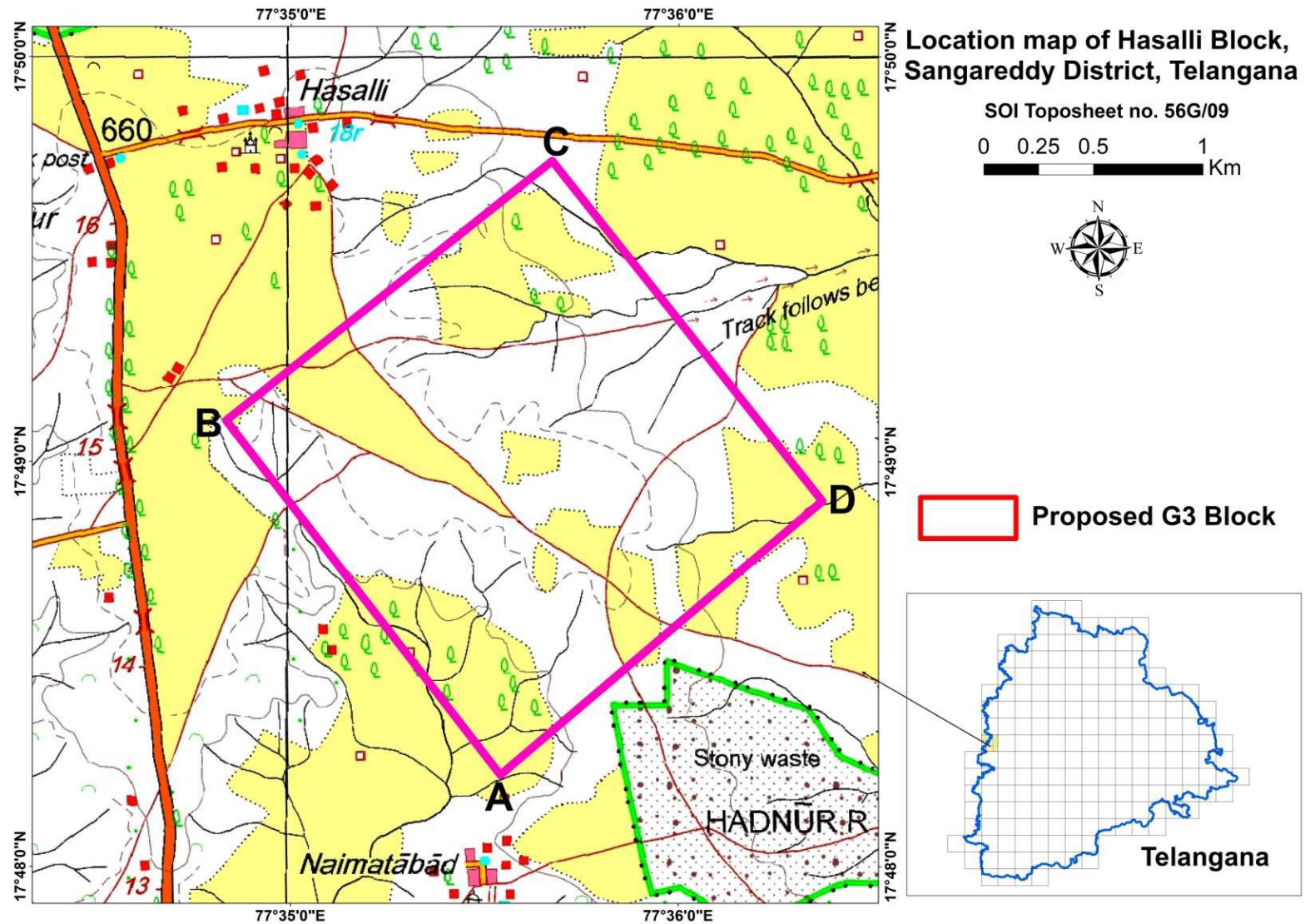


Plate-3: Geological map of the block (1:50,000 scale) (Source. GSI, NGDR)

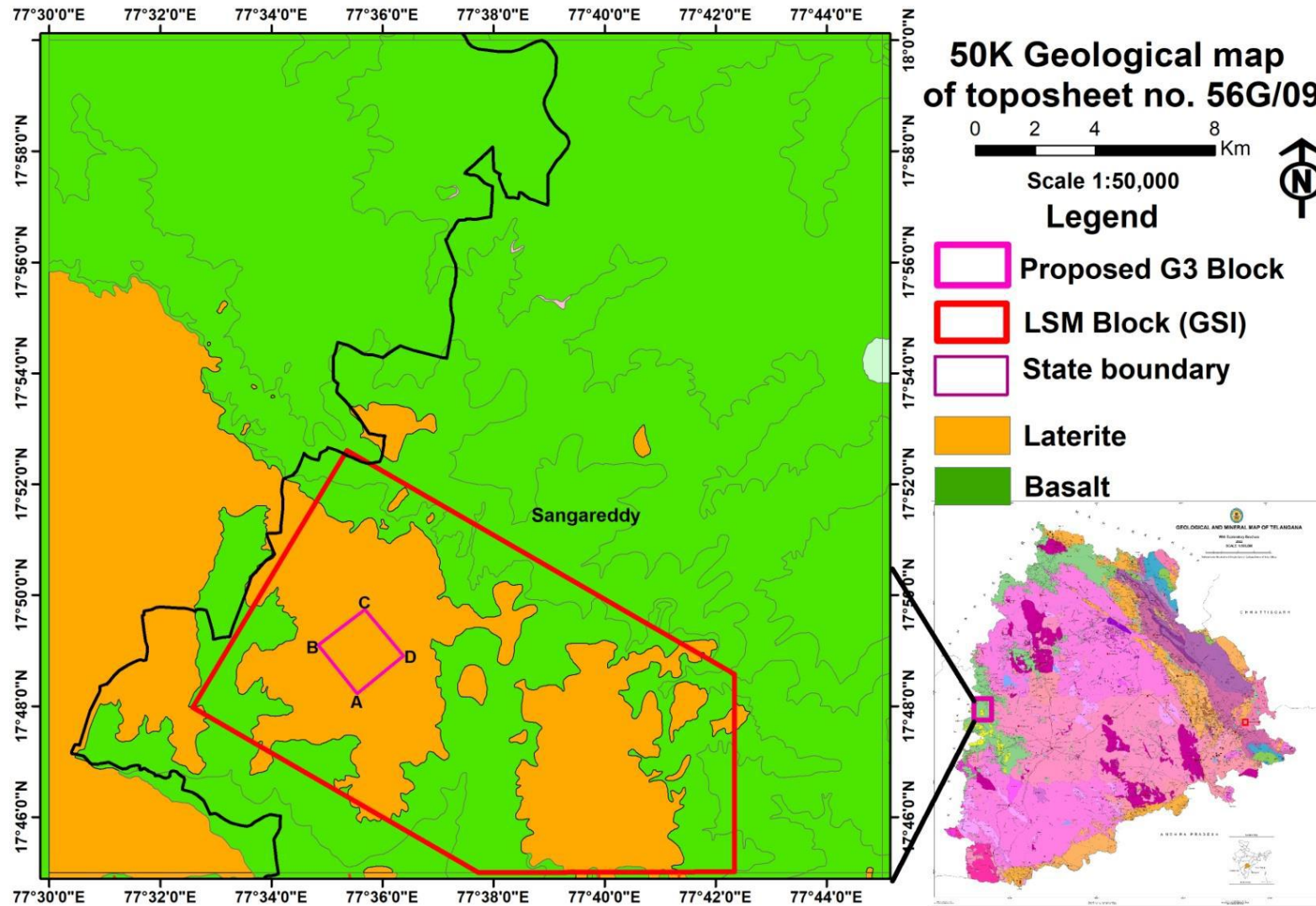


Plate-4: Exploration status map of GSI and proposed block (Source. GSI, NGDR)

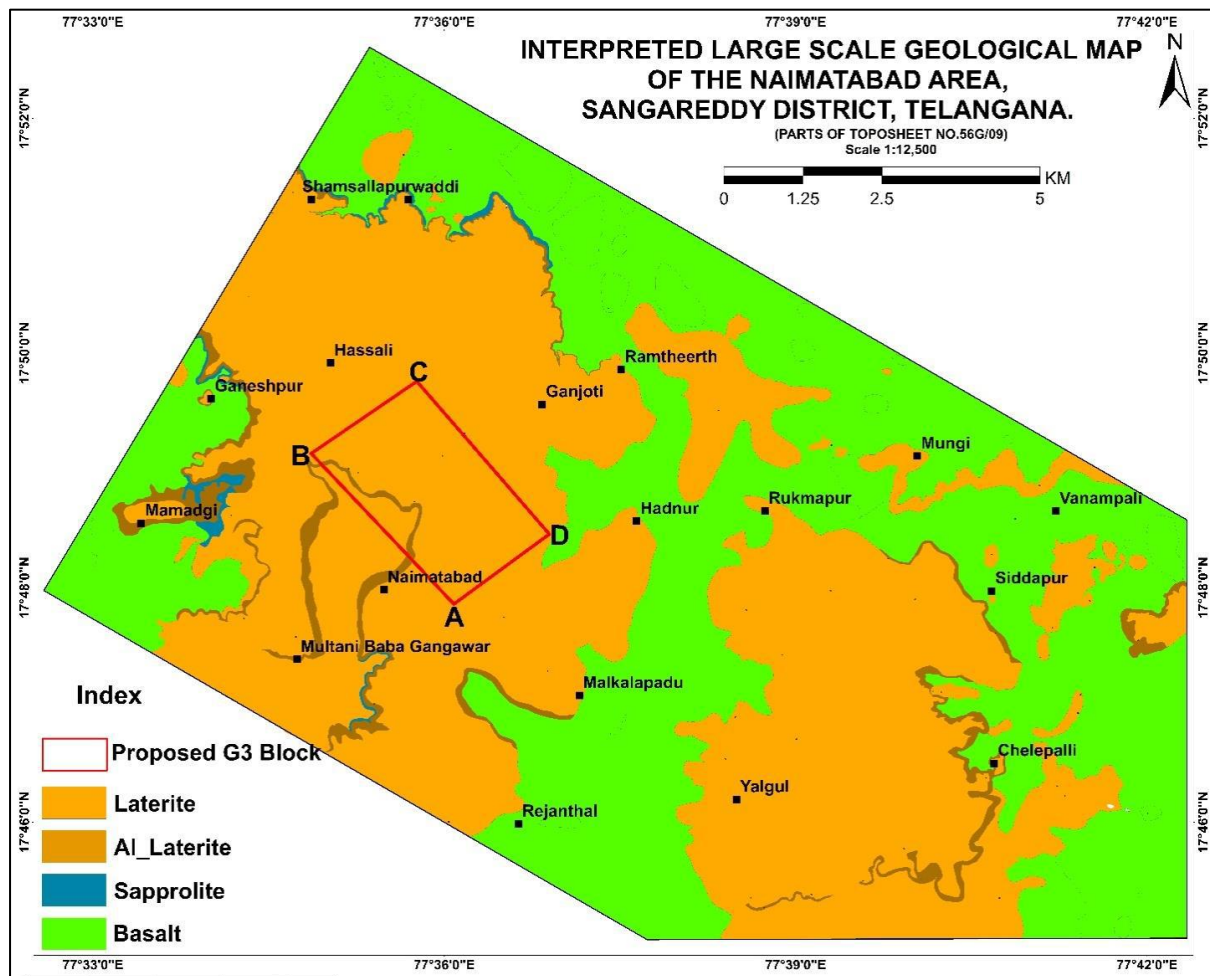


Plate-5: Distribution of vanadium (V) values in proposed exploration blocks based on data compiled from GSI (Source. GSI, NGDR)

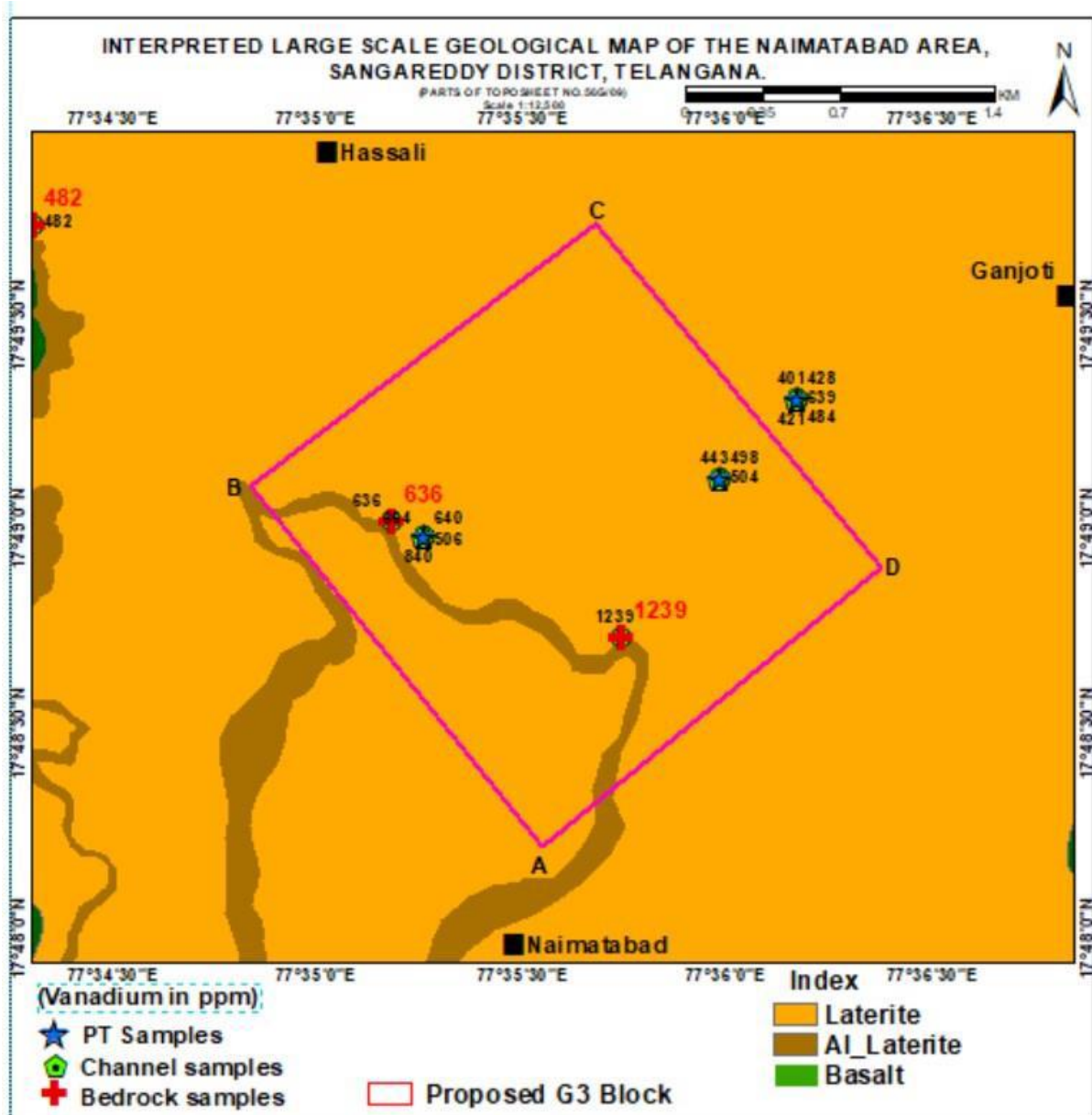


Plate-6: Distribution of Titanium (TiO_2) values in proposed exploration blocks based on data compiled from GSI (Source. GSI, NGDR)

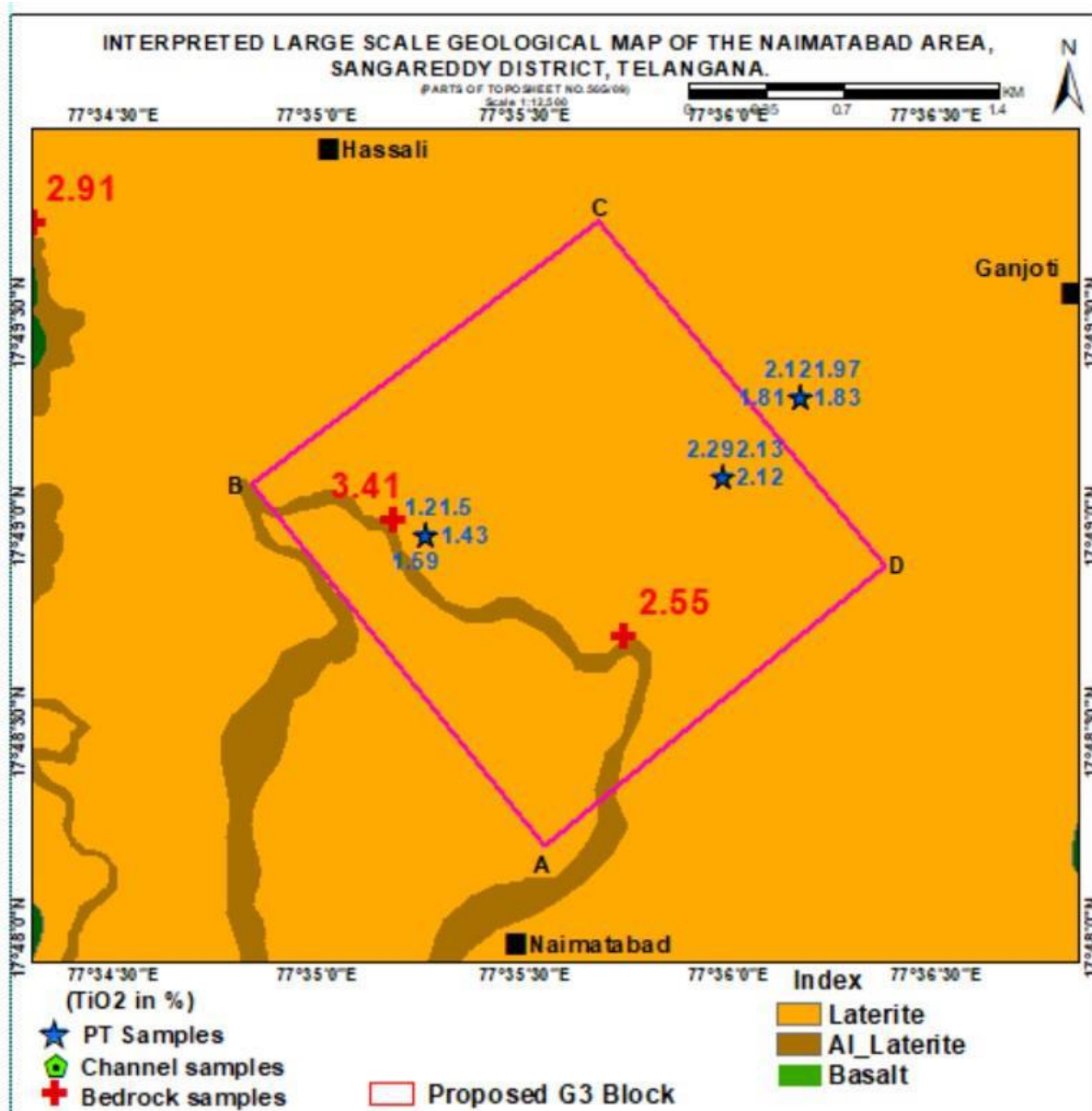


Plate-7: Distribution of Scandium (Sc) values in proposed exploration blocks based on data compiled from GSI (Source. GSI, NGDR)

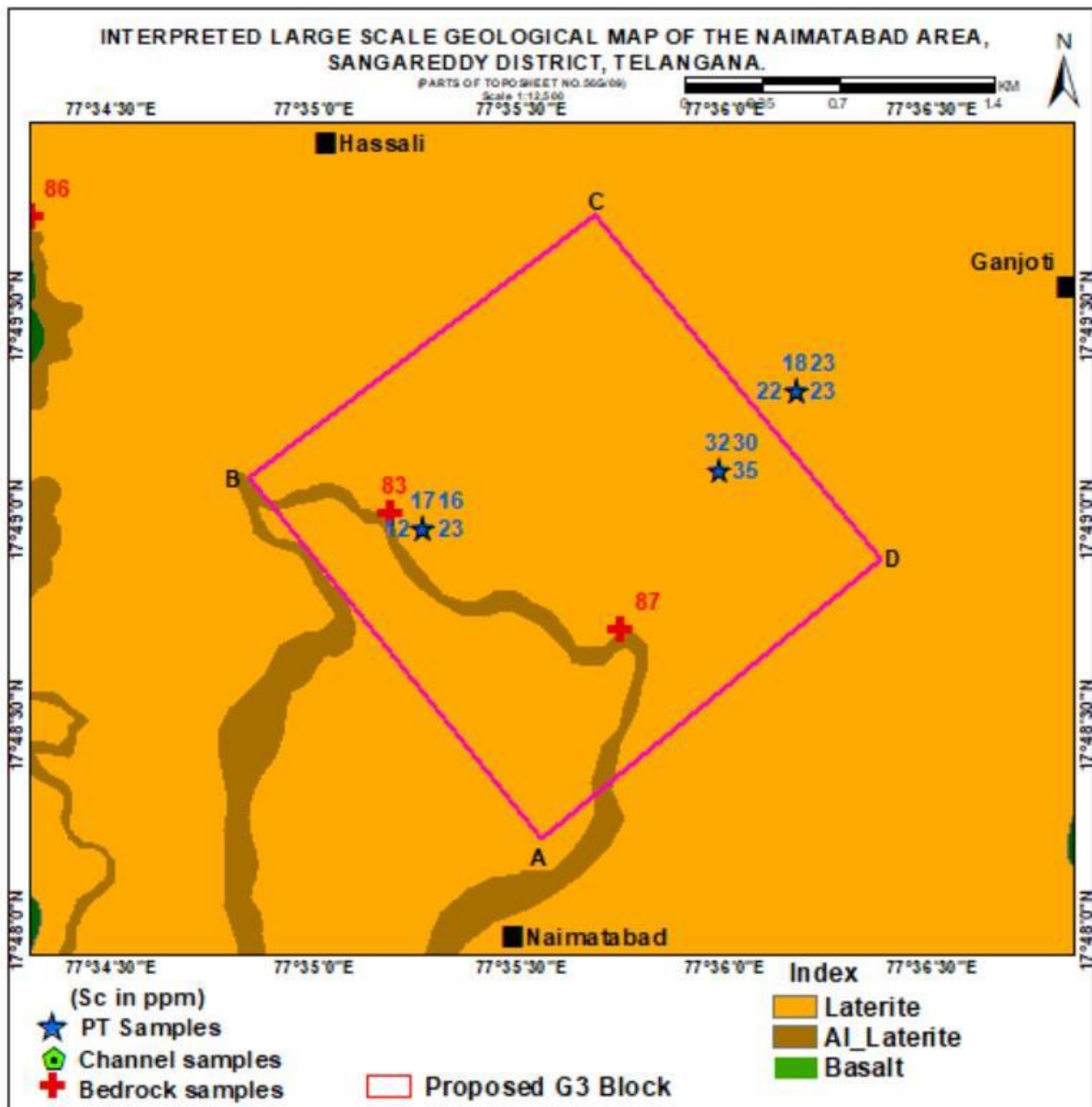


Plate-8: Distribution of Aluminium (Al_2O_3) values in proposed exploration blocks based on data compiled from GSI (Source: GSI, NGDR)

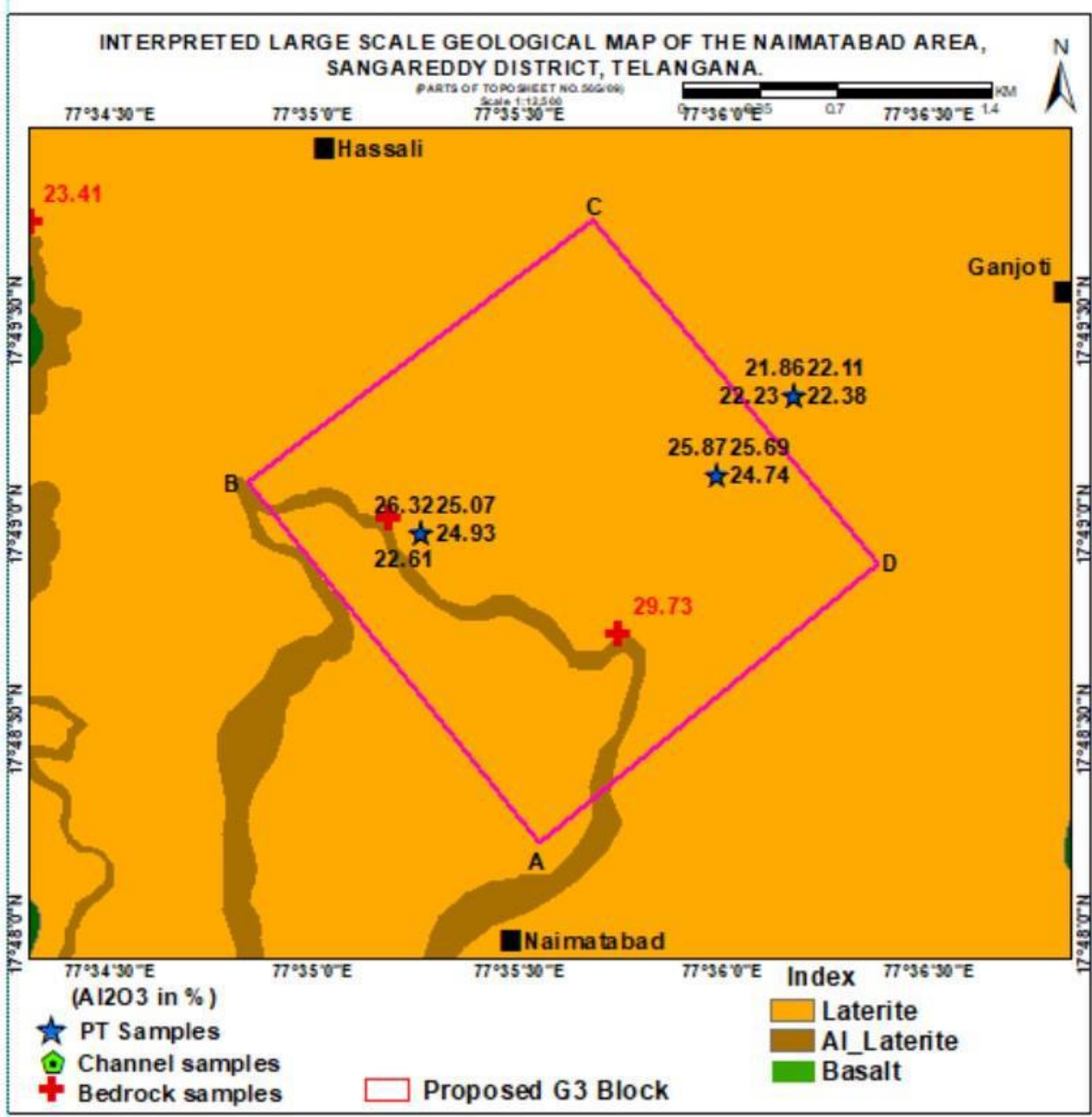


Plate-9: Proposed Drillhole Locations

