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STRATA AFRICA EXPLORATION – NAMAQUA PR

Northern Cape, South Africa

LITERATURE REVIEW & TARGET GENERATION

Prospecting Right NC30/5/1/1/2/14344 PR

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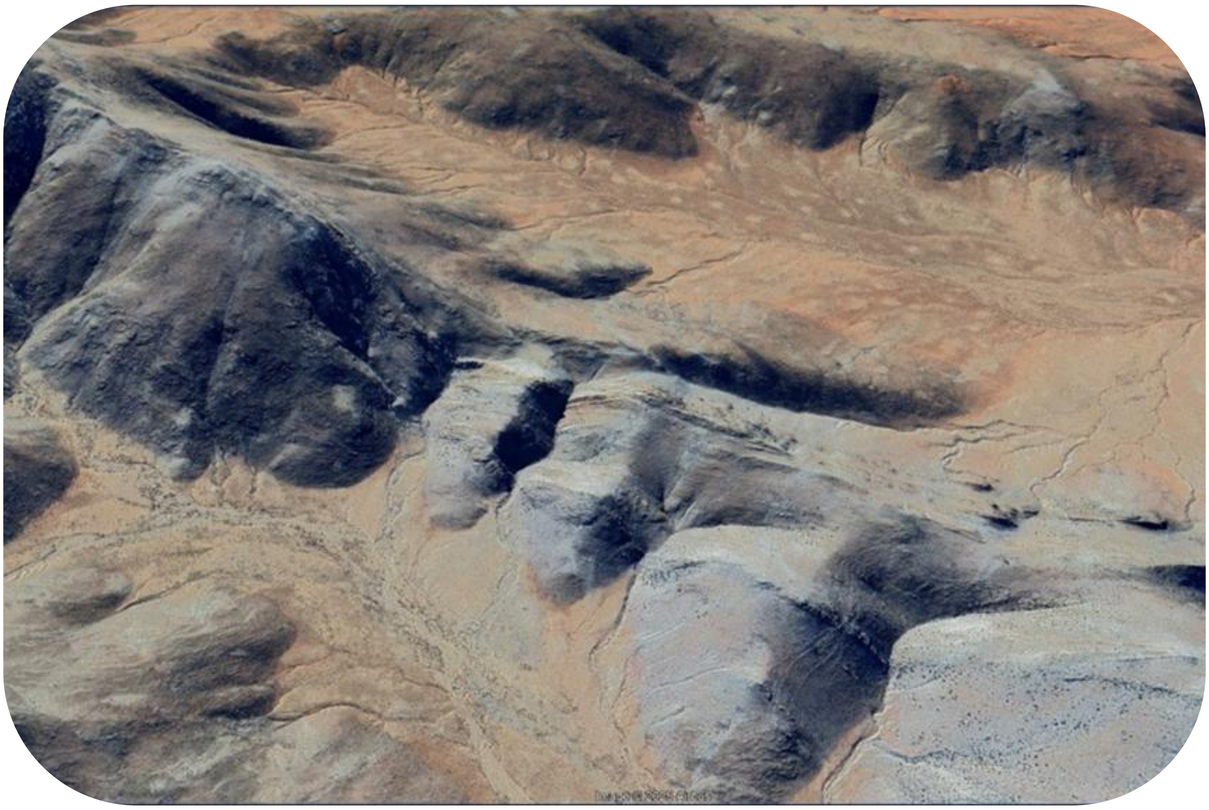

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EXECUTIVE SUMMARY

Minrom Consulting (Pty) Ltd was requested by Strata Africa Exploration (Pty) Ltd to investigate mineral potential for the mineralisation potential within Prospecting Right NC30/5/1/1/2/14344 PR, which covers five (5) farm portions between Steinkopf and Port Nolloth in the Northern Cape, South Africa. The assessment involved a combination of geological data review, interpretation of open-access data, Minrom's internal archives, and advanced remote sensing techniques. The primary objective was to position the client on the mineral potential of each farm and rank exploration targets.

The remote sensing analysis, utilising primarily LANDSAT 8 satellite data, identified several target areas based on band ratios that highlighted potential hydrothermal alteration and silica content. These target areas were subsequently ranked based on their prominence in false-colour satellite imagery, particularly RGB combinations incorporating band ratios 4/2, 6/7, and band 5. The highest-ranked targets were located on the farms Tusschen In 143 and Steenbok 165. These target areas generally coincided with extensions of industrial mineralised geological units (Garnet, Kyanite, and Sillimanite).

The literature study acknowledged several limitations in the pursuit of mineral targets with a significant complicating factor being the covering or masking of potential deposits by overlying sand or soil, particularly the wind-blown aeolian Kalahari sands and beach sands prevalent in the Namaqualand and Richtersveld region. Furthermore, due to limited data availability, not all the parameters defined in the mineralisation targeting could be fully considered in the remote sensing analysis.

Based on the mineralisation model and the results of the remote sensing study, it was concluded that while all farms were considered prospective, this was primarily for industrial mineralisation. The possibility of copper or pegmatite mineralisation (Sn, Ta, W, Li) is, however, still possible as this mineralisation exists within the regional geological context, particularly considering the history of copper mining in Namaqualand and pegmatite occurrences hosting lithium and tantalum associated with the later structural events. However, the remote sensing and regional literature data did not indicate any direct targets for these types of mineralisation within the Project Area.

In conclusion, the work performed suggests that the Project Area has minimal direct indication for copper or pegmatite mineralisation based on the available regional data and remote sensing analysis. However, the study did identify several targets, particularly within the Nakanas Formation, that exhibit characteristics indicative of potential for industrial minerals, such as those associated with medium to high-grade metamorphic rocks. The report recommends further field investigation of these targets to determine the potential size and economic viability of any industrial mineral deposits.

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1 INTRODUCTION

1.1 Purpose of this Report

Minrom Consulting (Pty) Ltd was requested by Strata Africa Exploration (the "Client") to assist in evaluating the mineralisation potential for any commodities within Prospecting Right (NC30/5/1/1/2/14344 PR) which consists of five (5) farm portions located between Steinkopf and Port Nolloth in the Northern Cape Province of South Africa.

The mineralisation potential for each farm portion was assessed through a combination of geological data review and interpretation of open access (public domain) data, as well as by including information that is exclusive to Minrom's internal archives. Advanced remote sensing techniques were also used to generate target areas for further exploration to quantify the mineralisation.

This report aims to position the Client on the mineral potential for each farm and rank the exploration targets from highest potential to lowest potential.

1.2 Project Location & Description

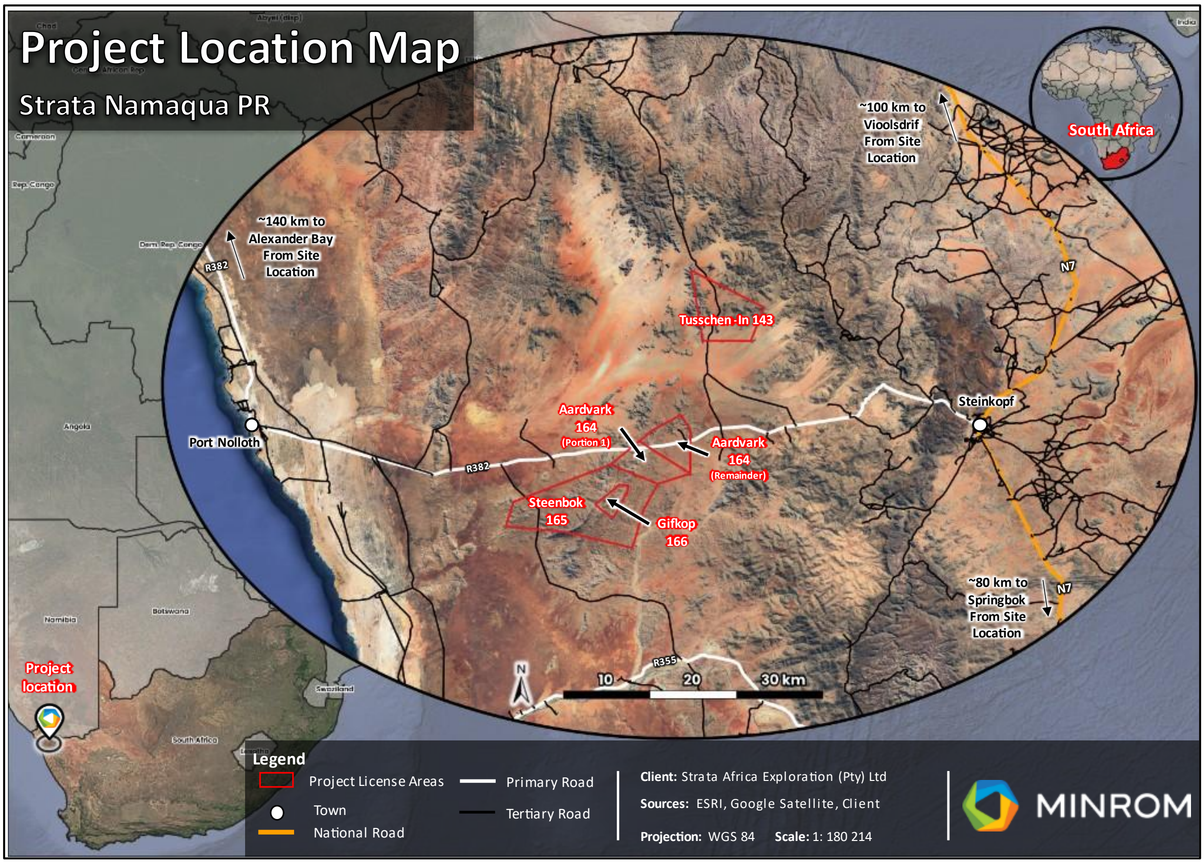

Figure 1: Project location map.

The Project Area consists of 1 Prospecting Right (NC30/5/1/1/2/14344 PR) and covers the farms Tusschen In 143, Aardvark 164 Remainder, Aardvark 164 Portion 1, Steenbok 165 and Gifkop 166, which covers a total area 20 996 Hectares.

The farms are situated 565 kilometres north of Cape town and halfway between the towns of Port Nolloth and Steinkopf, 46 kilometres from Port Nolloth and 45 kilometres from Steinkopf in the Northern Cape Province of South Africa.

The R382 tar road between Port Nolloth and Steinkopf gives access to both Aardvark 164 Remainder, Aardvark 164 Portion 1, a tertiary road from the R382 gives access to Tusschen In 143 while Steenbok 165 and Gifkop 166 could be accessed by 2-track roads from the R382.

1.3 Mineral & License Tenure

The prospecting right for the five (5) farms is NC30/5/1/1/2/14344 PR. The regulation 2.2 map which was provided by the client (Appendix 6.2) does not state which commodities the PR is valid for, nor the validity period.

Table 1: List of Farms under NC30/5/1/1/2/14344 PR

PR Number	Farm/portion Number (#)	Municipality/ District
NC30/5/1/1/2/14344 PR	Tusschen In 143	Namakwa District Municipality
	Remaining Extent of the farm Aardvark 164	
	Portion 1 of farm Aardvark 164	
	Steenbok 165	
	Gifkop 166	

1.4 Information Basis for this Report

Client Provided Data

The following data was provided by the client:

Data	Data Format
Regulation 2.2 Map for Prospecting Right NC30/5/1/1/2/13826 PR	pdf

Other Material Data Sources

The majority of the data employed in this literature review and target generation was obtained from open-source geological literature, regional geological mapping, and satellite spectral imagery, including the following publications:

Editors	Title	Year	Publisher
Johnson, MR; Anhaeusser,CR & Thomas,RJ	The Geology of South Africa	2006	Geological Society SA & Council for Geoscience
Wilson, MGC & Anhaeusser,CR	The Mineral Resources of South Africa	1998	Council for Geoscience
Snyman, CP	Geologie van Suid-Afrika Volume 2	1996	Universiteit van Pretoria
Marais, JAH	1:250 000 2916 Springbok Geological Map	2001	Council for Geoscience

2 PROJECT HISTORY & ADJACENT PROPERTIES

2.1 Summary of Project History

The nomadic inhabitants of Namaqualand, the Nama people, are known to have mined, smelted, and worked copper for thousands of years prior to the arrival of Jan van Riebeeck in Table Bay in 1652, as documented by the Dutch East India Company. This copper artifacts was the first metal to draw the attention of the Dutch settlers. In 1685, the Governor Simon van der Stel led an expedition to the north where he located the source of the Namaqua copper near Springbok. However, the region was arid and despite very encouraging sample results, the copper deposits could not be mined until 1846.

According to the 1:250 000 Springbok Geological map (2916), garnet and kyanite has been found on the Farm Steenbok 165 at 2 places, closely associated with the Nakanas Formation that consists of a garnet-staurolite-kyanite schist.

2.1.1 Historical Drilling

A total of 33 drill holes have been drilled previously by Anglo American on the farm Tusschen In as obtained from the Council of Geoscience (CGS) (Figure 2). Out of the 33, 27 drill holes have intersected uranium-bearing rock. These boreholes were drilled down to 150 metres depth, but no further information is available.

No historical data of any mining nor prospecting data on any of the other farms within the Project Area could be found.

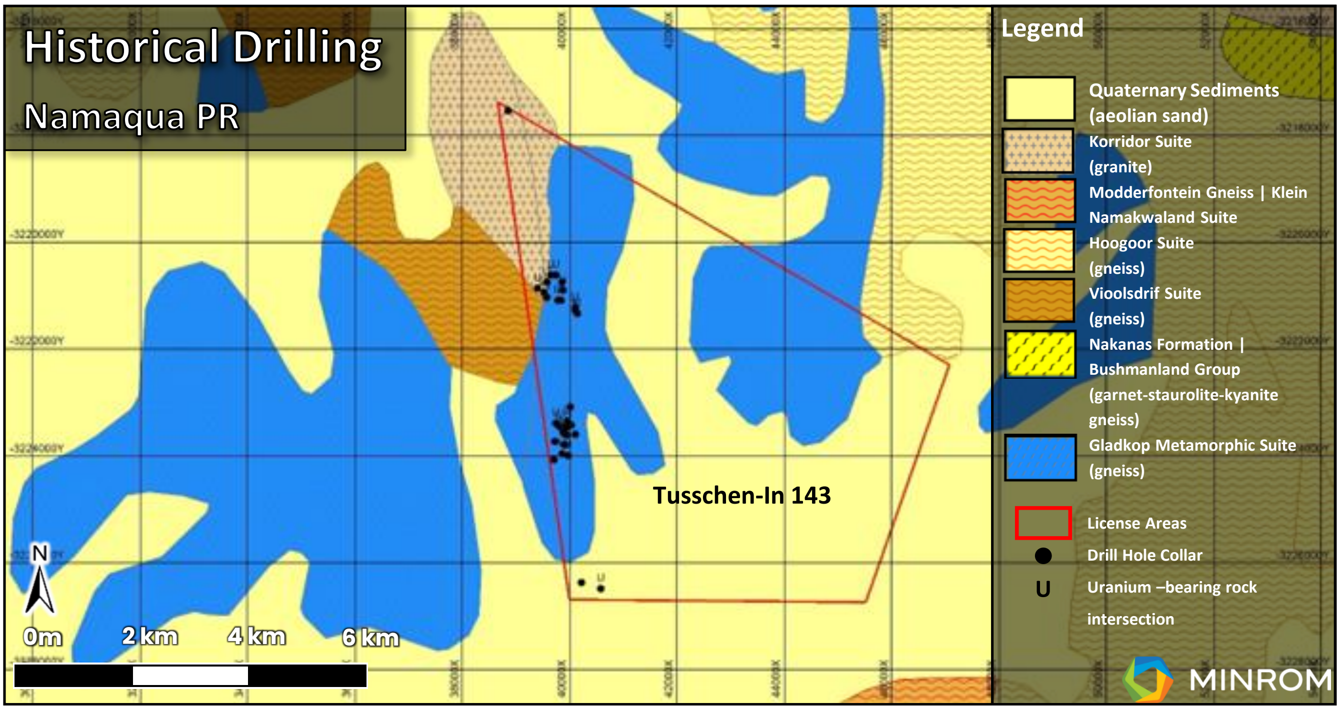

Figure 2: Historical drill hole collar locations on the farm, Tusschen In 143.

2.2 Summary of Adjacent Properties

2.2.1 Meidjes Karroo Reserve 191 (South)

The farm Meidjes Karroo Reserve 191, located immediately south of the farm Steenbok 165, hosts known occurrences of garnet and kyanite. These occurrences are closely associated with the Nakanas Formation, a significant lithostratigraphic unit in the region. Specifically, the Nakanas Formation on Meidjes Karroo Reserve 191 is described as a garnet-staurolite-kyanite schist, indicating a metamorphic origin and a geological environment conducive to the formation of these indicator minerals. The presence of multiple occurrences of garnet and kyanite within this formation on the adjacent property strengthens the potential for similar mineralisation to extend into the target farm of Steenbok 165. The broader area around Steinkopf is also known for pegmatite occurrences, with the Norrabees Mine (lithium and tantalum) located nearby and the historical Blesberg Mine (lithium and tantalum) situated approximately 40 km to the north. These operations highlight the potential for pegmatite-hosted mineralisation in the region.

2.2.2 Nakanas 171 (Southwest)

The adjacent farm Nakanas 171, situated to the southwest of Steenbok 165, also exhibits mineral occurrences of interest. Historical exploration or geological mapping has identified the presence of garnet and kyanite at one location on this farm. Similar to Meidjes Karroo Reserve 191, these occurrences are associated with the Nakanas

Formation, further highlighting the regional significance of this geological unit for hosting these metamorphic minerals.

Furthermore, Nakanas 171 is reported to host alluvial diamond(s) at another location, associated with Recent Sediments. This indicates the potential for secondary diamondiferous deposits within the broader area, possibly derived from upstream primary sources that may or may not be located within the immediate vicinity. The town of Port Nolloth, situated to the west, has a long history of diamond mining, both onshore and offshore, with operations currently being conducted by entities like Alexkor. Additionally, the Walviskop Heavy Mineral Sands operation (garnet, ilmenite, zircon, rutile) near Alexander Bay, north of Port Nolloth, indicates the presence of other valuable mineral deposits in the coastal region.

2.2.3 Copper Occurrences

The Project Area is surrounded by copper deposits and occurrences but not part thereof (Figure 3). This indicates the possibility of finding a copper deposit within the target area if scientific exploration method is applied; however, the anticipation thereof is low.

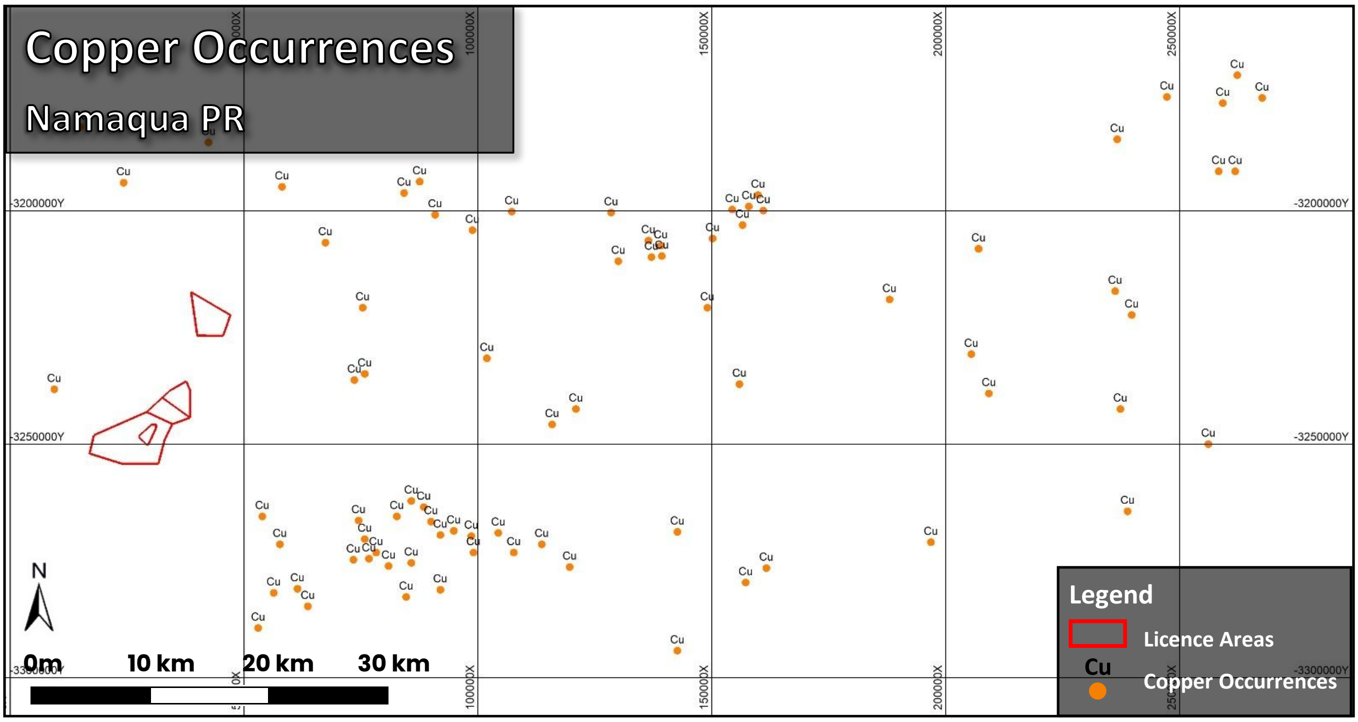

Figure 3: Known copper deposits and occurrences in the Namaqualand Region. Information obtained from CGS.

2.2.4 Conclusions

The documented occurrences of garnet, kyanite, and alluvial diamonds on the adjacent properties of Meidjes Karroo Reserve 191 and Nakanas 171, coupled with the presence of nearby mining operations for lithium, tantalum, diamonds, copper, and heavy mineral sands, provide valuable context for assessing the mineral exploration potential of the target farms. The association of garnet and kyanite with the Nakanas Formation across these properties suggests a regional metamorphic event that could have resulted in a broader distribution of these minerals. The presence of alluvial diamonds near Port Nolloth suggests that similar depositional environments and potential diamond-bearing source rocks may exist within the target farms. Furthermore, the regional presence of copper and pegmatite-hosted lithium and tantalum mineralisation warrants consideration for similar potential within the Project Area. These observations warrant a detailed geological investigation of the target farms, focusing on the extent and characteristics of the Nakanas Formation, the potential for alluvial diamond deposits within the Recent Sediments, and the possible occurrence of pegmatite intrusions.

3 TECTONIC SETTING

3.1 Regional Geology

The Project Area, encompassing the farms under investigation, is situated within a complex geological domain along the western margin of the ancient Kaapvaal Craton. This craton, a stable continental crustal block, is bounded to its west and south by the extensive Namaqua-Natal Province, a major tectono-stratigraphic unit that significantly influences the geological framework of the Northern Cape region of South Africa (Figure 4).

The Namaqua-Natal Province is defined as a large area characterized by a contiguous structural fabric and well-defined boundaries, formed during the Namaqua Orogeny, a significant tectono-metamorphic event spanning approximately 1200 to 1000 Ma (Stockwell et al., 1970). This orogenic belt resulted in the formation and/or metamorphism of a vast suite of igneous and metamorphic rocks that are extensively exposed across the Northern Cape Province (covering an area of approximately 100 000 km²) and KwaZulu-Natal (approximately 20 000 km²), referred to as the Namaqua and Natal Sectors, respectively (Figure 4).

Regional geophysical surveys, including gravity and magnetic studies, along with evidence from crustal xenoliths found in Lesotho kimberlites and limited deep borehole data from Soekor, indicate that the Namaqua and Natal Sectors are part of a continuous, arcuate orogenic belt extending for approximately 1 400 km in length and 400 km in width. This belt underlies the younger Phanerozoic Karoo Supergroup and has significant extensions into southern Namibia, potentially linking with the broadly coeval Kibaran Orogeny of Central-East Africa. These Kibaran orogenic belts, in turn, are recognized as components of the worldwide Grenville Orogeny, associated with the amalgamation of the Mesoproterozoic supercontinent of Rodinia.

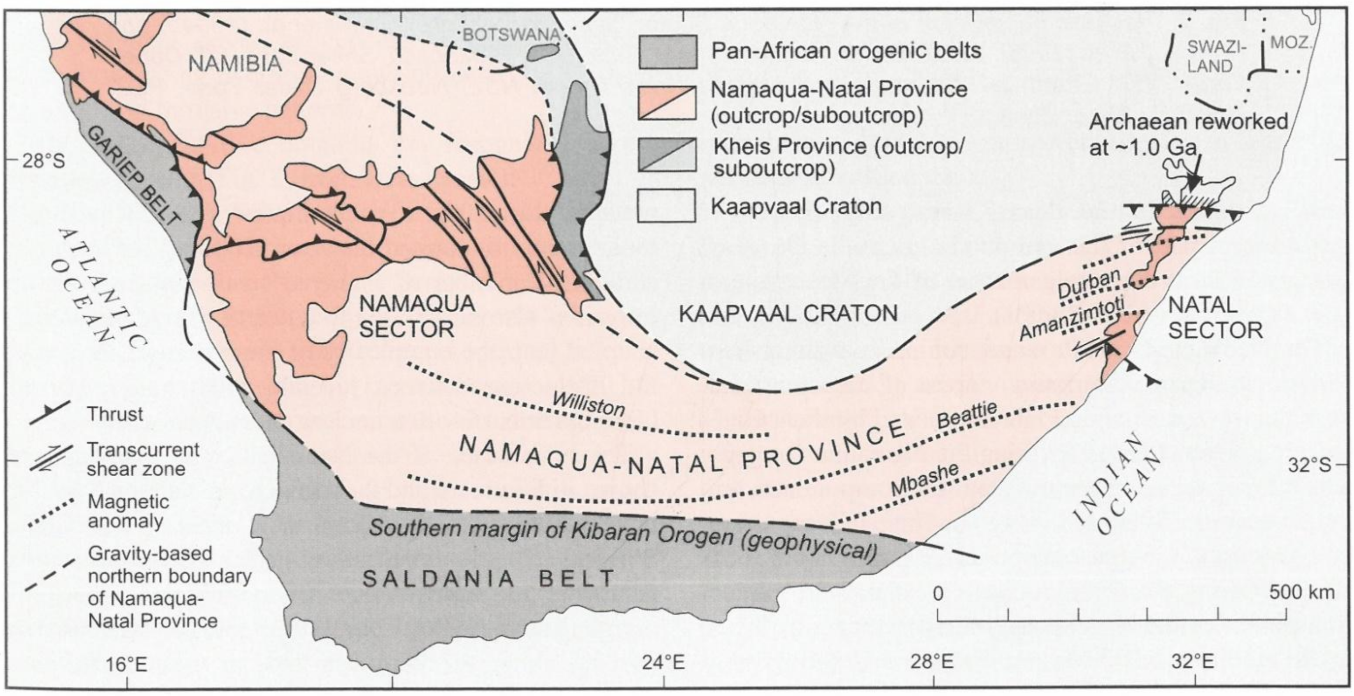

Figure 4: Geological setting of the Namaqua-Natal Province. Geophysical boundaries after De Beer and Meyer (1984).

The Namaqua-Natal Province is not a monolithic entity but rather comprises several tectono-stratigraphic terranes. These terranes are defined as areas exhibiting a common litho-stratigraphy and structural fabric, bounded by significant shear zones, and were assembled during the protracted Namaqua Orogeny. The principal lithostratigraphic components that constitute these terranes include:

- **Reworked ~2 000 Ma Kheisian (late Palaeoproterozoic) rocks:** These represent older crustal material that was subjected to deformation and metamorphism during the Namaqua Orogeny.
- **Juvenile supracrustal and plutonic rocks (~1 600 to 1 200 Ma):** These rocks formed during the rifting, ocean spreading, and subsequent subduction phases of the Namaquan (Mesoproterozoic) Wilson cycle. Their assembly involved intense deformation and metamorphism during collisional events.
- **Voluminous syn- and post-tectonic granitoids (1 200 to 1 000 Ma):** These granitic intrusions were emplaced during and after the main phases of deformation associated with the Namaqua Orogeny.

In addition to these major components, scattered small mafic and ultramafic intrusions are also present within the Namaqua-Natal Province. However, the complex and protracted nature of the Namaqua Orogeny, coupled with a limited availability of precise geochronological data in some areas, often makes the distinction between juvenile rocks and reworked older basement challenging and a subject of ongoing research.

The western boundary of the Namaqua Sector is defined by the Kheis Province, which separates it from the Kaapvaal Craton. The dominant structural fabric within the Kheis Province is generally considered to have formed between 1 900 and 1 750 Ma (Kheisian age) (Stowe, 1986; Cornell et al., 1998). Notably, the Kaaien Terrane, situated along the boundary between the Namaqua Sector and the Kheis Province, exhibits an early Namaquan fabric that likely overprints older Kheisian structures (Moen, 1999). Furthermore, Namaquan age determinations have been reported within the Kheis Province itself, such as in the Kalahari Manganese Field, and Namaquan ages extend as far north as Okwa in Botswana. Based on these observations, Moen (1999) proposed that the Kheis Province could be considered a sub province within the broader Namaqua-Natal Province, highlighting the intricate geological relationships in this region.

The Project Area, located approximately midway between Port Nolloth and Steinkopf in the Northern Cape, falls within this complex geological framework influenced by the Namaqua-Natal Province and its interaction with the Kaapvaal Craton and the intervening Kheis Province. Understanding the specific terranes and lithological units present in the vicinity of the farms is crucial for evaluating the potential for mineral occurrences, as highlighted by the presence of garnet, kyanite (associated with reworked Kheisian rocks within the Namaqua Province on adjacent farms), and alluvial diamonds (potentially related to regional kimberlite sources and depositional environments within the broader geological context). The nearby mining operations for lithium, tantalum, and heavy mineral sands further underscore the mineral prospectivity of this geologically significant region.

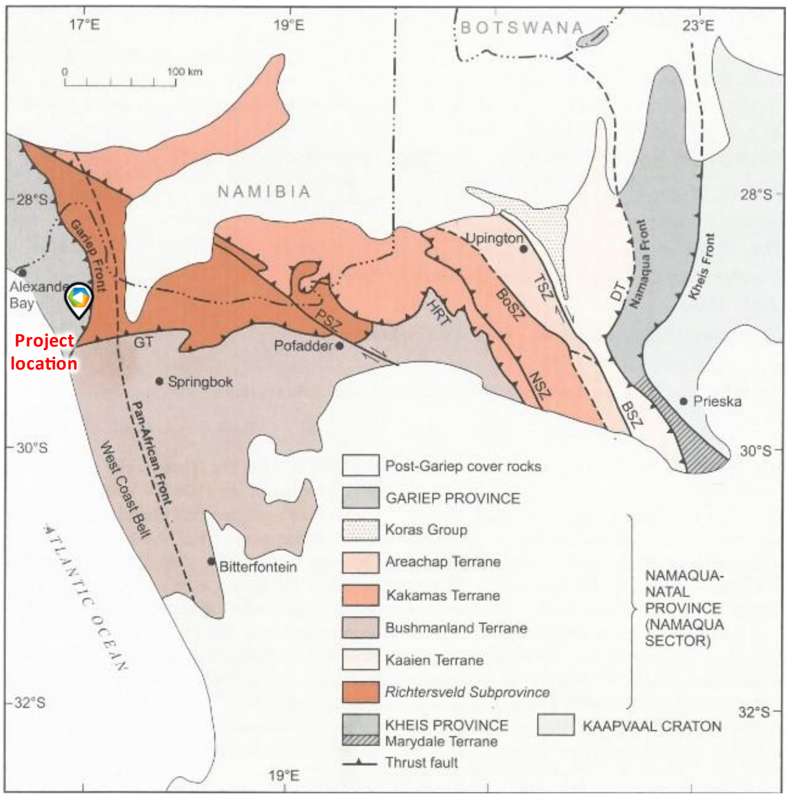

Figure 5: Tectonic subdivision of the Namaqua Sector.

3.1.1 Major Subdivisions of the Namaqua-Natal Province

The Namaqua-Natal Province is subdivided into a number of tectonostratigraphic subprovinces and terranes, based on marked changes in the lithostratigraphy across structural discontinuities. One such region, the Bushmanland Terrane, was upgraded to a subprovince and subdivided into at least five terranes by Van Aswegen et al. (1987). The authors have tried to avoid controversial subdivisions and to adhere mainly to the less detailed, broadly accepted subdivision of the Namaqua Sector of Thomas et al. (1994a). Even within this broad framework, some of the terranes are poorly constrained due to complexities such as changes in basement rock types with identical cover sequences, or early structural boundaries being overprinted and obscured by younger tectonic and intrusive patterns.

The following five domains are recognised in the Namaqua Sector (Figure 5 - from west to east):

- **Richtersveld Subprovince**: —2 000 Ma low- to medium-grade supracrustal rocks and intrusions in the northwestern Namaqua Sector, much less affected by the Namaqua orogeny than the other terranes. No pervasive —1 000 Ma (Namaquan) fabric is developed in the west, but there are some —1 000 Ma granites. Although no terranes are distinguished within it, it is called a subprovince because it clearly represents a small remnant of an originally much larger Kheisian cratonic block, surrounded by and tectonically interleaved with the Namaquan high-grade Bushmanland and Kakamas Terranes, the boundary being the Groothoek Thrust and Wortel Belt.
- **Bushmanland Terrane:** —2 000 Ma granitic gneisses, 1 600 to 1 200 Ma amphibolite to granulite grade supracrustal rocks and 1 200 to 1 000 Ma granitoids. A pervasive Namaquan fabric is developed. The Hartbees River Thrust forms the eastern boundary.
- **Kakamas Terrane:** possibly —2 000 Ma supracrustal metapelite, Namaquan granitoids and a Namaquan fabric. It is bounded in the east by the Boven Rugzeer Shear Zone.
- **Areachap Terrane:** juvenile —1 300 Ma arc-related supracrustal rocks and 1 000 Ma granitoids, with a pervasive Namaquan fabric. The Areachap-Kakamas terrane boundary is rather uncertain and probably diverges from the Boven Rugzeer Shear Zone in the south. The eastern boundary is the Brakbosch-Trooilapspan Shear Zone.
- **Kaaien Terrane:** Kheisian metaquartzites, deformed early Namaquan volcano-sedimentary rocks and undeformed, but thermally metamorphosed, bimodal volcanic rocks. The Namaqua Front occupies most of the Kaaien Terrane. The Dabep Thrust forms the eastern boundary.

The Namaqua Sector is flanked along its eastern margin by the Kheis Province, containing —3 000 Ma, —2 000 Ma and –1 300 Ma, predominantly low-grade, supracrustal rocks. It has a pervasive Kheisian fabric with some Namaqua folds and thrusts along the western boundary. The eastern boundary is the Kheis Front, defined by folds and thrusts in Randian to Vaalian cover sequences on the Kaapvaal Craton.

Each terrane has a pervasive Namaquan fabric. The Namaqua Front extends into the southern part of the Kaapvaal Craton, which suffered low-temperature reworking at —1 000 Ma; however, Namaquan fabric has not been identified there.

The structural, metamorphic and intrusive complexity, together with a general lack of reliable dating, means that many aspects of the stratigraphic relationships and evolution of the province are still unknown, speculative or in dispute. In the following sections, the geological features of each of the major components are described, and an attempt is made to incorporate the present state of knowledge into a tectonic model for the evolution of the province.

3.1.2 Namaqua Sector of the Namaqua-Natal Province

The Richtersveld Subprovince contains some of the oldest supracrustal rocks in the Namaqua-Natal Province. It covers an area of about 29 000 km^2, with an elongate wedge shape in the lower Orange River region (Figure 5). The subprovince is bounded by thrusts or subvertical shear zones that juxtapose it against the higher-grade Bushmanland Terrane. In the west, younger thrusts and transpressive shears transported part of the Pan-African Gariep Province over the Richtersveld Subprovince.

Stratigraphy & Geochronology:

The two principal components of the Richtersveld Subprovince are:

- Volcano-sedimentary sequence, the Orange River Group
- Intrusive Vioolsdrif Suite – a granitoid batholith closely related in space and time to its volcanic cover.

The Orange River Group is predominantly composed of sub-aerial volcanic rocks and reworked volcaniclastic sediments, which show extreme variations. Deformation caused displacements along stratigraphic contacts before the intrusion of the Vioolsdrif Suite, and the intrusion of the many voluminous granitoid plutons of the suite further disrupted stratigraphic relationships.

The Orange River Group has been subdivided into two subgroups, within which a number of formations are recognised. Distribution of the volcanic and sedimentary formations in the Richtersveld-Goodhouse area is shown in Figure 6. It is clear from the stratigraphic syntheses that the group contains a series of eruptive centres, bounded by second-order repositories of reworked volcaniclastic detritus. Eruption and epiclastic sedimentation probably migrated laterally with time, while tectonic events periodically caused exhumation, erosion and reworking of early granitoid intrusions. Certain sedimentary formations (e.g., Rosyntjieberg, Boerputs) are mature, containing orthoquartzites. Radiometric studies of the Orange River Group give ages between 2 000 and 1 730 Ma.

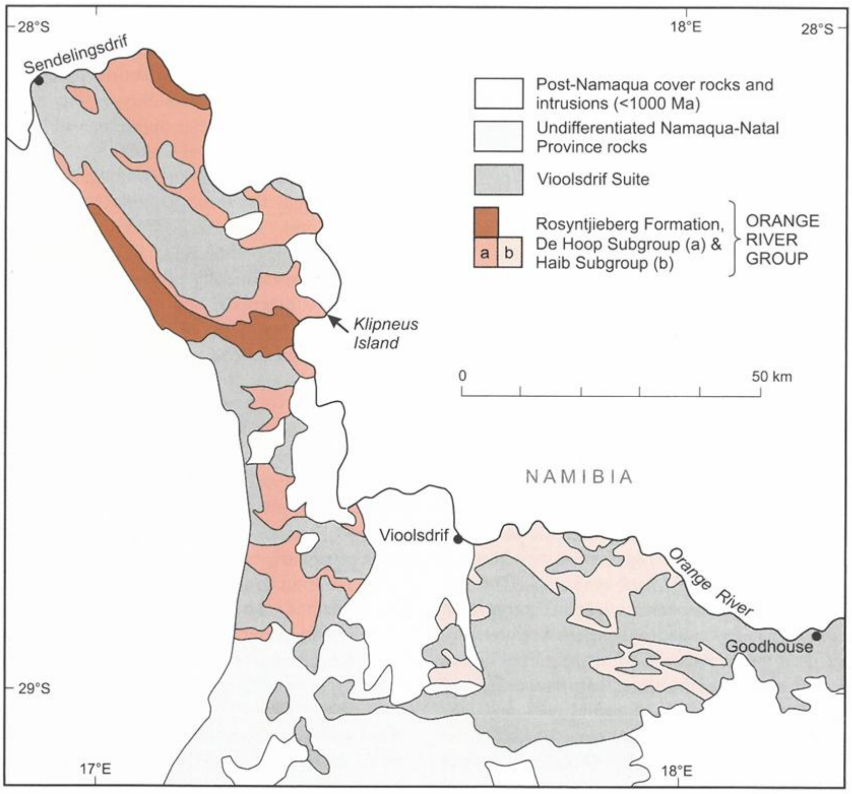

Figure 6: Distribution of the Orange River Group in the Richtersveld Subprovince west of Goodhouse

Relations Between the Orange River Group & the Vioolsdrif Suite:

Despite Kheisian deformation, metamorphism and intrusion, several sections containing primary volcanic structures and textures are well preserved. A good section through part of the volcanic Nous Formation is exposed in the canyon of the Orange River east of Vioolsdrif.

Massive andesite lavas are interspersed with andesite-dacite tuffs and volcaniclastic sediments, while flattened pumice-rich beds and welded textures are commonly discernible in the dacite-rhyolite volcanic rocks of the underlying Tsams Formation (Haib area).

At the present erosion level through the Vioolsdrif batholith, granodiorites and tonalites predominate, although granites are also abundant, and several mappable units are distinguished. The intrusion sequence, based on contact relations and xenolith suites, is marked by a transition to progressively more differentiated magmas. Whereas stopping mechanisms were predominant in the emplacement of the intermediate granitoids, the later granites were more controlled by brittle fracture, and the base of the Volcanic carapace is cut by a network of irregular bodies.

Geochemical aspects of the Orange River Group are discussed by Reid et al. (1987), who concluded that the sequence represented largely subaerial eruptions of lava and pyroclastic beds. ranging in composition from basalt to rhyolite, with predominant intermediate members (andesite, dacite). The associated intrusive batholith shows similar compositional characteristics, reflected by variations in modal composition.

Structural Geology & Metamorphic History:

The deformation and metamorphism, which affected the Richtersveld Subprovince during the Kheisian (Palaeoproterozoic), is known as the "Orange River Orogeny". It is the time equivalent of the Eburnean and Ubendian orogenies elsewhere in Africa.

An early D1 deformation in the Richtersveld and Haib areas are recognised, producing open to isoclinal folds, the most spectacular being the tight F1, structures developed in the Rosyntjieberg Formation. Isoclinal F1 folds cut by Vioolsdrif granite are well exposed around Nous in the Vioolsdrif region. A second generation of F2 folds, which refold F1 structures, might be Namaquan in age, particularly in the eastern part of the terrane between Pella and Onseepkans. However, some F2 structures developed in the Rosyntjieberg sediments. These, together with F2 nappe-like structures, such as the Mike nappe in the Aussenkehr area in Namibia, and the intrusion of late Vioolsdrif granites into earlier foliated granitoids, are evidence for a protracted, polyphase Orange River Orogeny. It therefore seems likely that both F1, and F2 folding are products of D1, which, based on radiometric dating, took place at — 1 900 Ma.

Metamorphism associated with the Orange River Orogeny was mainly due to the regional emplacement of voluminous granitoids at high levels in the crust. Little erosion of the original volcanic carapace has occurred, and the metamorphic grade is barely above greenschist facies. Low-grade metamorphism probably persisted throughout the volcano-plutonic complex and overprinted all the igneous assemblages, including the porphyry-style hydrothermal alteration zones developed around some of the granitic intrusions.

The predominance of andesite and calc-alkaline magmatic rocks led Reid et al. (1987) to propose an island-arc model for the region. Compressional tectonics prevailed throughout the magmatic episode, so that earlier eruptive and intrusive rocks were deformed prior to the emplacement of later intrusive phases.

3.1.3 Namaqua Orogeny

The Palaeoproterozoic island arc complex now preserved as the Richtersveld Subprovince was probably sandwiched between neighbouring crustal blocks during Namaquan collisions. During this second major deformation phase, the adjacent crust of the Kakamas Terrane was thrust over the northern margin of the Richtersveld arc along the Fish River Thrust, while the Richtersveld Terrane itself was transported south-westwards over the Bushmanland Terrane along the Groothoek Thrust. A complex multistage Namaquan history is indicated, since many of the bounding thrusts are themselves folded and imbricated and subsequently cut by oblique transgressive shears. Klippen of metasediments from the original Kakamas and Bushmanland Terranes may occur as erosional remnants within the Richtersveld Subprovince along its southern margin, while Namaqua syntectonic granitoids intrude across old thrusts and shears.

Radiometric dates from one such granitoid, the Swartmodder Gneiss (Pella Granite), indicate intrusion at about 1 135 Ma, while reset Rb-Sr and Pb-Pb isochrons with similar 1 100 Ma ages have been obtained from Orange River Group metavolcanic rocks and associated gneisses interpreted as deformed Vioolsdrifintrusives. Thus, the accretionary tectonics responsible for the juxtaposition of the Richtersveld Subprovince and the Kakamas and Bushmanland Terranes commenced some time before 1 135 Ma and ended before the emplacement of the Groothoek pegmatite swarm at 1 000 Ma.

The Namaqua Orogeny caused imbricate stacking of thrust slices of the Orange River Group and associated intrusives, metamorphosed to amphibolite facies, around the margins of the Richtersveld Subprovince. An increase in grade from greenschist to amphibolite is described across the Fish River Thrust in the north and also across the Groothoek Thrust in the south.

Associated with the Groothoek thrusting and tectonic stacking was the emplacement of the granitic Groothoek pegmatite swarm, which is particularly prevalent in the hanging wall of the Groothoek Thrust. A causative link between thrusting, metamorphism and pegmatites is indicated, and it is probable that midcrustal dewatering and associated melt pockets focused the pegmatite swarm along the thrust planes.

Bushmanland Terrane

The Bushmanland Terrane is the largest crustal block in the Namaqua Sector, covering some 60 000 km^2. Its northern boundary against the Richtersveld Subprovince is defined by the Groothoek Thrust and Wortel Belt. The eastern boundary against the Kakamas Terrane is along the Hartbees River Thrust (Figure 5). In the west, the rocks are overprinted in a narrow north-trending zone (the West Coast Belt, Figure 5) by thermal and deformation effects related to the Pan-African Gariep Orogeny. In the south, the rocks are overlain by Vanrhynsdorp Group and Karoo Supergroup sediments.

Workers from the University of the Free State have subdivided the Bushmanland Terrane into a complex collage of smaller, thrust-bound terranes such as the Okiep, Aggeneys, Grünau, Pofadder, Steinkopf, and Bladgrond Terranes, which make the Bushmanland Terrane a subprovince.

However, the authors consider this unjustified at this stage, because the rocks in different parts of the terrane display strong tectonic, metamorphic and geochronological similarities, suggesting a common evolutionary history. Stratigraphy and geochronology:

The Bushmanland Terrane comprises rocks of three distinct age groups:

1. a basement complex (Achab Gneiss, Gladkop Suite) consisting predominantly of granitic rocks of Kheisian age (2 050 to 1 700 Ma)
2. a variety of supracrustal sequences of mixed sedimentary and volcanic origin and probably falling in three broad age groups (~1 900, 1 600 and 1 200 Ma); and
3. suites of syn- and late-tectonic Namaquan intrusive rocks, generally of granitic to charnockitic composition. These include the 1 200 Ma Little Namaqualand Suite, the ~1060 Ma Spektakel Suite and basic rocks of the 1 060-1 030 Ma Koperberg and "Wortel" Suites and Nouzees Complex, as well as 950 Ma pegmatites.

Kheisian Basement

The oldest dated rocks in the Bushmanland Terrane occur along the northern margin, adjacent to the Richtersveld Subprovince. They include the Gladkop Suite in the Steinkopf area (Reid and Barton, 1983), and the Achab Gneiss in the Pofadder area. In contrast to the predominantly granodiorite, I-type Vioolsdrif Suite, these rocks are mainly peraluminous granites (Reid and Barton, 1983). In the Gladkop Suite, the fine-grained granodiorite-granite (Steinkopf Gneiss) is intruded by the megacrystic Brandewynsbank Gneiss, which is, in turn, intruded by the Noenoemaasberg Gneiss. The Achab Gneiss is also a megacrystic granitoid. In both areas the gneisses contain xenoliths of amphibolite, calc-silicate rock and quartzite, which are interpreted as remnants of an older supracrustal successsion. It is suggested that the S-type character of the Gladkop Suite may reflect assimilation of this sedimentary material by the Gladkop magmas.

The most recent data show the oldest rocks in the Bushmanland Terrane to be slightly younger than the Vioolsdrif Suite with a Pb-Pb age of 1 822 ± 36 Ma for the Brandewynsbank Gneiss. Xenocrystic zircon cores in this rock suggest crust as old as 2 018 ± 8 Ma in the Bushmanland.

The rocks display a structural complexity, compatible with their interpretation as older basement on which the various supracrustal sequences were subsequently deposited. Similar megacrystic gneisses underlie the supracrustal sequences in central and southern Namaqualand and may represent an equivalent basement.

However, dating has not confirmed this, and the extent of the Kheisian basement in the Bushmanland Terrane remains unknown.

Supracrustal belts

Supracrustal rocks occur in several discontinuous east-west trending belts within the Bushmanland Terrane, increasing in abundance towards the south in the vicinity of Garies as shown in Figure 7.

The heterogeneity of rock types and the disruption caused by thrust related deformation and the voluminous sheet-like intrusions make correlation difficult. There is a broad two-fold subdivision into a southern succession (Bitterfontein-Kamieskroon area), comprising basal quartzofeldspathic gneisses, and overlying feldspathic quartzites and garnet-cordierite gneisses, and a northern succession (Springbok-Steinkopf-Pofadder area) known as the Bushmanland Group, which comprises basal leucocratic gneisses and overlying quartzites and mica-sillimanite schists. The two types overlap in the Gamoep area. Moore (1989) suggested that the supracrustal rocks could be correlated throughout the Bushmanland Terrane; however, other workers such as Colliston el al. (1989) suggested that there are several distinct sequences, with relationships complicated by thrusting.

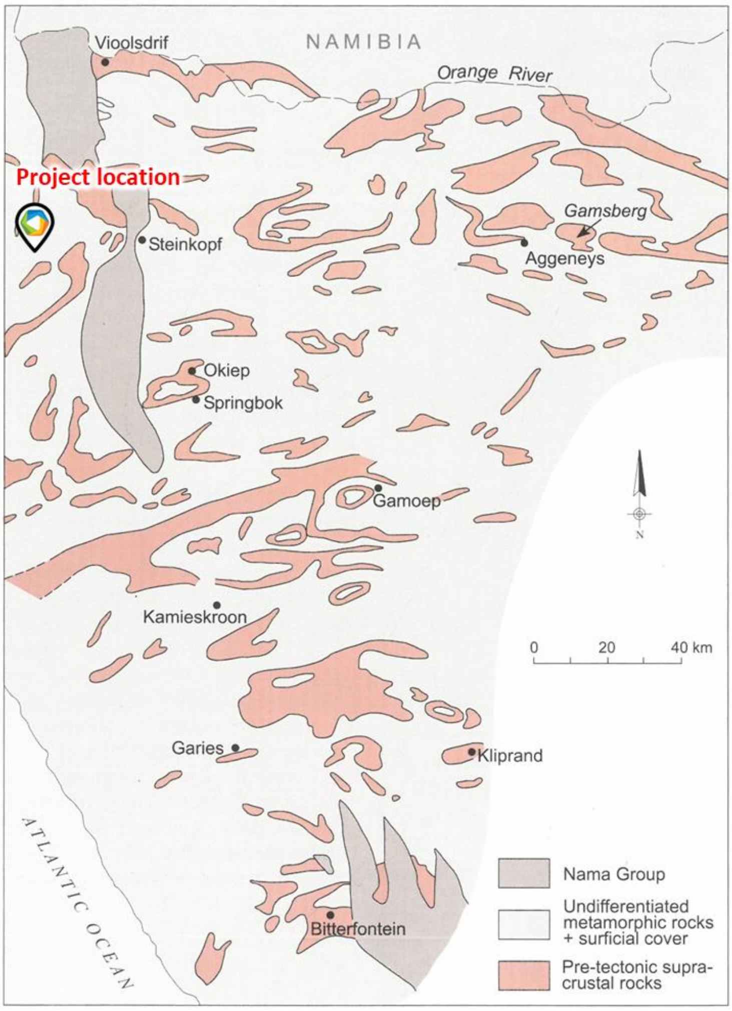

Figure 7: Schematic representation of supracrustal rocks occurring as paragneiss belts in the Bushmanland Terrane.

The supracrustal belts are dominated by leucocratic and biotite-bearing quartzofeldspathic gneiss, probably metavolcanic rocks of rhyolite to dacite composition, feldspathic and glassy quartzite, interpreted as arkose and quartzose sandstone respectively, and mica-sillimanite schist or cordierite-rich gneiss, interpreted as metapelite (shale) and psammite (sandy) clastic sediments (Moore, 1989).

The supracrustal sequences are interpreted as the products of bimodal, felsic-dominated volcanism and the products of their sedimentary reworking (Moore, 1989), but their ages are not well defined. Amphibolites from the Koeris Formation yielded a Sn-Nd isochron age of 1650 Ma (Reid et al., 1987), whereas galena from the giant base metal deposits in the same group gave younger model Pb ages between 1 350 and 1 300 Ma (Köppel, 1980; Welke and Smith, 1984): The presence of supracrustal xenoliths in the Gladkop Suite and Achab Gneiss (Van Aswegen, 1983; Watkeys, 1986) suggests the presence of Kheisian supracrustal rocks in the terrane. U-Pb ion probe ages from detrital zircon cores and rims in metapelite samples from around Bitterfontein give minimum provenance ages of 1 200 and 1 150 Ma (Raith and Cornell, 2000; Raith et al., 2003), indicating that different parts of the Bushman land Group sediments probably both predate and postdate the intrusion of the Little Namaqualand Suite.

Robb (unpublished data, in Robb et al., 1999) obtained xenocrystic zircons from the Brandewynsbank Gneiss and quartzite with ages of 2 020, 1 940 and 1 920 Ma, which indicates a Kheisian basement of similar age to the Richtersveld Subprovince. Additional overgrowths on these cores in detrital grains in the quartzite indicate an age of ~1 850 Ma, interpreted as a metamorphic age.

The Little Namaqualand Suite consists of sheet-like bodies of mesocratic quartz-microcline-biotite augen gneiss with variable amounts of plagioclase, garnet and magnetite, and, in the high-grade southern sector, hypersthene and rare clinopyroxene. The rocks are granite to adamellite in composition (Reid and Barton, 1983). The Nababeep Gneiss is intruded by the more leucocratic Modderfontein Gneiss, although the two appear to be related by crystal fractionation. Ion probe Pb-Pb ages for zircons in these rocks of 1 212 ±11 Ma and 1 199 ± 12 Ma respectively.

Spektakel Suite intrusions are common throughout the southern and western parts of the Bushmanland Terrane. The Rietberg Granite is a heterogeneous granite-syenite characterised by euhedral microcline phenocrysts that define a magmatic flow fabric in a quartz-biotite-feldspar matrix, but no tectonic fabric. Ion probe zircon Pb-Pb ages of 1 064 ± 31 Ma for the Concordia Granite and 1 058 ± 30 Ma for the Rietberg Granite were reported.

The Spektakel Suite displays an A-type granite geochemical signature similar to coeval intrusions from the Natal Sector and is slightly less peraluminous than the Little Namaqualand Suite. The precursor melts were derived from a lower crustal basic granulite source; however, the low Sr initial isotope ratios and extreme Ba, Sr and Zr enrichment that support a subcontinental mantle source.

Mafic rocks occur as layers and lenses throughout the Bushmanland Terrane. Two-pyroxene granulite sill-like bodies in the Okiep District have been interpreted as either part of the volcano-sedimentary succession, or as feeders to the Koperberg Suite as shown in Figure 8.

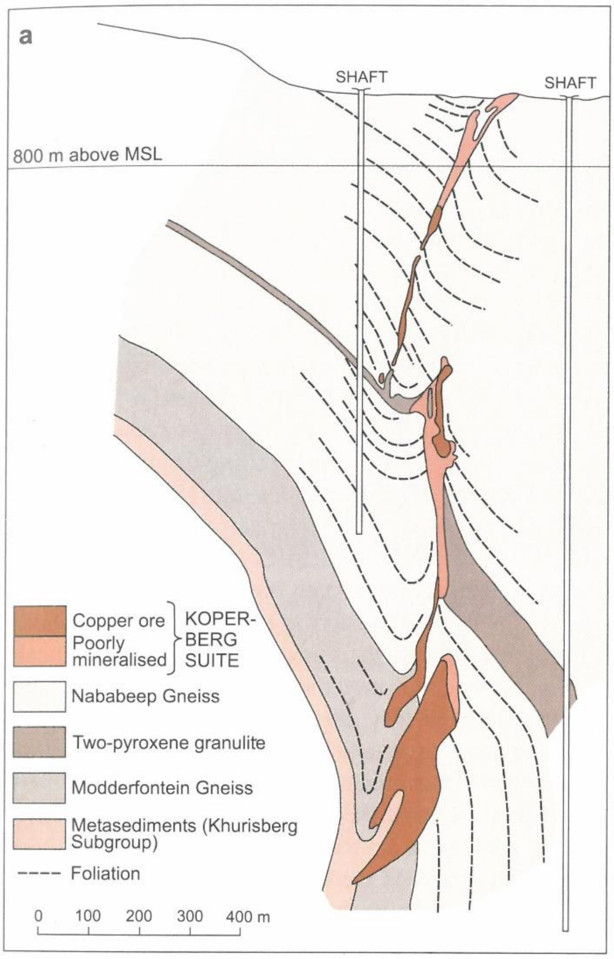

Figure 8: Section through the Carolusberg Mine, showing how the copper-bearing Koperberg Suite noritoid has intruded the antiformal to monoclinal "steep structure" displacement zone. The interpretation of the two-pyroxene granulite as a feeder to the noritoid bodies is also supported by the relationships shown here.

In the Okiep Copper District, some 1 700 irregular, discontinuous sheet- and plug-like bodies, ranging in composition from andesine anorthosite to biotite diorite, pyroxene diorite and pyroxenite, and in size from a few metres to several hundred metres, are grouped in the Koperberg Suite and are host to the famous copper mineralisation. They represent the youngest phase of intrusion. Their mineralogy is dominated by andesine, hypersthene and phlogopite or biotite. Individual bodies are commonly composite and display a consistent intrusive sequence from leucocratic to mafic, with the former brecciated by the latter, which are ore-bearing.

Structural & Metamorphic History:

The Bushmanland Terrane is characterised by a polyphase deformational history that is dominated by two major tectonic episodes and of Joubert, 1971). Evidence for an early phase called D, is found in metasedimentary xenoliths in the Gladkop Suite, in the pre-Bushmanland Group Achab Gneiss near Namiesberg, in the Broken Hill ore body (Bushmanland Group metasediments) at Aggeneys, and in the Gladkop Suite. If the Bushmanland Group sediments were deposited only after 1 600 Ma, this deformation could not be related to the events responsible for the formation of the Gladkop Suite and deformation in the Richtersveld Subprovince. However, evidence of metasedimentary xenoliths in the Gladkop Suite suggests that pre-1 800 Ma supracrustal sediments were present so that at least some D-structures could be correlated with deformation in the Richtersveld.

The regionally dominant D2 event produced a heterogeneous, locally intense, subhorizontal fabric parallel to the axial planes of tight to isoclinal, east-trending, metre- to kilometre-scale recumbent folds. A strong ENE-trending augen and mineral lineation is associated with the S-foliation. The inferred presence of large-scale recumbent folds beneath major shear zones such as the Skelmfontein Thrust may indicate that the thrusts also originated during D2.

The gross structure of the Bushmanland Terrane is dominated by kilometre-scale, upright, ENE-trending, periclinal folds and east- to southeast-trending shear zones of the Nous Shear System. Folds and shears were produced simultaneously as a result of constriction of the footwall between lateral ramps during west-directed crustal-scale thrusting. D2 and D3 may be linked as the bulk stress field involving subhorizontal NNW-SSE compression required to produce the folds is indistinguishable from that for D2; however, the S2 fabric is clearly rotated and intensely deformed in these fold structures, supporting their designation as D3 features.

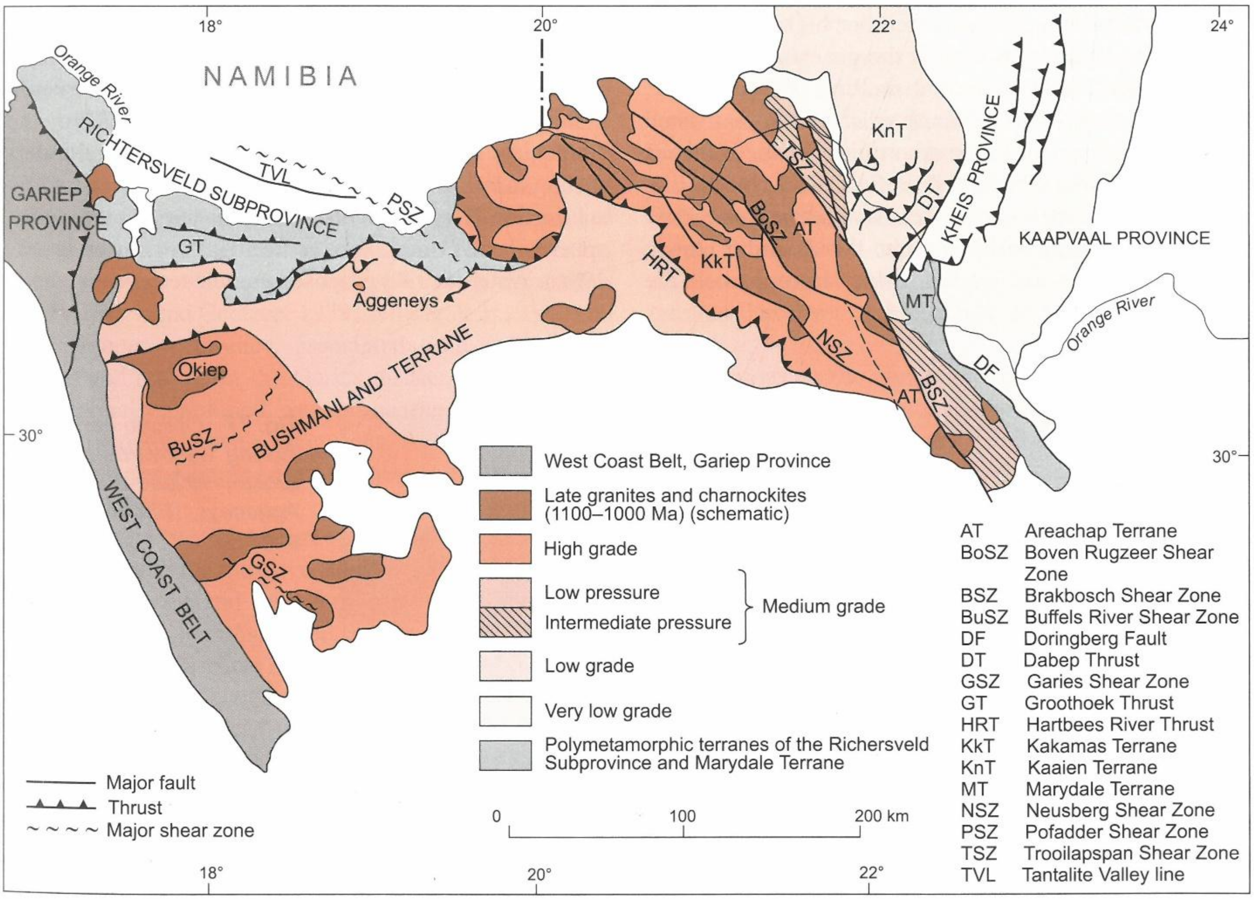

Figure 9: Metamorphic map of the Namaqua Sector and adjoining regions. Low, medium and high grades are equivalent to greenschist, amphibolite and granulite facies respectively.

In the west, greenschist to amphibolite facies retrograde Pan-African age metamorphism overprints the Namaqua metamorphic assemblages. While there is general agreement that the Namaquan metamorphism followed an anticlockwise P-T path (increasing P with increasing T) and the Namaquan event extended over 200 million years, from 1 200 Ma to 1 000 Ma. Three events during this period: the peak, event synchronous with emplacement of the Little Namaqualand Suite and the main deformation D2 event; a slightly lower temperature event synchronous with the intrusion of the Spektakel Suite; localised reactivation of S2 by the D2 ‘Skelmfontein thrusting’ event. Th-U-Pb monazite ages also cluster between 1 038 ± 12 Ma and 1 047 ± 18 Ma supporting field evidence that the peak of metamorphism, reflected by garnet- or orthopyroxene-bearing leucosomes. The high-grade event must have been responsible for the genesis of the Little Namaqualand Suite by partial melting.

The high geothermal gradient necessary to cause the granulite facies metamorphism and the anticlockwise P-T path deduced for the Namaquan evolution of the Bushmanland Terrane are consistent with magmatic thickening of the crust on a scale typical of island arcs have suggested that the broad anticlockwise P-T loop inferred by previous workers, based on prograde reaction textures and pseudomorphous replacement of andalusite by sillimanite may in fact represent the sum of a series of discrete crustal thickening events, driven mainly by magmatic accretion but culminating in a joint tectonic thickening with a magmatic accretion event at 1 030 Ma.

3.2 Local Geology

The regional geological framework of the Namaqua-Natal Province, with its complex history of orogenic events and terrane assembly, provides the overarching context for understanding the more localised geological setting of the Project Area. Specifically, the project's location within the Northern Cape places it within the Namaqua Sector, a key portion of this extensive Mesoproterozoic orogenic belt, which is characterized by distinctive lithostratigraphic components and structural fabrics that will likely be reflected in the local geology of the target farms.

The Project Area encompasses the following farms: Tusschen In 143, located north of the R382 road connecting Port Nolloth and Steinkopf; Aardvark 164, which the R382 transects (east of Port Nolloth); and Steenbok 165 and Gifkop 166, situated within the farm Steenbok south of the R382.

The geology consists of 3 high grade metamorphosed volcanic/sedimentary layers of rock intruded by 3 granitoid bodies during high grade metamorphism (Figure 10). The rock layers have a basic north-northeast strike and dips to the west at a dip of 60 – 75°. The rock in and around the Project Area consists of high-grade metamorphic rock, made up of high pressure and temperature gneiss and schist. However, volcanic-sedimentary sequences could still be distinguished from plutonic magmatic rock by size, shape and field relations. Layered sequences maintained their layered nature while plutonic magmatic rock cuts through the layered sequences. Therefore, gneisses could be distinguished as formerly volcanic-sedimentary or plutonic.

Rock formations of volcanic-sedimentary origin:

- The oldest rock formation in the Project Area is the Steinkopf Gneiss of the Gladkop Metamorphic Suite which consists of fine-grained grey, banded to massive biotite-hornblende gneiss.
- The Steinkopf Gneiss is overlain by the Noenoemaasberg Gneiss of the Gladkop Metamorphic Suite which consists of a fine-grained sillimanite bearing gneiss. Weathered rock shows a pink colouring. The presence of sillimanite indicates high pressure and high temperature metamorphism at the peak of the Namaqualand-Natal metamorphic cycle.

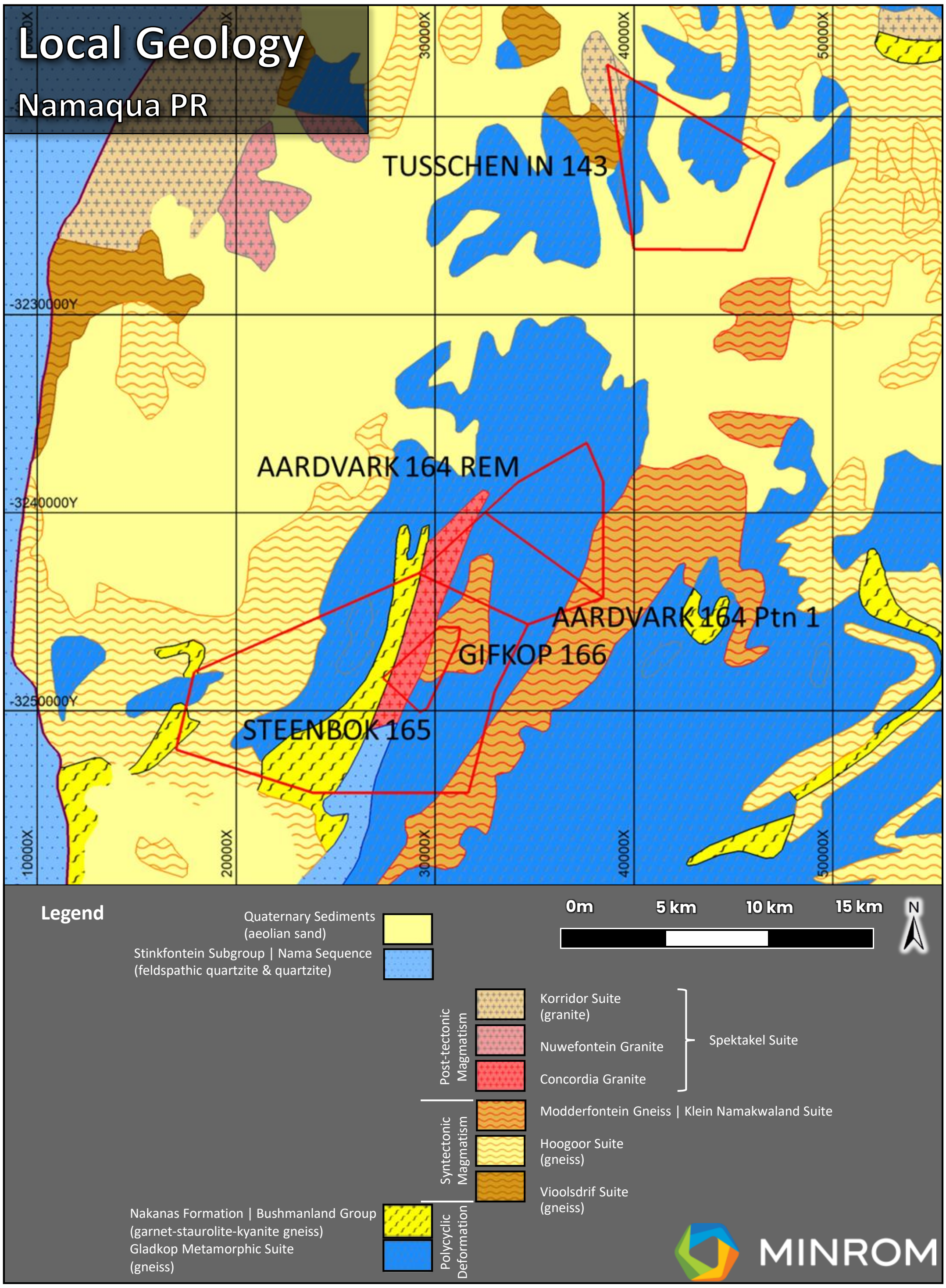

Figure 10: Local geological map.

- The Noenoemansberg Gneiss is overlain by the Nakanas Formation of the Boesmanland Group. It consists of a garnet-staurolite-kyanite schist. The presence of kyanite indicates high pressure with medium temperature metamorphism of the rock.
- This metamorphosed volcanic-sedimentary sequence was the intruded by three (3) granitoid bodies in the later stages of the metamorphic cycle:
  - First was the Modderfontein Gneiss which consists of a leucocratic augen gneiss.

- Then the Concordia Granite intruded comprising a medium-grained leucocratic granite which already shows faster cooling times nearing the end of the metamorphic cycle.
- Lastly the Nuwefontein granite were intruded which consists of a medium-grained hornblende granite. Faster cooling at the end of the metamorphic cycle facilitated the medium-sized crystals in the granite.

3.3 Mineralisation Model

The mineralisation model aims to use regional, local, and site geology to determine the geological factors that have influenced the formation of the mineralisation of interest on all scales. Therefore, it is important to understand some basic properties of high-grade metamorphic terranes.

Metamorphic rocks arise from the transformation of existing rock to new types of rock in a process called metamorphism. The original rock (protolith) is subjected to temperatures greater than 150 to 200°C and, often, elevated pressure of 100 megapascals (1 000 bar) or more, causing profound physical or chemical changes. During this process, the rock remains mostly in the solid state but gradually recrystallizes to a new texture or mineral composition. The protolith may be an igneous, sedimentary, or existing metamorphic rock.

Mineralogical changes:

Metasomatism can change the bulk composition of a rock. Hot fluids circulating through pore space in the rock can dissolve existing minerals and precipitate new minerals. Dissolved substances are transported out of the rock by the fluids while new substances are brought in by fresh fluids, resulting in the change of the rock's the mineral makeup.

However, changes in the mineral composition can take place even when the bulk composition of the rock does not change. This is possible because all minerals are stable only within certain limits of temperature, pressure, and chemical environment. For example, at atmospheric pressure, the mineral kyanite transforms to andalusite at a temperature of about 190 °C (374 °F). Andalusite, in turn, transforms to sillimanite when the temperature reaches about 800 °C (1 470 °F). All three have the identical composition (Al_2SiO_5).

Many complex high-temperature reactions may take place between minerals without them melting, and each mineral assemblage produced indicates the temperatures and pressures at the time of metamorphism. These reactions are possible because of rapid diffusion of atoms at elevated temperature. Pore fluid between mineral grains can be an important medium through which atoms are exchanged

Economic importance of metamorphic minerals:

Kyanite is used primarily in refractory and ceramic products, including porcelain plumbing and dishware. It is also used in electronics, electrical insulators, and abrasives.

The uses of staurolite are based on its hardness (7–7.5), moderate specific gravity, low thermal expansion, high melting point (1 537°C), and its resistance to weathering and chemical attack. The main uses of staurolite are as an abrasive, particularly in sandblasting, and as foundry sand.

Garnet, a mineral known for its hardness and durability, finds diverse applications, ranging from jewellery and abrasive materials, sand- or air-blasting, waterjet cutting, and sandpaper. Garnet is now used for some blast-cleaning applications that previously used common sand.

Sillimanite, an aluminosilicate mineral, is primarily used as a refractory material in high-temperature applications like ceramics, glass, and metal production, as well as for lining kilns and furnaces. Approximately 95% of the world's consumption of these minerals is used for this purpose in the manufacture of metals, glass, ceramics and cement.

In a low, medium to high grade metamorphic region like Namaqualand, Bushmanland, and the Richtersveld, these metamorphic minerals occur throughout the region. Areas where these minerals occur in economic exploitable concentrations should be targeted for further exploration and extraction.

4 MINERALISATION POTENTIAL

4.1 Mineralisation Targeting

The Project Area consists of four (4) farms, all of which are located within the same geological environment with similar rock strata and plutonic intrusions. Considering the mineralisation model, the following multidisciplinary parameters have been identified and defined to target medium to high-grade metamorphic rock as well as possible hydrothermal altered rock and hydrothermal vein deposits within the study area:

- Geological areas proximally located next to late tectonic granites (Concordia and Nuwefontein Granites) with possible hydrothermal enrichment in the host rock or rock formations that underwent medium grade metamorphism (Nakanas Formation) or high-grade metamorphism (Noenoemaasberg Gneiss) where high temperature refractory and abrasive minerals could have formed.
- Climatical areas with a relatively consistent generally arid climate have less vegetation that enhances the effectiveness of the satellite imagery.

- Topographical areas with prominent ridges could indicate areas with large quartz veins where hydrothermal enrichment occurred with possible metal enrichment within.
- A complicating factor in the pursuit of minerals in general is that in many cases theses deposits are covered or masked by overlying sand or soil. This is especially true in the Project Area due to the wind-blown aeolian Kalahari sands or beach sands that cover much of the Namaqualand and Richtersveld region.

4.2 Remote Sensing (RS)

Remote sensing is a term used to describe the process of investigating a specific area without physically interacting with the formations or geology. In this case, remote sensing made use of the reflective light spectrum including near- and long-wave infrared light.

Due to the size of the Project Area, remote sensing was performed to identify exploration targets. Not all the factors defined in the mineralisation targeting could be considered due to limited data availability. Various open-source satellite imagery is available to the public; however, after processing the most useful data was derived from the LANDSAT 8 satellite which records 11 bands that range from the visible spectrum at 0.43 µm to 12.51 µm (NASA, 2023).

Reflective light remote sensing using satellite imaging works on the principle that all material absorbs and reflects electromagnetic radiation at different wavelengths. These satellites are equipped with various sensors that can detect electromagnetic radiation within specific bands. Normal visible light is made up of the red, green, and blue colour bands. Combining bands of different wavelengths produces specific colour images referred to as false colour images. These images can be used to interpret and identify different characteristics related to specific electromagnetic radiation bands. A summary of the different bands representing reflective wavelengths for the ASTER satellite can be found below in Table 1.

Table 1: Spectral bands of the ASTER satellite.

Spectral Band	Description	Wavelength	Resolution
Band 1	Coastal Aerosol	0.43 - 0.45 µm	30 m
Band 2	Blue	0.450 - 0.51 µm	30 m
Band 3	Green	0.53 - 0.59 µm	30 m
Band 4	Red	0.64 - 0.67 µm	30 m
Band 5	Near-Infrared	0.85 - 0.88 µm	30 m
Band 6	SWIR 1	1.57 - 1.65 µm	30 m
Band 7	SWIR 2	2.11 - 2.29 µm	30 m
Band 8	Panchromatic (PAN)	0.50 - 0.68 µm	15 m
Band 9	Cirrus	1.36 - 1.38 µm	30 m
Band 10	Thermal infrared 1	10.60 – 11.19 µm	100 m
Band 11	Thermal infrared 2	11.50 – 12.51 µm	100 m

LANDSAT 8 satellite data was used due to its high reflected range, extending to nearly 12.51 µm. A visual representation of the different bands for ASTER, Landsat-8 and Sentinel-2 can be found below in Figure 11.

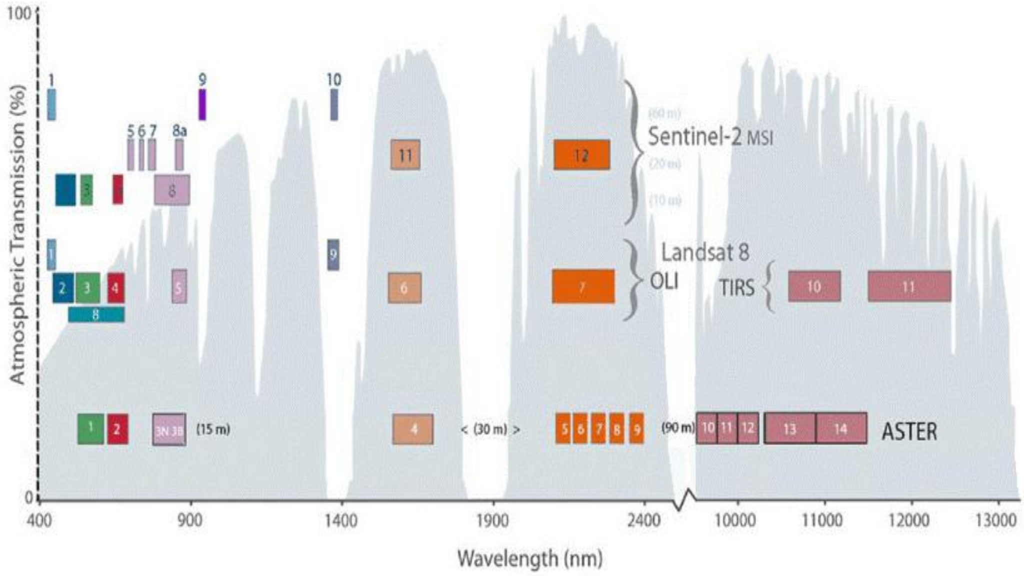

Figure 11: Comparison of ASTER, Landsat-8 and Sentinel-2 bands. Figure adapted from Ustin & Middleton, 2021.

4.2.1 Band Ratios Reasoning

A band ratio is created by dividing different bands of satellite images from each other and is a technique used to draw attention to specific desired spectral differences (Cardoso-Fernandes et al. 2019). Spectral characteristics of features in an image get enhanced by band ratioing, regardless of the variation in scene illumination (Shahi et al., 2022).

The presence of certain minerals is highlighted using band ratios, and it was applied in the following manner:

Table 2: Band ratios & False Colour Combinations.

Band Ratio	Features
6/7	Can help distinguish between felsic and mafic rocks.
6/5	Useful for identifying iron-rich minerals.
4/5	Can highlight vegetation cover and its interaction with soil and rock.
5/4	Helps differentiate between different types of vegetation and bare soil.
Band Combinations	
7, 6, 4	This combination is useful for visualizing urban environments and can help in identifying lithological units.
5, 6, 4	This combination is helpful for distinguishing land from water.
5, 7, 1	Useful for vegetation and water analysis.
6, 5, 2	Useful for agricultural monitoring and distinguishing different types of vegetation.
6, 3, 2	Useful for distinguishing differences in bare earth.

Specific Applications:

- **Identifying alteration zones:** Band ratios, especially those involving SWIR bands (6 and 7), can help identify areas affected by hydrothermal alteration, which is important for mineral exploration.
- **Mapping lithological units:** Different band combinations and ratios can help differentiate between different rock types, such as igneous, metamorphic, and sedimentary rocks.
- **Detecting iron ore:** Certain band ratios, like 4/2, 5/7, and 5/4, can be used to identify and map iron ore deposits.
- **Vegetation analysis:** Band combinations, such as 5, 4, and 3, are useful for vegetation analysis and mapping.
- **Monitoring agricultural crops:** Band combinations like 6, 5, and 2 are useful for monitoring agricultural crops.

The main bands that were selected for the remote sensing study were the middle infrared and neat infrared bands, mainly LANDSAT 8 Bands 5, 6, and 7. In this high-grade metamorphic environment, band ratios and combinations were selected to show hydrothermal alteration that would also show massive sulphide deposits at the surface.

4.2.2 Application of Band Ratios

Band ratios that worked best were B6/B7 (using both middle infrared bands), B5/B4 (using near infrared and visible red), and B4/B2 (using visible red and blue). Using B6/B5 resulted in dramatic images, further confirming the rock alterations indicated by the other band ratios, B6/B7 and B5/B4. For comparison, a visible light image (Figure 12) and a vegetation image (Figure 13) were also used.

A normal colour image (RGB432) of the Project Area showcases the arid nature of the area with sparse vegetation (Figure 12). Note the white and reddish-brown sand in the valley west of the Project Area.

Figure 13 in RGB543 was used to show up vegetation, but there is little to be seen, indicating little or no influence of vegetation on the images. Figure 14, however, in RGB with band ratios 4/2, 6/7 and near infrared band 5 as blue, indicated hydrothermally altered rock in green. Alteration is noted along the mountains on the western border of Tusschen In and in the mountain ranges crossing north-south over the farm Steenbok. This corresponds with the outcrops of the Nakanas Formation which consists of garnet-staurolite-kyanite schist.

Figure 15 in RGB with band ratios 6/7, 5/4 and near infrared band 5 as blue, shows up hydrothermally altered rock, in this image as bright pink. Again, the alteration in the mountains on the western border of Tusschen In and in the mountain ranges crossing north-south over the farm Steenbok is noted, corresponding with the outcrops of the Nakanas Formation, comprising garnet-staurolite-kyanite schist.

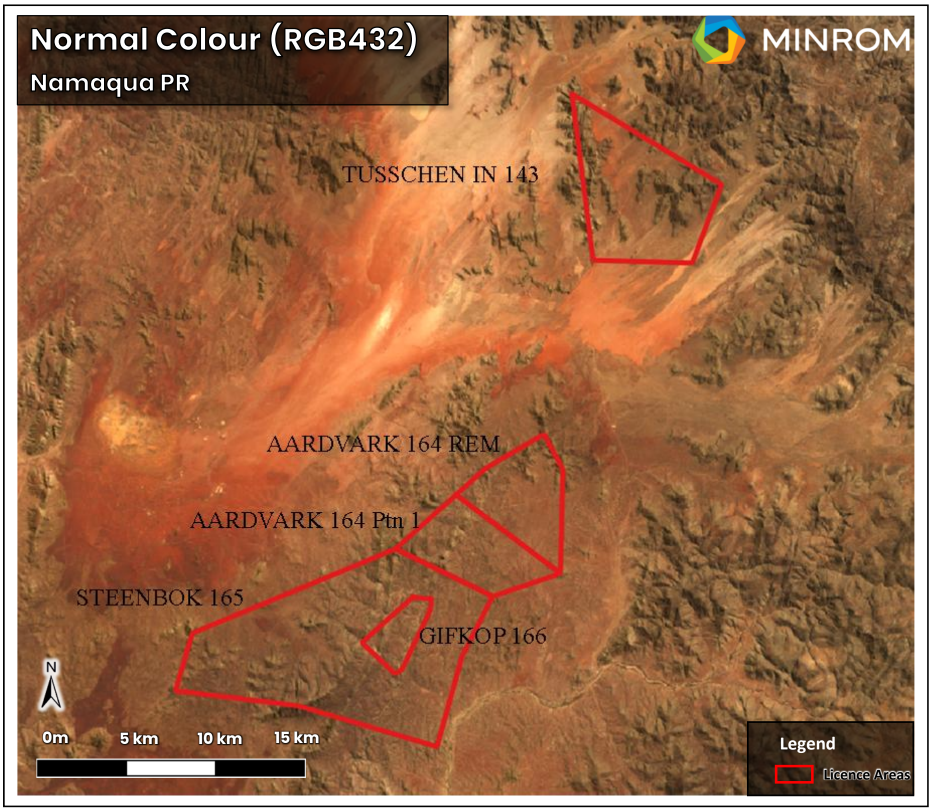

Figure 12: Normal Colour RS Image (RGB432).

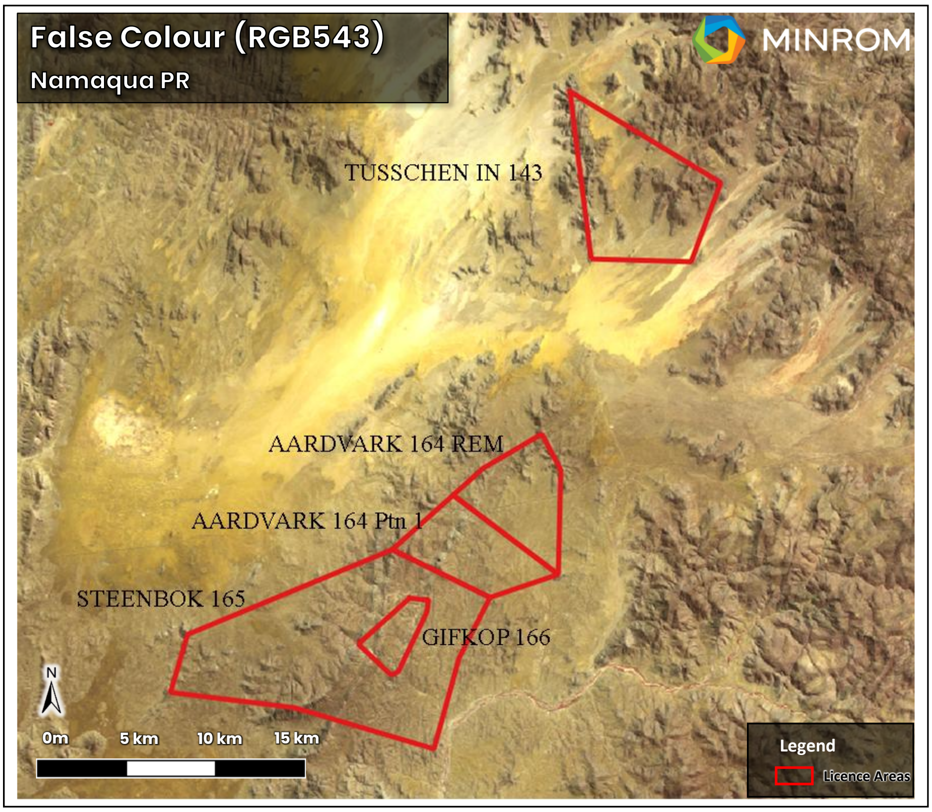

Figure 13: False Colour RS Image (RGB543).

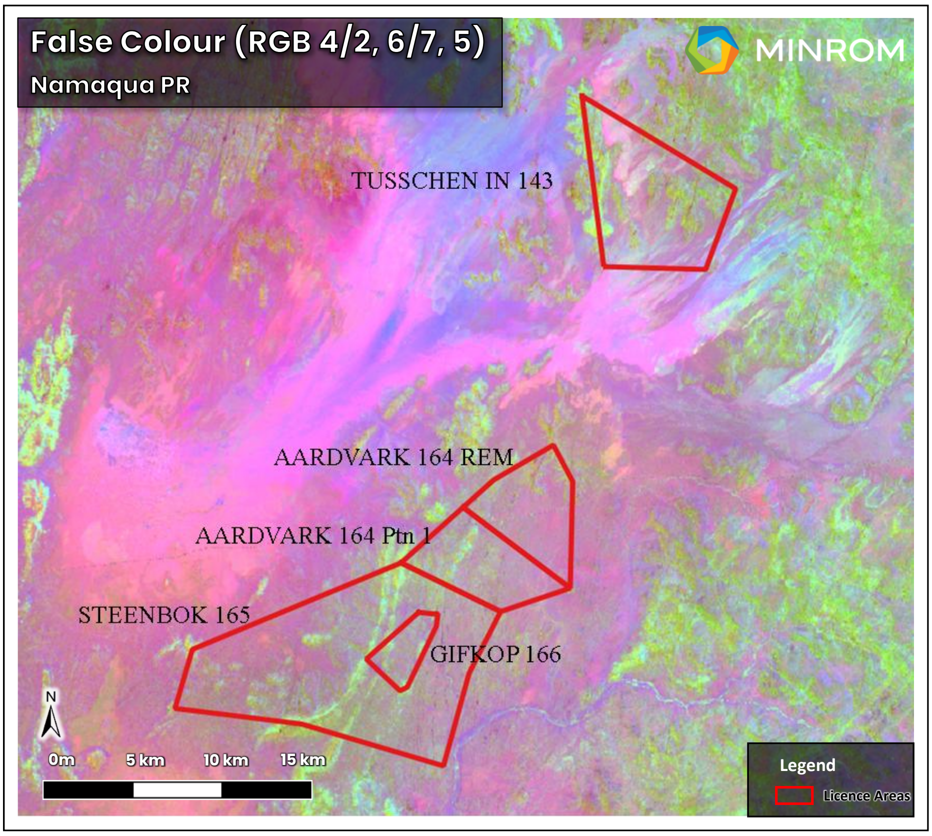

Figure 14: False Colour RS Image (RGB 4/2, 6/7 and 5).

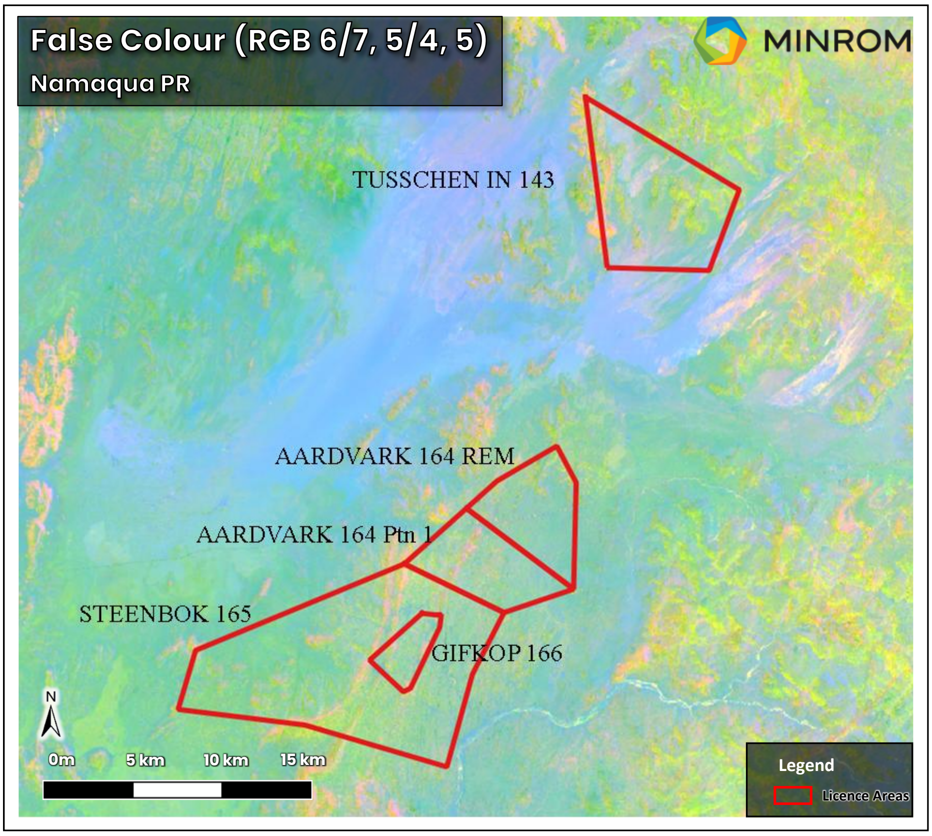

Figure 15: False Colour RS Image (RGB 6/7, 5/4, and 5).

4.3 Target Generation & Ranking

Certain layers within the Nakanas Formation show up prominently on the band ratio B6/B7 image (Figure 15). This could be used as a target for further exploration for hydrothermally altered layers within the Nakanas formation. Target areas are indicated on the next images. Targets have been selected based primarily on the prominence on the satellite image with RGB 4/2 6/7 5, which shows the most detail, and, secondly, on the area of the target (Figure 16 & Figure 17).

The historical Anglo American drill holes on the Tusschen In farm (Figure 2), were drilled on identified target areas 1 and 6, which is situated on the Gladkop Metamorphic Suite (Figure 16). The target areas were selected purely on the pink areas that showed up on the RGB 6/7 5/4 5 satellite image.

Based on the mineralisation model, and the results and interpretations from the remote sensing study, all farms are considered prospective; however, only for industrial mineralisation or uranium mineralisation. The possibility of copper, or pegmatite mineralisation (Sn, Ta, W, Li) is possible; however, the remote sensing and regional data did not indicate any direct targets.

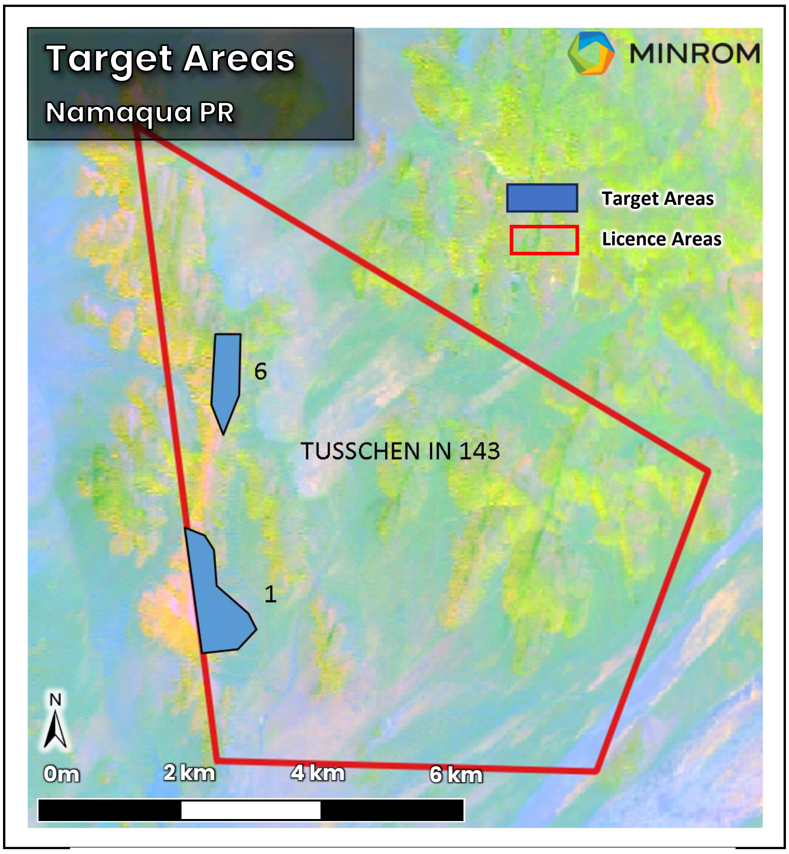

Figure 16: Target areas for the farm Tusschen In 143.

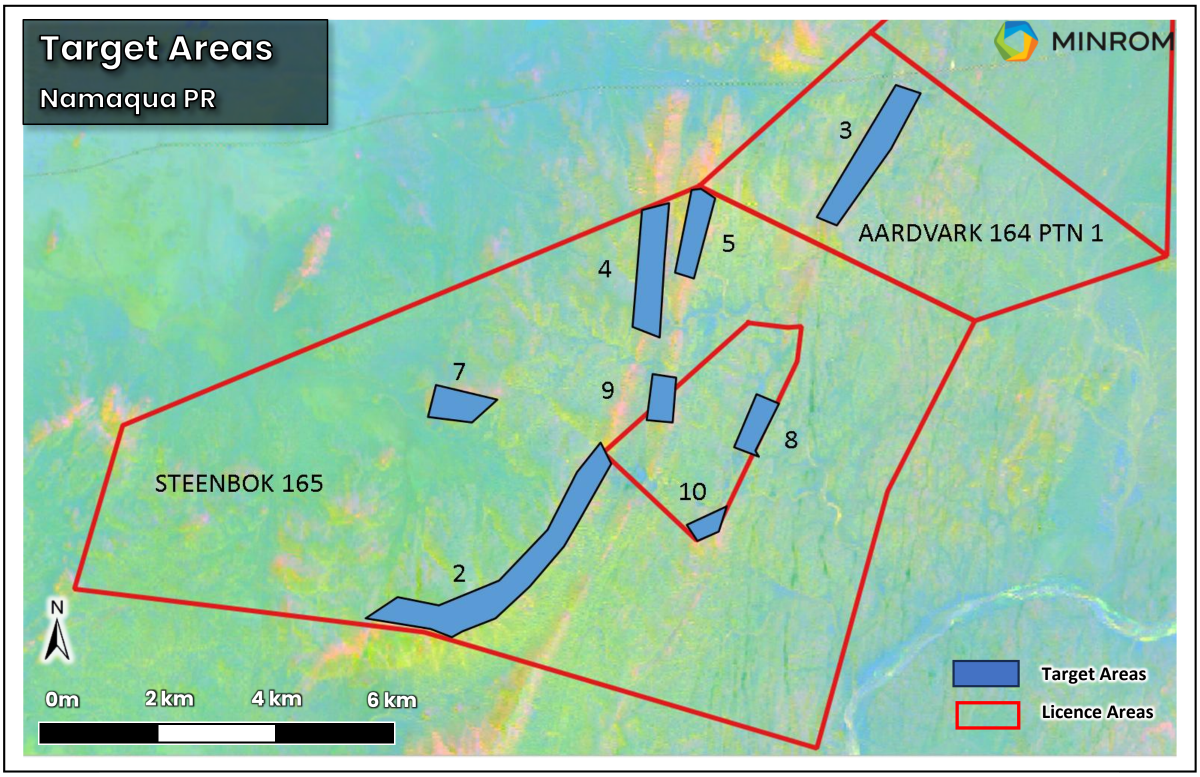

Figure 17: Target areas on farms Steenbok 165, Gifkop 166, and Aardvark 164.

These targets could be ranked as follows, although the rankings are subjective as most have similar prospectivity:

Table 3: Ranked Exploration Targets.

Target #	Farm
1	Tusschen In 143
2	Steenbok 165
3	Aardvark 164 Ptn 1
4	Steenbok 165
5	Steenbok 165
6	Tusschen In 143
7	Steenbok 165
8	Gifkop 166
9	Gifkop 166
10	Gifkop 166

These targets should, therefore, be further investigated to determine the potential size of the deposits. Additionally, representative samples should also be extracted if any trace mineralisation is identified.

5 CONCLUSIONS & RECOMMENDATIONS

It can be concluded that Prospecting Right NC30/5/1/1/2/14344 PR has reasonable potential for industrial minerals such as garnet, kyanite, and sillimanite, which are known to occur in the region and on adjacent properties. These targets were particularly associated with the Nakanas Formation and, so, the target areas were defined along this geological unit.

The Project does not have direct indications for copper or pegmatite mineralisation, as observed in the remote sensing and regional data analysed; however, based on the limitations of the desktop aspects of the study, it is recommended that reconnaissance geological mapping and sampling be performed to directly inspect the potential for industrial minerals and any indications of base or precious metals.

Since the mineralisation potential defined in this report supports additional exploration, the following high-level (overview) exploration strategy has been defined:

• **Phase 1 - Literature review & Target generation** ○ Review all available project data ○ Develop mineralisation model which can be applied to search for the target commodity anywhere the geological setting ○ Generate exploration targets ○ Rank exploration targets	**Complete**
• **Phase 2 – Field Verification** ○ Site investigation to determine if the target areas contain any commercial mineralisation ○ Surface sampling (representative samples) ▪ Consider soil sampling to determine the presence of copper	**Proposed Next Phase**

Minrom favours a phased approach to minimise exploration expenditure and maximise geological data gathered.

6 APPENDIX

6.1 Project Grid System

All coordinate and spatial data utilised during the project is in the following format:

WGS 84 / UTM zone 34S (EPSG: 32734)

- Easting – refers to the position on the east–west line, also known as the X–coordinate.
- Northing – refers to the position on the north–south line, also known as the Y–coordinate.
- RL – refers to the relative height of the point above sea level.

Coordinate system details:

Datum:	**D_WGS_1984**
Projection:	Universal Transverse Mercator
Project Name:	WGS 84 / UTM zone 34S
Projection Details:	
False_Easting	0
False_Northing	0
Central_Meridian	0
Scale_Factor	1
Latitude_of_Origin	0
Linear Units:	Meters (m)

6.2 Licence

Regulation 2.2 Map for the Prospecting Right: