Desktop Overview of the Baseline Socio Economic and Environmental Conditions

Stakeholder Communication as part of the compilation of the Environmental Management Plan in the application for a Prospecting Right

Vaalboschfontein11; Remainder and Portions 1,2,3, and 4 of Farm 12; Remainder and Portion 1 of Farm 13; Farm14; Farm 21; Remainder and Portion 1 of Kook Fontein 31; Dikgatlong Municipal Area

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Desktop Baseline Socio-Economic and Environmental Conditions Report – Dikgatlong Municipal Area Prospecting Right Application

Reference Number: (NC)30/5/1/1/2/11057PR

The purpose of this report is to provide stakeholders with a brief overview of the baseline socio-economic and environmental conditions of the proposed prospecting site and the surrounding areas. The information contained in this report has been derived from various sources and these sources have been references throughout the document. The document outline is as follows:

Section 1: Prospecting Site Locality

Section 2: Proposed prospecting activities

Section 3: The Socio-Economic Environment

Section 4: The Physical and Biophysical Environment

Stakeholders are invited to review this report and provide comments regarding the information contained herein.

Section 1

1. Prospecting Site Locality

Province	Northern Cape
District Municipality	Frances Baard
Local Municipality	Dikgatlong
Affect Ward(s)	Ward 6
Land portions where prospecting will take place	Vaalboschfontein 11; Remainder and Portions 1,2,3, and 4 of Farm 12; Remainder and Portion 1 of Farm 13; Farm14; Farm 21; Remainder and Portion 1 of Kook Fontein 31; Barkly West

The site boundary aligns with the boundary between the North West Province and the Northern Cape Province, but the entire site falls within the Northern Cape. The planned prospecting area is approximately 14,730ha in extent, and is situated approximately 30Km south-east of Reivilo and approximately 110km north-west of Kimberly (refer to Figure 1 and Figure 2)

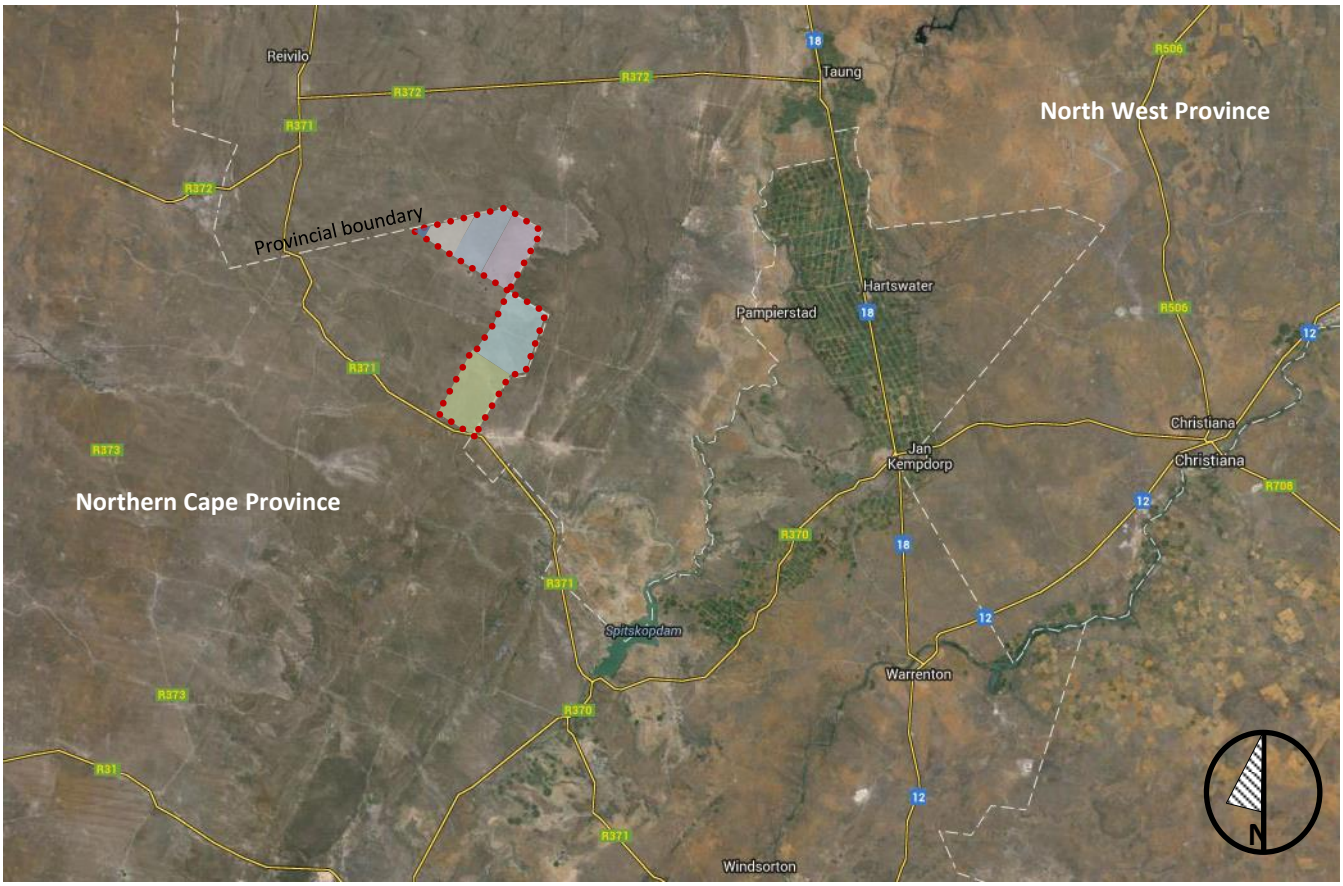


Figure 1: The extent of the prospecting area in relation to major towns (Google Earth Image. Imagery Date – 25.11.2013)

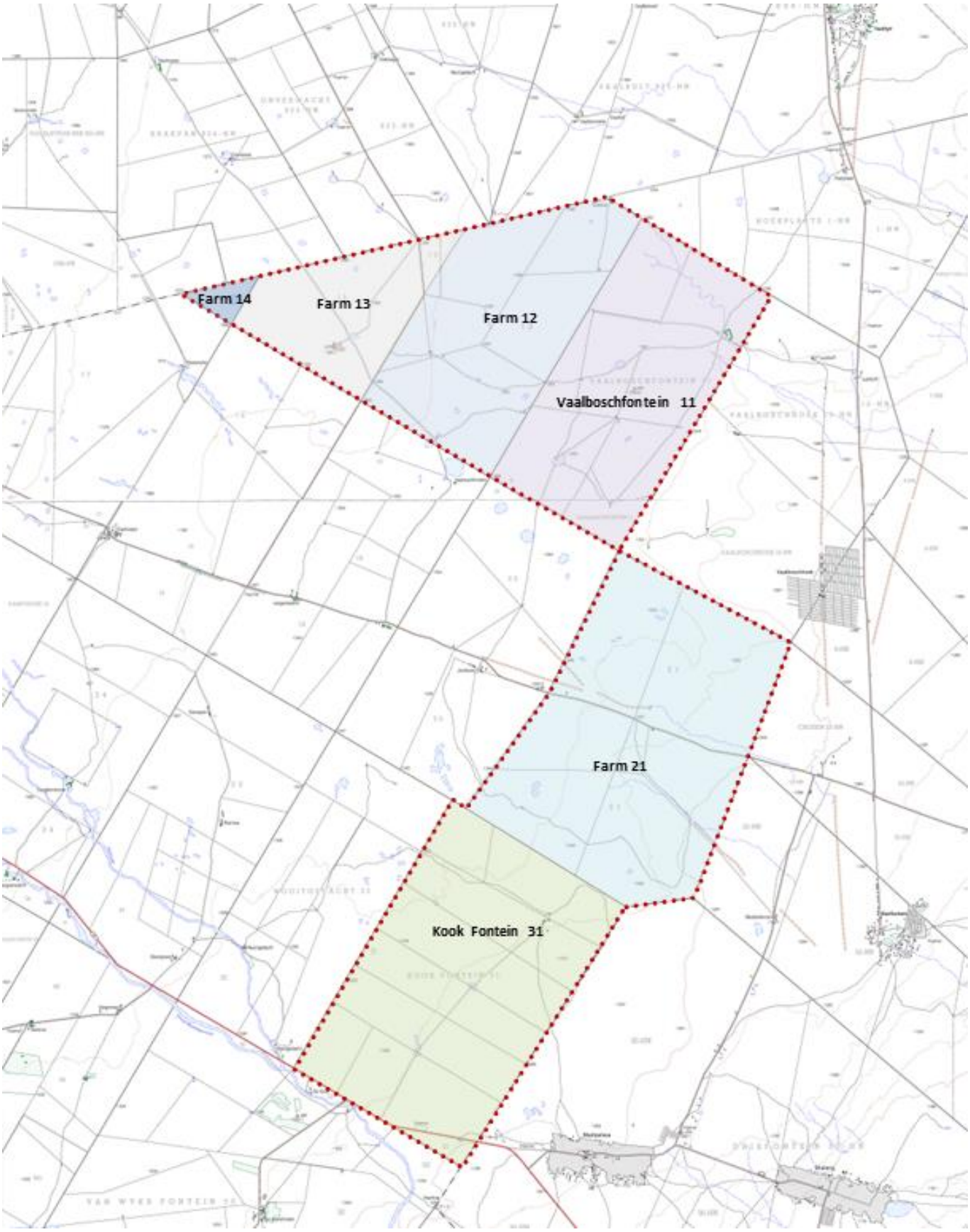


Figure 2: The farms of the prospecting area (1:50 000 Topographical Survey Sheets: 2824AB and 2824BA)

Table 1: Site co-ordinates

Portion	Latitude	Longitude
Vaalboschfontein 11	-27.723152°	24.409442°
Remainder and Portions 1,2,3, and 4 of Farm 12	-27.711679°	24.377714°
Remainder and Portion 1 of Farm 13	-27.706582°	24.337875°
Farm14	-27.703129°	24.307108°
Farm 21	-27.806178°	24.414947°
Remainder and Portion 1 of Kook Fontein 31	-27.857794°	24.367629°

Section 2

2. Description of the Planned Prospecting Activities

The detailed geology and diamond potential of the area is relatively unknown, and exploration work will commence at a very basic level. The prospecting will be undertaken in three (3) phases, each phase will be conditional on the success of the previous.

2.1. Phase 1: Data Acquisition and Desktop Survey

A desktop study of all available data for the area will be undertaken to accumulate as much regional and historical data around the area as possible. This includes published geological reports, infrastructure mapping, satellite imagery and existing geophysical information (if available), both primary (Kimberlite or Lamproite) and secondary (alluvial) diamond deposits will be targeted.

During this phase, no on-site activities will be undertaken and analysis of the site will be done through the sourcing and analysis of existing information.

2.2. Phase 2: Target Generation and Ground-Truthing

If the initial results of the desktop study are positive, further data will be generated through airborne or ground geophysics. Targets generated and/or historical information will be investigated on the ground and subject to more detailed target-specific geophysics and loam sampling for the presence of Kimberlite Indicator Minerals (KIM).

If any of the exploration targets give a positive result, a drilling programme will be undertaken in order to identify the causative body for the geophysical and geochemical targets.

2.3. Phase 3: Scout Drilling and Delineation Drilling

Targets that have been prioritised through detailed loam sampling and ground geophysics will be tested by initial diamond or percussion drilling. If Kimberlite if intersected, one or more 10kg samples will be taken for Heavy Metal Abundance (HMA) sampling to extract Kimberlite Indicator Minerals (KIM) such as garnet, chromite, ilmenite and chrome diopside in representative quantities. These will be analysed by electron microprobe for major and selected minor elements and the results will be interpreted to assess diamond potential.

Dependent on HMA results, further delineation drilling and micro-diamond (MiDA) sampling would be carried out to further define the deposit and give a better indication of grade.

Positive results from MiDA would be followed by more detailed delineation diamond drilling and geological modelling to assess potential resource tonnage and diamond content. Information gathered during this phase would be used in the decision to embark on additional prospecting and evaluation activities.

Table 2: Prospecting Timeframes and Activities

Phase	Anticipated Timeframe	Activities	Outcomes
Phase 1: Data Acquisition and Desktop Survey	1 Year	1. Data Acquisition: acquire historical geological/exploration data over area applied for and surrounds	1. Compile data. 2. Refine exploration strategy

Phase	Anticipated Timeframe	Activities	Outcomes
Phase 2: Target Generation and Ground-Truthing	2 Years	1. Ground and or aerial magnetic survey over prospecting area 2. Anomaly-specific ground geophysics 3. Anomaly-specific loam sampling and drilling for kimberlite/alluvial deposit identification	1. Define and prioritize exploration targets for detailed follow up. 2. Detailed follow up on targets to establish which targets warrant scout drilling to test for kimberlite/ alluvials.
Phase 3: Scout Drilling and Delineation Drilling	2 Years	1. Scout Drilling 2. KIM Sampling 3. MiDA sampling 4. Initial delineation drilling	1. Confirm which targets are due to the presence of kimberlite. 2. Test diamond potential and estimate potential grade of kimberlite. 3. Delineate orebody. 4. Assess what further work is warranted (e.g. bulk sampling). 5. Amend relevant documents such as Environmental Management Plan and Prospecting Works Program.

Section 3

3. State of the Socio-Economic and Natural Environment

The information contained in this section of the report is based on the available desktop information obtained from the sources as referenced.

3.1. Socio-Economic Environment

The following information relating to the socio-economic environment has been obtained from the Frances Baard District Municipality Integrated Development Plan (IDP) 2012/13 – 2016/17.

1. The Dikgatlong Municipal area is reported to have an unemployment rate of 39.7%. Unemployment is attributed to low levels of education.
2. Agriculture and mining activity form the economic basis of the Dikgatlong Local Municipality.
3. Due to the low level of transformation within the district municipality, economic development opportunities, including wildlife-related activities, tourism or livestock farming have been identified. Nature-related tourism opportunities have been identified for the Dikgatlong municipal area.
4. Limited water availability has been identified as a threat to the future socio-economic development of the district.
5. Future priority issues for the District Municipality include job creation and provision of housing and services.

Statistics SA confirms that the Northern Cape's largest economic contributors are mining and agriculture which contribute 32.2%, followed by manufacturing and construction which contributes 7.3%.

3.2. Physical and Biophysical Environment

3.2.1. Climate

The climate information (meteorological data) was obtained from the South African Weather Service (SAWS), Taung weather station.

A. Wind Speed and Direction

Table 3: Wind Speed and Direction

Wind Direction and Speed	
Period of data	2007-2011
Dominant wind direction	North-north-west and north
Dominant day time wind direction	North-north-west
Dominant night time wind direction	North and north east
Maximum wind speed	8.8 m/s Stronger winds are more commonly during the spring and summer seasons, wind speeds between 5.7 and 8.8 m/s occur around 2% and 1% respectively.
Wind calms	18.82% Calm conditions are more abundant during autumn and winter months, 14.9% and 14.13% respectively.

Wind Direction and Speed	
Day time calms	10.08%
Night time calms	21.91%

B. Rainfall and Temperature

Maximum rainfall for the 2011 was recorded at 190mm in January with a minimum of 0mm in July and August. Based on the information contained in the Overview of Water Resources Availability and Utilisation Report for the Lower Vaal Management Areas published by the DWA (Report No: P WMA 10/000/00/0203 dated September 2003) ,the average annual rainfall is reported to be 300-400mm per annum.

The maximum, minimum and average monthly temperatures for Taung for the year 2011 are reflected in the table below:

Table 4: Maximum, Minimum and Average Monthly Temperature: Taung 2011

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max	27.8	28.9	28.9	23.6	22.1	18.8	19.1	23.8	28.5	29.4	31	30
Min	19.2	18.1	17.3	12.7	7.6	1.8	1.2	5.2	9.4	11.9	13.1	17.2
Ave	23.5	22.9	22.6	17.4	13.9	9.2	9.1	14.1	18.7	20.6	22.4	23.5

3.2.2. Geology

A. Regional Geology

Much of the region of the north-eastern Cape Province is underlain by flat-lying Palaeo-zoic rocks of the Karoo Supergroup and the sub-vertical Proterozoic rocks of the Trans-vaal Supergroup. The Transvaal Supergroup consists of dolomitic rocks and mafic lavas. Permian Dwyka-Ecca Group tillites, shales and marine sediments form the base of the Karoo succession and are overlain by arenaceous continental sediments of the Beaufort and Stormberg Groups. The sedimentary rocks are capped by an accumulation of Cretaceous amygdaloidal basalt flows up to 1,700 m thick belonging to the Drakensburg Group. Feeder dykes and sills of basalt are common within the underlying 1,000 m of sediments. Kimberlite intrusions, some of which are diamondiferous, represent the final phase of igneous activity in the region. They were emplaced during the Cretaceous in several parallel north-northeast and east-west trending structures.

Southern African kimberlites intrusions are divided into Group I (basaltic) and Group II (micaceous) kimberlites. This division was originally made along mineralogical grounds. However, the Group I/Group II distinction is better defined by isotopic ratios. Group I kimberlites have lower 87Sr/86Sr and higher 143Nd/144Nd ratios than Group II kimberlites. Mineralogically the Group I kimberlites have olivine, monticellite, serpentine-rich groundmass, while the Group II kimberlites have a phlogopite, tetraferriphlogopite, olivine groundmass.

Spatially, the occurrence of Group I and Group II kimberlites overlap, though Group II kimberlites (110Ma Ð 200 Ma.) are older than the majority of Group 1 kimberlites (generally less than 90 Ma.). Economically viable Group II kimberlites occur as both pipes and dykes (fissures), while the only economically viable Group I kimberlites to date are pipes.

B. Local Geology and Historic Information

The area applied for covers an area of 14,730 Ha, and is situated approximately 5Km south-east of Reivilo and approximately 100km north-west of Kimberly, on the provincial border between the North West Province and the Northern Cape.

The area lies on the Kaapvaal craton, on the Eastern edge of the Griqualand West basin, and consists of dolomite, limestone and chert of the Reivilo formation (2567Ma). These shallow water carbonate deposits form the lower section of the Campbellrand Subgroup of the Ghaap Group, and are overlain in places by recent cover of calcrete and sand which can exceed 30m in thickness. Ghaap Group sediments are underlain by andesitic lavas and rare tuffaceous sediments of the Ventersdorp Supergroup. These lithologies are known to occur at a depth of approximately 400m from surface at Sedibeng Diamond mine 10km to the SE, and are separated from the overlying Ghaap Group sediments by a major geological unconformity.

Historically, several kimberlite occurrences are known in the area, and number of these have been exploited for diamonds in the past (e.g. the Bobbejaan and Bellsbank fissures on the edge of the Ghaap plateau). There have also been various alluvial diamond operations in this region (e.g. Mahura Muthla approximately 5km to the north), however, the calcretised nature of these deposits has made them relatively difficult to mine.

The detailed geology and economic potential of the area under application is currently unknown, though the area is perceived to have good potential for hosting economically viable kimberlites due to the proximity of current, or historically producing, hard-rock diamond mines. The regional geology is also conducive to the possibility of alluvial diamonds in palaeochannels.

The Bellsbank and Bobbejaan kimberlite occurrences in the vicinity are Group II 'fissures' (kimberlite dykes with an average width of 0.5m to 1m) and occasional blows (irregular shaped enlargements on the fissures, often with large amounts of wall rock included with the kimberlite to form a breccia). Fissures are not continuous intrusions, but systems of discrete, disc-like lenses of kimberlite that pinch and swell along strike (typical lenses are 70-80m in diameter). If one lens pinches out and disappears, the next is usually located to the side of the first, offset by several metres. The same offset, or en-echelon, pattern between lenses is evident vertically as well as horizontally.

This system is often repeated at a larger scale with fissure 'segments' (made up of groups of individual lenses) of hundreds of metres in length being separated by offsets of more than 100m in places. These larger offsets often coincide with major geological features, e.g. discontinuities in host rock lithologies such as faults and unconformities.

3.2.3. Land Capability and Land Use

According to the Agricultural Geo-Referenced Information System (AGIS) the prospecting site is classified as non-arable land with a moderate to low grazing capacity. Cattle and game farming is predominant land use in the general area. Crops cultivated in the local region include olives, pecan nuts, peanuts, citrus, wine, cotton, wheat, mealies and lucerne, contributing to the growth of agri-tourism in the area.

The Frances Baard District Municipality reports it is a Diamond Fields area, and relies on diamond mining, tourism and agriculture for economic growth and job creation.

A. Water Resources

The proposed prospecting site falls within the Lower Vaal Water Management Area, and falls within two Quaternary Catchment Areas, C33A and C33B. The Department of Water Affairs (DWA) considers these catchment areas of moderate ecological sensitivity. Based on the information contained in the Overview of Water Resources Availability and Utilisation Report for the Lower Vaal Management Areas (DWA Report No: P WMA 10/000/00/0203, September 2003), the primary water use is irrigation, which comprises more than 80% of water use in the region.

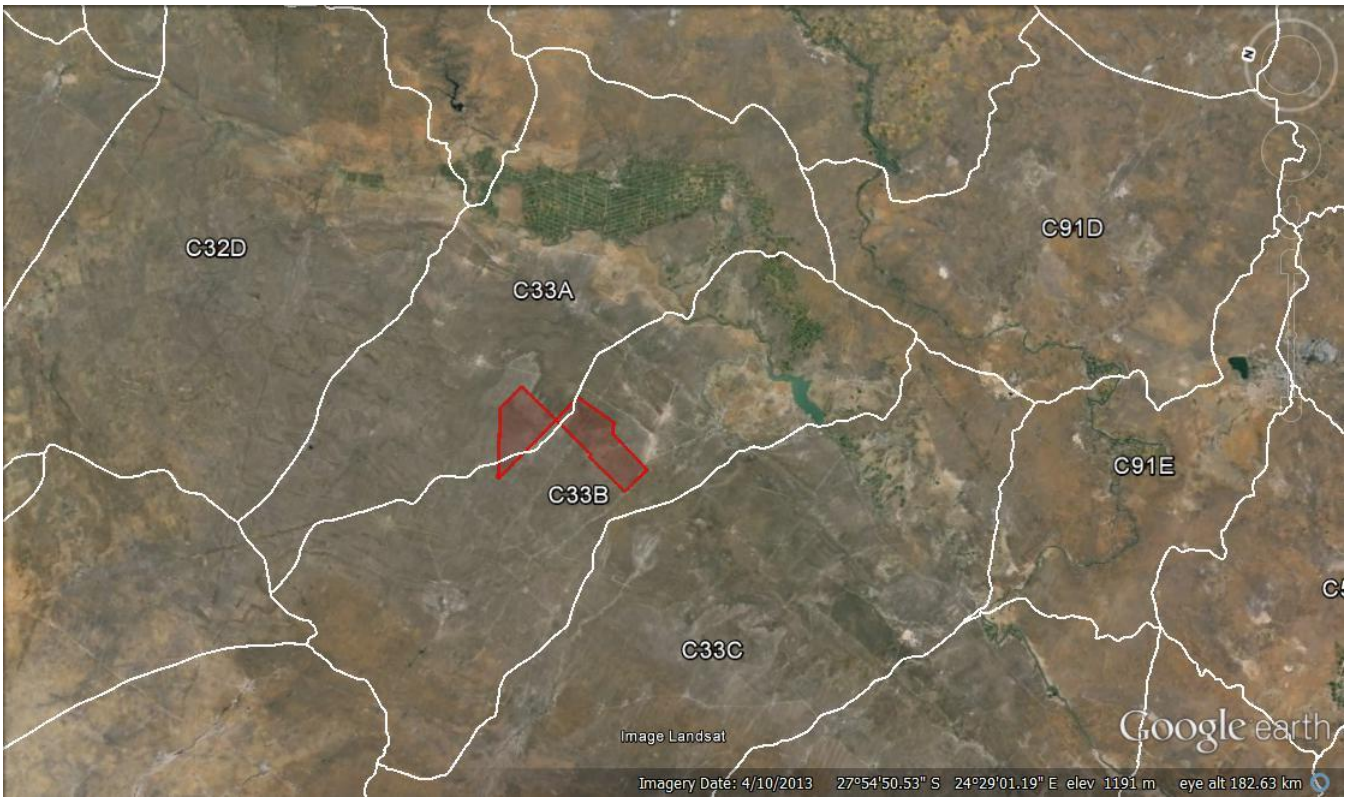


Figure 3: The site falls into Quaternary Catchment Areas C33A and C33B

B. Surface Water

Based on a review of the1:50 000 Topographical Survey Sheets and Google Earth maps, several non-perennial pans and streams were identified on the proposed prospecting site as well as a dry pan. There are two non-perennial rivers to the south west of the site: Hol River and Grootboetsap River. These rivers merge into the Grootboetsap River which flows adjacent to the R371, which forms the south western boundary of the prospecting area. The Grootboetsap River eventually flows into the Spitskop Dam, approximately 30km to the south east. Figure 5 shows the water bodies on site and adjacent rivers. The surface water on site may provide habitat for water birds and amphibians, discussed in 3.2.4.

C. Groundwater

The DWA (2003) reports groundwater utilisation to be of major importance in the Lower Vaal Water Management Area. Dolomitic aquifers occur in the uppermost reaches of the Harts River and Molopo River and extend north and eastwards into the Crocodile (West) and Marico, Upper Vaal and Middle Vaal Water Management Areas. Significant quantities of groundwater are abstracted in the area. The total yield from groundwater in the water management area well exceeds water available from surface water sources. The site is located above two aquifers, one major and one minor, as shown in Figure 4. DWA Vulnerability data shows that these aquifers are considered least vulnerable.

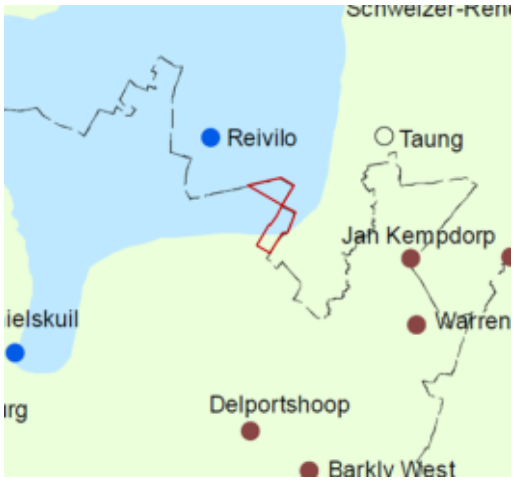
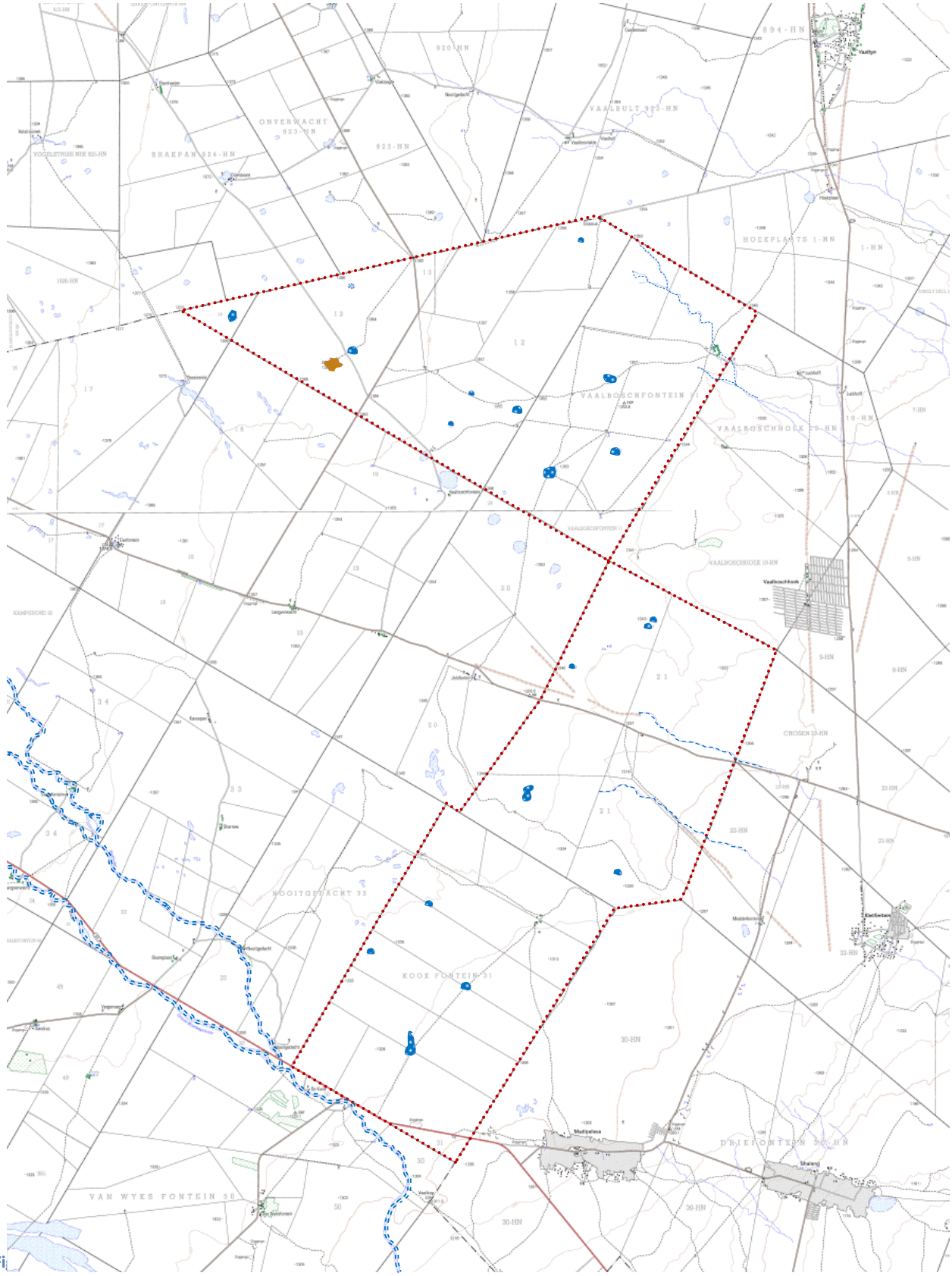


Figure 4: The site is located over two aquifers

Legend:
Major Aquifer
Minor Aquifer



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Legend:

Dry pan | Non-perennial pans | Non-perennial rivers | Non-perennial streams

3.2.4. Biodiversity

According to the South African National Biodiversity Institute's (SANBI) Biodiversity Geographical Information System (BGIS), the proposed prospecting site is located within the Savanna Biome, Schmidtsdrif Thornveld Vegetation Type (SVk6). The descriptions for the vegetation types were obtained from Vegetation Map of South Africa, Lesotho and Swaziland.

The Schmidtsdrif Thornveld Vegetation Type represents 38.31% of Dikgatlong municipal area and the conservation status of the Schmidtsdrif Thornveld is recorded as "Least Threatened". The vegetation type is described as mostly a closed shrubby thornveld dominated by *Acacia Mellifera* and *Acacia Tortillis*. Grasses, bulbous and annual herbaceous plant species are also prominent. A large percentage of the municipal area remains natural (approximately 90%) though a very small percentage of the areas is statutorily conserved.

According to the Agricultural Geo-Referenced Information System (AGIS), the predominant vegetation types on site include thicket bushland, bush clumps, high fynbos. The database also indicates that there are small areas of scrubland, low fynbos and degraded grassland.

There are several rocky outcrops on Farm 21. These may provide habitat for small mammals and reptiles, and the non-perennial pans may provide habitat for frogs. Some of the most common fauna species found in the region are included in Table 5.

Table 5: Fauna found in the Dikgatlong Local Municipal Area

Birds	Small mammals	Reptiles	Frogs
Pygmy Falcon	Duiker	Leopard Tortoise	Common Caco
Pale Chanting Goshawk	Steenbok	Cape Cobra	Giant Bullfrog
White Quilled Korhaan	Rock Elephant Shrew	Puff Adder	Karoo Toad
Kori Bustard	Smith's Red Rock Rabbit	Mole Snake	Common Platanna
Rock Martin	Ground Squirrel	Brown House Snake	
Mountain Chat	Suricate / Meerkat	Bibron's Gecko	
Crimson Breasted Shrike	Rock Dassie	Southern Rock Agama	
White Browed Sparrowweaver	Yellow Mongoose	Ground Agama	
Sociable Weaver		Striped Skink	
Cape Bunting		Cape Skink	

3.2.5. Heritage Resources

To date, no desktop heritage resource information could be sourced for the affected farm portions.

References

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