Motuoane Energy (Pty) Ltd

SITE SENSITIVITY AND VERIFICATION REPORT

SCOPE AND PURPOSE

Regulation 16(1)(b)(v) of the Environmental Impact Assessment Regulations (GNR 982 promulgated under the National Environmental Management Act (Act 107 of 1998-NEMA)), requires that a Screening Report generated by the national web-based environmental screening tool for the specific site and activity must accompany any application for Environmental Authorization.

The Screening Report identifies preliminary development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmentally sensitive features on the site based on the site sensitivity screening. On the basis of the sensitivities identified in the site sensitivity screening, a list of preliminary specialist studies required to be considered in the Impact Assessment process are provided.

Prior to commencing with a specialist assessment identified in the Screening Report, the current use of the land and the environmental sensitivity of the site, must be confirmed by undertaking a site sensitivity verification. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist. The site sensitivity verification must be undertaken through the use of:

a) *a desktop analysis, using satellite imagery;*
b) *a preliminary on-site inspection; and*
c) *any other available and relevant information.*

This Site Sensitivity and verification Report (SSVR) is a record of the outcome of the site sensitivity verification in compliance with the requirements of the procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA. The SSVR aims to:

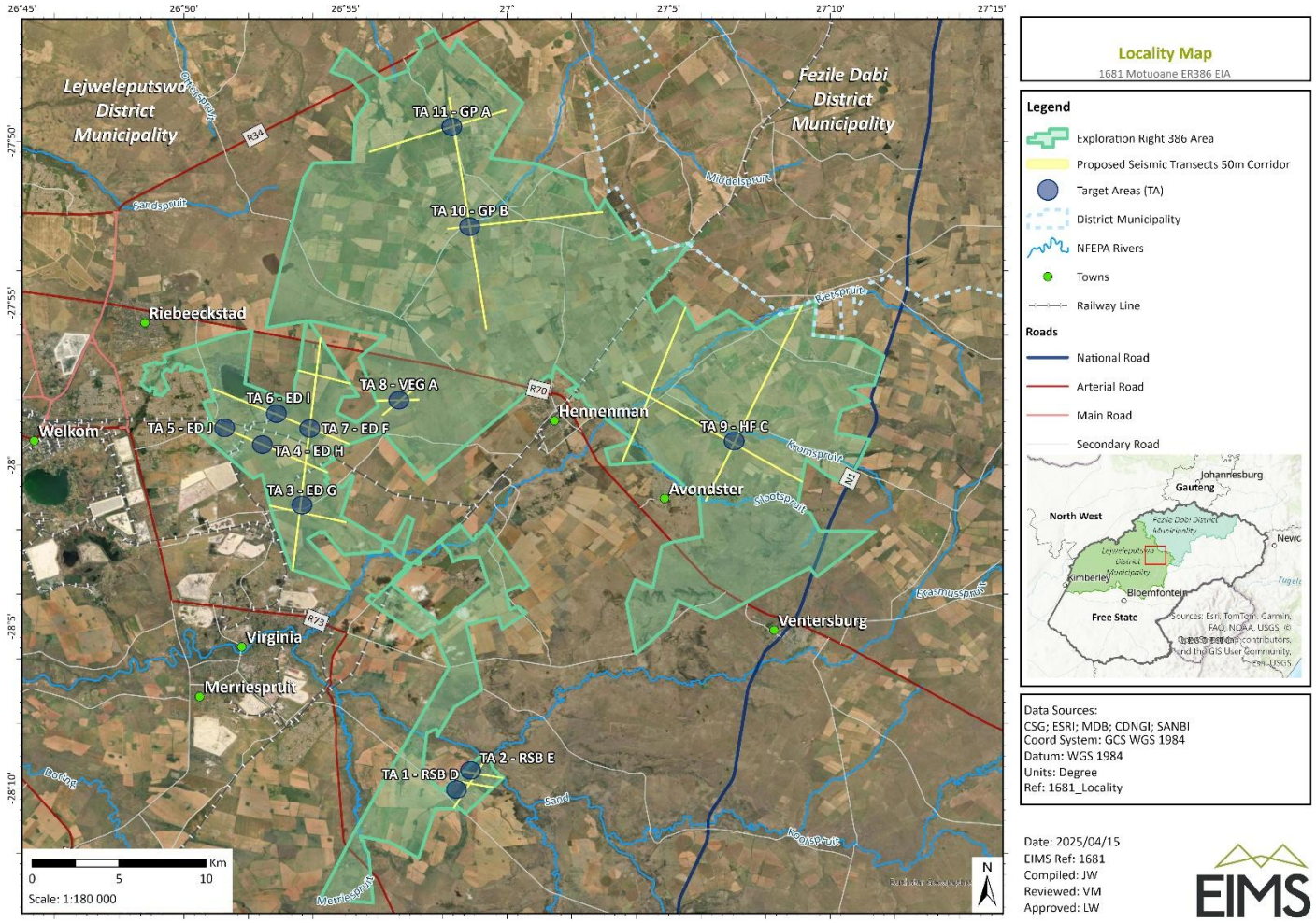
a) *confirm or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;*
b) *contain motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and*
c) *be submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations1 (EIA Regulations).*

Environmental Site Sensitivity Verification Report

Job #:	1681	Client Representative:	FJ Marx
Location:	Free State	EAP Representative:	Vukosi Mabunda
Client:	Motuoane Energy (Pty) Ltd, a sister company of D3 Energy (Pty) Ltd	Inspection Date:	26 March 2025

1. Background	
Background of the project:	Motuoane Energy (Pty) Ltd (hereafter referred to as Motuoane – the applicant) compiled and submitted an application for an Exploration Right (ER) to explore hydrocarbons, in terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 – MPRDA, as amended) to the Administrative Authority (AA), the Petroleum Agency South Africa (PASA) in 2024. The accepted (not yet approved) ER is located over an area of approximately 60 000 hectares (ha) / 598km^2, covering various farms near the towns of Welkom, Virginia, Hennenman and Odendaalsrus, within the Free State Province. The local municipalities in which the proposed exploration area is located are Matjhabeng and Moqhaka Local Municipalities, which are part of the Lejweleputswa and Fezile Dabi District Municipalities respectively. Noticeable boundaries of ER386 are 28°13'28.95"S; 26°55'2.76"E in the South, 27°57'37.57"S; 26°48'49.15"E in the West, 27°59'13.57"S; 27°11'13.06"E in the East and 27°46'34.45"S; 26°57'44.05"E in the North, the central coordinates are approximately 27°58'23.27"S; 26°59'38.94"E. Motuoane proposes to explore all saleable gases including but not limited to Methane, Carbon Dioxide, Helium, and Nitrogen in the licensed area. Published reports, general experience, experience within Motuoane and contacts with individuals familiar with the area indicate the presence of potentially commercial quantities of these gases. Direct evidence includes gas-emitting boreholes, nearby commercial gas production, gas encountered during drilling and underground mining operations. Due to the large area and complex exploration methodology, the ER will be required for an initial period of three years with the option to renew three additional periods of two years resulting in a total of nine years. Exploration Right 386 is a consolidation of Technical Cooperation Permit (TCP) 235 and 240 & Exploration Release Area (ERA) 341 which were tenures in 2024 before ER386 application was submitted to PASA on the 8th of October 2024. TCP235 & TCP240 were granted in October 2023 for a 12 Month Term, an ER application was applied for in October 2024. ERA341 was an application previously submitted to PASA which was held up due to changing legislation and subsequently withdrawn. The areas (ERA341, TCP235 and TCP240) were then consolidated to one ER (ER386). Motuoane's application for an exploration ER for hydrocarbons was accepted on the 22nd of October 2024 in terms of Section 79 of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 – MPRDA, as amended). The proposed activities to be undertaken as part of the exploration activities include the following: • Identifying existing blowers within the ER, undertaking well workover and intervention if necessary; • The undertaking of new core exploration well drilling where necessary (at preidentified / new areas of interest); • Undertaking seismic survey and/or magnetotellurics survey activities (at preidentified / new areas of interest);

	• Clearance of an area of 300m^2 or more of indigenous vegetation within specified geographical area; • Clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation; and • Perform gas composition analysis on gas from existing boreholes and newly drilled wells on the ER.		
Project Aspects:	Details (provide specifications)	Location (DD MM SS)	
		Latitude	Longitude
1. Target Area	Target Site 1: RSB D – 500m Buffer Drilling Area	28°10'2.21"S	26°58'26.26"E
2. Target Area	Target Site 2: RSB E – 500m Buffer Drilling Area	28° 9'26.86"S	26°58'52.57"E
3. Target Area	Target Site 3: ED G – 500m Buffer Drilling Area	28° 1'14.61"S	26°53'39.39"E
4. Target Area	Target Site 4: ED H – 500m Buffer Drilling Area	27°59'22.60"S	26°52'25.84"E
5. Target Area	Target Site 5: ED J – 500m Buffer Drilling Area	27°58'51.58"S	26°51'15.72"E
6. Target Area	Target Site 6: ED I – 500m Buffer Drilling Area	27°58'25.06"S	26°52'51.95"E
7. Target Area	Target Site 7: ED F – 500m Buffer Drilling Area	27°58'52.58"S	26°53'53.88"E
8. Target Area	Target Site 8: VEG A – 500m Buffer Drilling Area	27°58'0.25"S	26°56'39.30"E
9. Target Area	Target Site 9: HF C – 500m Buffer Drilling Area	27°59'16.03"S	27° 7'1.82"E
10. Target Area	Target Site 10: GP B – 500m Buffer Drilling Area	27°52'38.16"S	26°58'50.81"E
11. Target Area	Target Site 11: GP A – 500m Buffer Drilling Area	27°49'32.99"S	26°58'17.68"E
12. Seismic Transect	Seismic Transects / Magnetotellurics 50m Survey Areas: 16 different transects approximately 100km long combined.	Various	Various
13. Exploration Area	Motuoane Exploration Right 386 Area – overall ER Footprint. Approximately 58 000 hectares (ha) / 580km^2 covering various farms.	Various	Various
2. Site Layout Plan			



3. Site Locality

The project area falls within the Matjhabeng and Moqhaka Local Municipalities, Lejweleputswa and Fezile Dabi District Municipalities. It is 6km east of southern Virginia (Meloding), 7km east of central Virginia, 1.5km northeast of northern Virginia (Saaiplaas), 6.5km east of central Welkom, adjacent to west Welkom (Thabong); 1km southeast of Riebeeckstad and adjacent to Hennenman.

4. DFFE Screening Tool Assessment

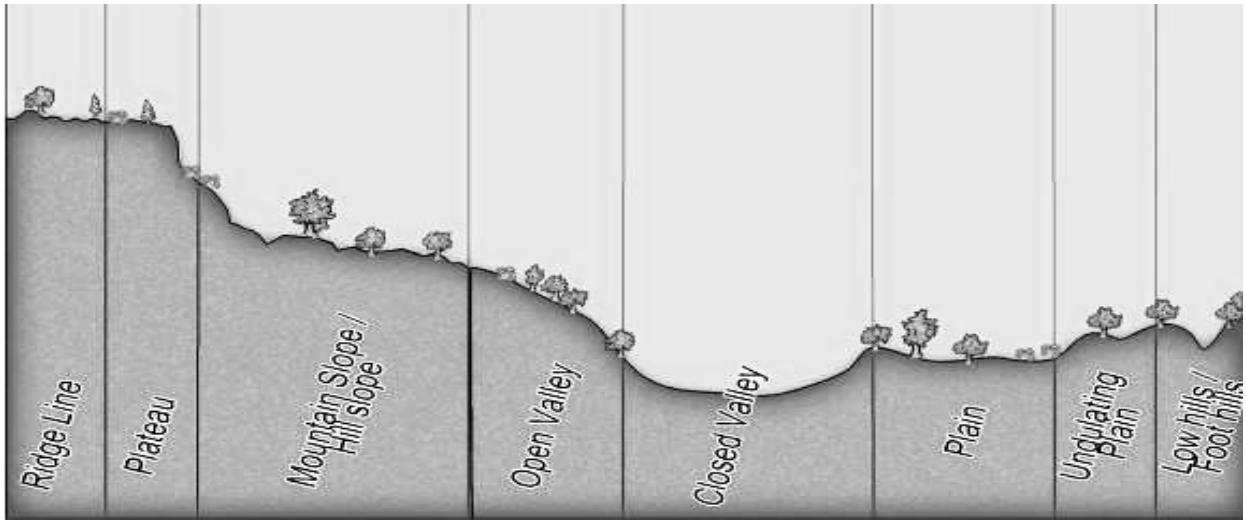
Aspect	Very High	High	Medium	Low
Agriculture Theme	☒	☐	☐	☐
Animal species Theme	☐	☒	☐	☐
Aquatic Biodiversity Theme	☒	☐	☐	☐
Archaeological and Cultural Heritage	☒	☐	☐	☐
Civil Aviation Theme	☐	☒	☐	☐

Defence Theme	☐	☐	☐	☒
Palaeontology Theme	☒	☐	☐	☐
Plant Species Theme	☐	☐	☐	☒
Terrestrial Biodiversity Theme	☒	☐	☐	☐

5. Site Assessment

5.1 Gradient (indicate the general gradient characteristics of site)

Aspect



Target Areas	☐	☐	☐	☐	☒	☒	☒	☒

5.2 Is the site located on or in the immediate vicinity of any of the following:

	Yes	No	Comment
Erosion Channels or areas of severe erosion/ destabilized soils	☒	☐	Within the southern section, Target Areas 1 and 2 (RBS B and RSB E) as well as Target Areas 10 (GP B) and 11 (GP A), erosion gullies observed with steep, carved and eroded banks as well as within. Moreover, within the ER there are existing gravel and surfaced roads which have been minimally to severely deteriorated by erosion.
Rivers (within 100m)	☒	☐	There are several natural and artificial watercourses within the ER some of which flow within 100m of the Target Areas and/or Seismic Transects. The Sandspruit is located within 100m of Target Area 2 (RSB E) and associated

			Transects RSB 1 and 2. The Rietspruit flows across southwestern section of ER. Kromspruit flows immediately to the north of Target Area 9 (HF C). Although Target Area 9 is closer to Kromspruit, its associated Transects (HF 1, HF2 and H7) actually intersect Rietspruit and not Kromspruit.
Wetlands (within 32m)	☒	☐	There are several natural and artificial wetlands within the ER some of which flow within 32m of the Target Areas and/or Seismic Transects. Based on currently available information and site verification, Target Areas 2 (RSB E), 5 (ED J), 6 (ED I), 10 (GP B), and 11 (GP A) and associated Transects (RSB1, RSB2, ED1, ED3, ED4, ED5, VEG2, HF1, HF2, HF7, G1, G2 and G3) are located within 32 of National Freshwater Ecosystem Priority Areas (NFEPA) wetlands.
Unstable slopes or geological features (rocky outcrops)	☐	☒	There are no unstable slopes or geological features or evidence of rocky outcrops within the exploration right area. However, rocky riverbed areas were noted along the watercourse within the proposed area.
Bare areas	☒	☐	Several bare areas around ER were noticed along gravel roads, disturbed areas due to agricultural activities and fire break zones around farms.
Other Sensitive or risk areas?	☒	☐	Based on the DFFE Screening Report, there two Grade II and/or Grade III Heritage sites within the ER and three Grade II and/or Grade III heritage feature buffer areas which overlap into the ER. There were two cemeteries (Phumulani and Thabong Cemeteries) noted on the far eastern section of the ER, 3km north of Target Area 3 (ED G). There were no heritage features noted along the Target Areas and/or Seismic Transects, although not the entire assessment footprints were traversed by the EAP. The Archaeologist has preliminary identified several heritage features within the ER and some, within the Target Areas and/or Seismic Transects. Detailed findings and implications will be provided in the EIA Phase. Although the DFFE Screening Report indicates no

			potential sensitive fauna and avifauna (amphibian and birds) species within the ER, there are possibly potential species of conservation concern (SCC) which may occur in the area. A terrestrial ecologist will undertake such an assessment and the findings be presented in the EIA Report.
Are any existing servitudes and structures directly or indirectly affected by the proposed sites and routes (e.g. Eskom, public road servitudes and restrictions- 60m from National Road, farmer's water/irrigation supplies, etc.)?	☒	☐	There are Eskom powerlines, substations (i.e. Everest Substation, Sedibeng Water Brabant Substation, etc.), national and regional roads (i.e., N1, R34, R70, R73), gravel roads and farmers water supply (canal in the southern section) within the ER.

5.3 Vegetation

Which of the listed descriptions best describes the general groundcover on and around the site?

Natural veld - good condition ☒	Natural veld with scattered aliens ☒	Natural veld with heavy alien infestation ☐	Veld dominated by alien species ☐	Gardens ☐
Sport field ☐	Cultivated land ☒	Paved surface ☐	Building or other structure ☒	Bare soil ☒

Comments on vegetation composition:	Site is mostly grassland with scattered areas that are disturbed and degraded due to anthropogenic activities, such as clearing of vegetation, presence of alien and invasive plant species, and fragmentation due to the presence of the infrastructure such as the existing boreholes. The ER area is largely cultivated land, there are areas with intact vegetation while in some areas evidence of alien species is notable.
Comments on weed species/type	It appears that an amount of scattered alien and invasive plant species is present within the ER. The exact type and species will be confirmed during the EIA Phase by the relevant specialist study.

5.4 Land cover/ use description: Describe the land uses on the site

The study area can be subdivided into four sections namely, the northern section, southern section, western section, and the eastern section (refer to **Figure 1** for the site locality).

- The study area can be subdivided into four sections namely, the northern section, southern section, western section, and the eastern section (refer to Figure 1 for the site locality). The northern section is closer to the R34 and located between Odendaalsrus and Kroonstad. There are currently two target areas proposed within this section namely, Target Area 10 (GP B) and Target Area 11 (GP A) and three seismic transect (Transect G1, G2 and G3). This section consists almost entirely of cultivated land with several natural and artificial watercourses.

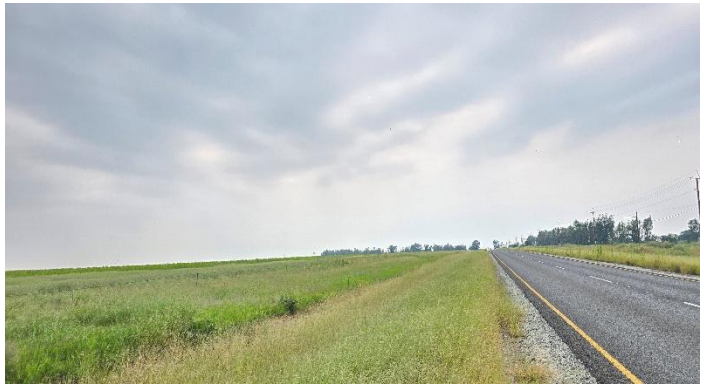
- The eastern section is located immediately north of Ventersburg and bounded by the N1 and Phomolong. This section is primarily dominated by cultivated land, open areas and minor game farms. There are distinctive watercourses within this area including the Kromspruit which is immediately to the north of the sole proposed drilling site, Target Area 9 (HF C) 500m assessment area within this section. There are three proposed transects within this section, namely, Transect HF1, HF2 and HF7. Which intersect the Kromspruit, Rietspruit and Slootspruit.

	• The tip of the southern section is approximately 8.5km south of southern Virginia (Meloding) while the two target areas, Target Area 1 (RSB D) and Target Area 2 (RSB E) are approximately 7km east of southern Virginia. The R73 cuts across this section. Similarly to the northern and eastern sections, the southern section is primarily dominated by cultivated land, open areas and minor game farms, several natural and artificial watercourses. Although there are two target areas within this section, two of the three seismic transects intersect the Sandrivier. There is also a canal that separated the two target areas. • The western section is the section where majority of the exploration activities are being proposed. This section is within a mining area and adjacent to mining towns. The edges of the residential areas of Saaiplaas, Bronville and Thabong form part of the western boundary of this section and ER386. There are six target areas Target Area 3 (ED G), Target Area 4 (ED H), Target Area 5 (ED J), Target Area 6 (ED I), Target Area 7 (ED F) and Target Area 8 (VEG A) as well as seven (7) seismic transects (Transects ED 1-5, VEG 1-2). Although this section also consists largely of cultivated land, open areas and minor game farms, several natural and artificial watercourses, it is the most transformed section within the ER comprising of mining activities, residential areas, road and electrical infrastructure.

5.5 Site Photos

		
Description	Northward's view from the centre point of Target Area 2 (RSB E) of the southern section. The area consists of a mixture of low-lying grassland with shrubs and areas of thick vegetation supporting the various game in the area. The area is accessed from a gravel going over a canal and an unknown spruit and channelled valley bottom wetland connecting to the Sandrivier.	A view of the Sandrivier at a meandering and escarpment section north of Target Area 1 and 2 and where the Transect RSB 1 ends. The area appears relatively intact.
		
Description	Southern view of the southern section showing thick intact vegetation.	Eastern view of the southern section showing a canal supporting the agricultural activities and low laying grasslands and shrubs within agricultural activities further east.

		
Description	Southern view from the western section showing low-lying disturbed grassland with sparsely distributed shrubs.	Northern view from the western section showing low-lying disturbed grassland with sparsely distributed shrubs. Thabong residential area and Doringpan can be seen further north.
		
Description	Eastern view of the western section showing a surfaced road connecting Thabong residential area and Harmony mines (Masimong Shaft). Uniform vegetation of low-lying grass and sparsely distributed shrubs can be seen.	Western view of the western section showing uniform vegetation of low-lying grass and sparsely distributed shrubs and Thabong residential area.

		
Description	A view of some of the activities (mining) located within the western section.	A large wetland located on the western edge of the western section.
		
Description	A view of some of the activities (grazing) located within the western section.	A view of some of the activities (corn farming) located within the eastern section along the N1.

		
Description	Closeup view of the general conditions in most of the target areas showing the gravel access road and low-lying to thick vegetation with some alien species.	One of the wetlands noted within the ER, noted within 40m from Target Area 6 (ED I).
		
Description	Northern view from the central area of the ER (closer to Target Area 8 / VEG A) showing low-lying grass within thick vegetation (further north) as some of the game within the area.	The eastern section consists primarily of agricultural and grazing activities. Small dairy farming activities were noted close to Target Area 9 (HF C).

		
Description	Eastern view from the northern section showing the grass and alien species along a farm boundary and agricultural activities within the farm. Target Area 10 (GP B) is within the farm which is entirely used for soyabeans farming.	Although the main land use of the northern section is cultivated land and grazing, there are some open spaces within medium-thick vegetation consisting of various floral species.
		
Description	Some of the infrastructure within the ER include surfaced and gravel roads. The conditions of the roads vary from good, maintained roads (left) to roads which have been severely deteriorated roads in poor condition (right).	

		
Description	A railway line which appears to be still operational was noted in the western section.	Eskom infrastructure including high voltage powerlines were also noted in the western section of the ER.

6. Verification findings and motivation:

Assessment for specialist studies and motivation:				
Screening Tool Specialist Study Required:	Level of Sensitivity:	Suggested Sensitivity:	Required level of Assessment	Motivation
Agriculture Impact Assessment	Very High	Medium	Compliance Statement	There are numerous agricultural activities within the application area with various agricultural activities being undertake especially in the southern, eastern and northern sections. However, the proposed exploration activities are limited to a maximum footprint of 50m x 50m drill pad and 10m wide transects which will have an acceptable overall impact on the soils and agricultural potential. In addition, post exploration, the disturbed areas will be rehabilitated and will have a final blower (gas emitting well) footprint of 2m x 2m.
Archaeological and Cultural Heritage Impact Assessment	Very High	High	Full Study	There are known heritage features including cemeteries and graves with potential HIGH local heritage significance based on the Relative Archaeological and Cultural Heritage sensitivity of the area and previous heritage studies in the region. Therefore, a Heritage Impact Assessment (HIA) is recommended by the EAP to identify the heritage features and provide mitigation measures (if any).
Palaeontology Impact Assessment	Very High	Medium	Full Study	Although no fossiliferous outcrop were noted within the current proposed target areas, due to the extent of the development footprint and the very high palaeo-sensitivity rating, it is consequently the EAPs recommendation that a Palaeontological Assessment be undertaken for the project in line with the requirements of the protocols that a Compliance Statement as a minimum be undertaken to verify the palaeontological sensitivity of the area.
Terrestrial Biodiversity Impact Assessment	Very High	High	Full Study	The National Web-Based Screening Tool Report found that the Relative Terrestrial Biodiversity Impact Assessment Theme Sensitivity is Very High-Sensitive. Based on known occurrence of sensitive terrestrial biodiversity ecosystems from the previous studies undertaken in region (ER 315), the EAP recommended that a Terrestrial Biodiversity Impact Assessment be undertaken to confirm presence of Flora or Fauna, Avifauna, SCC, or protected species

				within the development site, verify site terrestrial biodiversity sensitivity and provide necessary mitigation measures.
Aquatic Biodiversity Impact Assessment	Very High	High	Full Study	Some Target Areas and Transects were noted to be within / transecting or located within close proximity of watercourses and wetlands from desktop studies and site sensitivity verification. Based on potential impacts on surface and groundwater through the establishment of exploration boreholes and new seismic transects, the EAP recommends that an Aquatic Biodiversity Assessment be undertaken.
Civil Aviation Theme	High	Low	None	The proposed project which entails the establishment of up to eleven (11) new exploration boreholes and ~100km seismic transects do not reflect light which may have an impact on civil aviation. The proposed activities do not interfere with surface and air transmission and therefore, no anticipated impacts on civil aviation emanating from the project. The proposed development does not entail the establishment of high-rise structures, use of aboveground high frequency electromagnetic radiation nor reflecting infrastructure. In addition, the area has low air traffic. Therefore, the proposed activities are assessed to have a low impact on Civil Aviation and no study is required.
Defence Theme	Low	Low	None	There are no known military bases / facilities present within the vicinity of the project site. The nearest defence facility is the military base in Kroonstad, approximately 30 km northeast of the site and there are no anticipated impacts on defence theme emanating from the proposed activities.
Plant Species Assessment	Low	High	Full Study	Sections of intact vegetation were noted in the area. Plant species assessment is therefore required. This will be covered by the terrestrial biodiversity assessment.
Animal Species Assessment	High	High	Full Study	Sections of intact vegetation, potential habitats of fauna species were noted in the area. Several fauna species were also noted during the site assessment. Therefore. animal species assessment is required. This will be covered by the terrestrial biodiversity assessment
Guidance notes:				

- *An applicant intending to undertake an activity identified in the scope of this protocol, on a site identified by the screening tool as being of "very high" or "high" sensitivity for terrestrial animal species must submit a Terrestrial Animal Species Specialist Assessment Report.*
- *An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "medium sensitivity" for terrestrial animal species must submit either a Terrestrial Animal Species Specialist Assessment Report or a Terrestrial Animal Species Compliance Statement, depending on the outcome of a site inspection undertaken in accordance with paragraph 4.*
- *An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of "low" sensitivity for terrestrial animal species must submit a Terrestrial Animal Species Compliance Statement.*
- *Where the information gathered from the site sensitivity verification differs from the screening tool designation of "very high" or "high", for terrestrial animal species sensitivity and it is found to be of a "low" sensitivity, then a Terrestrial Animal Species Compliance Statement must be submitted.*
- *Where the information gathered from the site sensitivity verification differs from the screening tool designation of "low" terrestrial animal species sensitivity and it is found to be of a "very high" or "high" terrestrial animal species sensitivity, a Terrestrial Animal Species Specialist Assessment must be conducted.*
- *If any part of the development falls within an area of confirmed "very high" or "high" sensitivity, the assessment and reporting requirements prescribed for the "very high" or "high" sensitivity, apply to the entire development footprint. Development footprint in the context of this protocol means, the area on which the proposed development will take place and includes the area that will be disturbed or impacted*.