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# **AQUATIC BIODIVERSITY COMPLIANCE STATEMENT ASSOCIATED WITH THE SARAO KLEREFONTEIN SUPPORT BASE IN THE NORTHERN CAPE**

**Version – final**

**May 2023**

**GCS Project Number: 22-1156**

**Client Reference:**





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WITH THE SARAO KLEREFONTEIN SUPPORT BASE IN THE NORTHERN  
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	<b>Name</b>	<b>Signature</b>	<b>Date</b>
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## SPECIALIST DECLARATION

I, Magnus van Rooyen, in my capacity as a specialist consultant, hereby declare that I –  
Act as an independent consultant;

Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act (Act No. 107 of 1998);

Have and will not have vested interest in the proposed activity proceeding;

Have no, and will not engage in, conflicting interests in the undertaking of the activity;

Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act (Act No. 107 of 1998);

As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;

Based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability; and

Reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field.



Magnus van Rooyen (Pr.Sci.Nat)  
SACNASP reg. no. 400335/11

May 2023  
Date

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# **AQUATIC BIODIVERSITY COMPLIANCE STATEMENT ASSOCIATED WITH THE SARAO KLEREFONTEIN SUPPORT BASE IN THE NORTHERN CAPE**

## **1 INTRODUCTION**

GCS Water and Environment (Pty) Ltd has been appointed by Delta Build Environment Consultants (Pty) Ltd DeltaBec, on behalf of the South African Radio Astronomy Observatory (SARAO), as national facility of the National Research Foundation (NRF), to compile an Aquatic Compliance Statement for the Klerefontein Karoo Support Base site near Carnarvon in the Northern Cape Province.

## **2 PROJECT BACKGROUND**

### **2.1 Location and extent**

The Klerefontein Support Base is located approximately 14km to the west of the town of Carnarvon in the Kareeberg Municipality in the Northern Cape Province. The location of the support base is provided in Figure 2-2. The extend of the Klerefontein Support Base is approximately 8.5ha and is indicated in Figure 2-3.

### **2.2 Project description**

The SKA1-MID Engineering Operations Centre (EOC) will be an expansion of the current infrastructure on site where the current workshops will be expanded as a singular building to incorporate:

- New office space
- Additional workshops
- Expansion of generator facilities and diesel storage

There is also a second building on site which is the old farmhouse which will remain unaltered as it is more than 60 years old and is therefore protected by the National Heritage Resources Act (Act 25 of 1995).

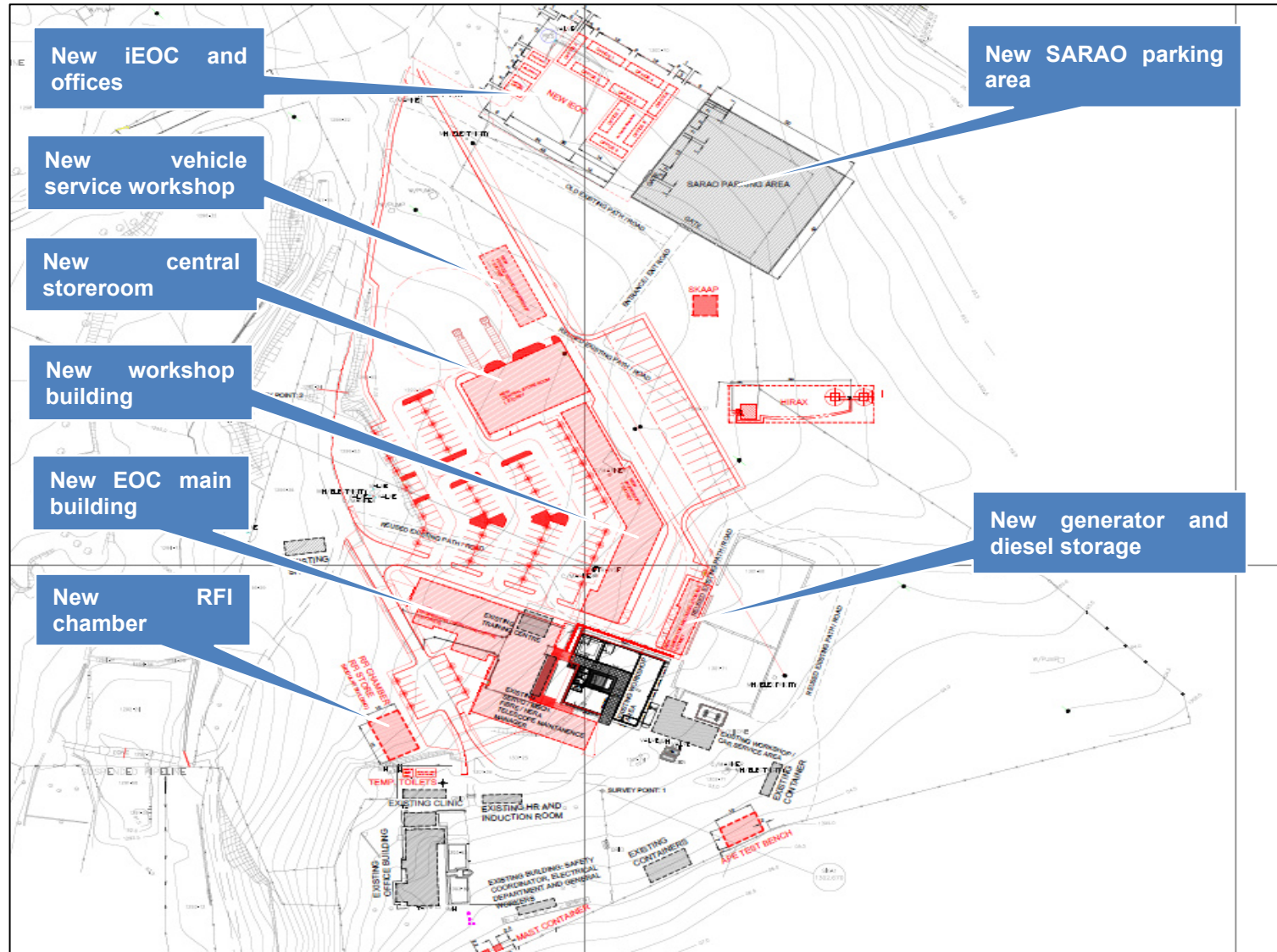


Figure 2-1: Layout of the SARAO Klerefontein Support Base infrastructure

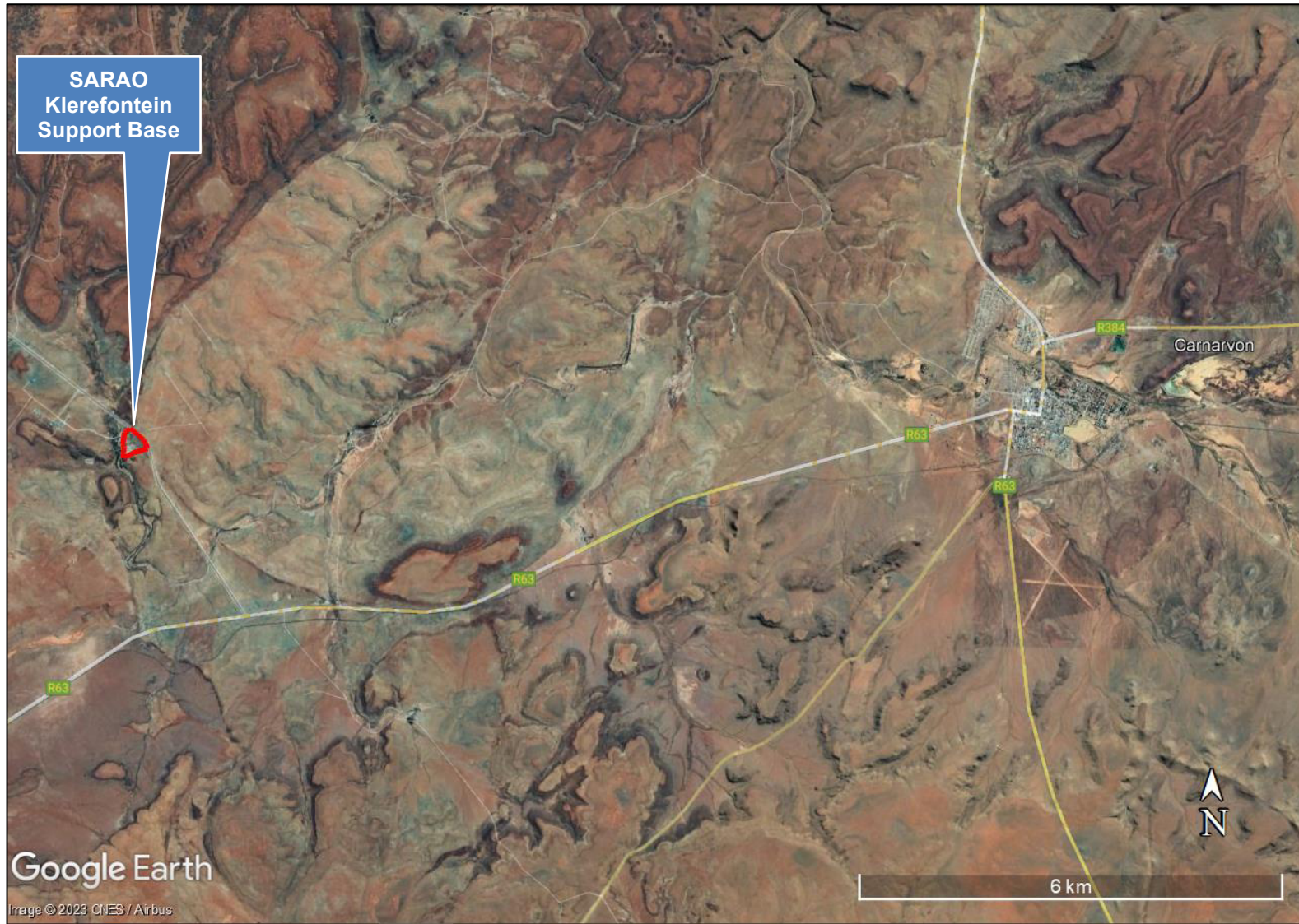


Figure 2-2: Location of the SARAO Klerefontein Support Base





Figure 2-3: Extent of the site associated with the SARAO Klerefontein Support Base

### 3 ASSUMPTIONS AND KNOWLEDGE GAPS

The following are assumptions made in the completion of the report:

- The assessment of the potential aquatic biodiversity on the study site is based on several site visits, the last of which was conducted on 7 and 8 October 2021. Further site photographs and updates were provided by the client's representative on site.
- The following standardised and accepted methods to determine the various aspects of the study were used:
  - Electronic aquatic biodiversity related databases managed by the South African National Biodiversity Institute (SANBI);
  - Virtual aquatic feature databases;
  - Available provincial electronic biodiversity databases;
  - South African Bird Atlas 2; and
  - Information from the Virtual Museum managed by the Percy Fitzpatrick Institute.

### 4 SCOPE OF WORK

This report will be submitted in support of the Application for Environmental Authorisation in accordance with the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended and the Water Use Licence Application in accordance with the National Water Act (Act No. 36 of 1998). The report will make provision for the requirements of these to regulatory processes.

The results from the Department of Forestry, Fisheries and Environment's (DFFE) online Screening Tool as it relates to the aquatic biodiversity on the study site are provided in the table below.

**Table 4-1: Result of the DFFE online Screening Tool**

Theme	Very high sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Aquatic theme		X		X

The full screening assessment is attached in Appendix B.

From the above, it is clear that the Aquatic Biodiversity Theme is classified as "low".

As such, the protocol requires the completion of a Site Sensitivity Verification before conducting a specialist assessment. The minimum requirements associated with the Site Sensitivity Verification is as follows:

1. The Site Sensitivity Verification must be undertaken by a specialist.
2. 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.
3. The outcome of the site sensitivity verification must be recorded in the form of a report that:
- a) confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool;
  - b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and
  - c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

To this end, the first step in the Scope of Works is to complete the Site Sensitivity Verification. The outcome of this verification will guide the next step in the assessment process.

## **5 SITE SENSITIVITY VERIFICATION**

The Site Sensitivity Verification was initiated by conducting a desktop assessment of the proposed development site. The desktop assessment made use of the following available information:

- Information contained in the DFFE Screening Tool Report;
- Current and historical aerial imagery of the area;
- Aquatic biodiversity databases available on the SANBI Website;
- 1 in 50 000 topographical map sheet for the area;
- Recent aerial imagery for the site; and
- Information from the Virtual Museum managed by the Percy Fitzpatrick Institute.

Various site assessments associated with the development of the study site was conducted by Mr Magnus van Rooyen of GCS Water and Environment (Pty) Ltd. The seasonality of these site visits is not considered to be a limitation of the findings of the site verification assessment. The site assessment consisted of a site walkover to identify any possible aquatic biodiversity features that require investigation and assessment. The assessment also had as a goal to verify the information findings of the desktop assessment.

The following findings were made during the Site Sensitivity Verification.

## 6 DESKTOP FINDINGS

### 6.1 Department of Forestry, Fisheries and Environment online Screening Tool

The **DFFE online Screening Tool** has indicated that the aquatic them in the tool is rated as “low”. The protocol requires the completion of a Site Sensitivity Verification to confirm this rating before proceeding with any further assessment. The information from the screening tool for each of these themes are provided in the table below.

**Table 6-1: Sensitivity features identified for the animal and vegetation themes**

Sensitivity theme	Feature	Sensitivity
Aquatic biodiversity theme	No sensitive features	Low

### 6.2 Hydrological setting

The results of the desktop assessment of the hydrological characteristics of the study site is provided in the table below.

**Table 6-2: Desktop hydrological characteristics of the study site**

Hydrological characteristic	Result	Comment
Water management area	Orange River	
Primary catchment	Primary region D	
Tertiary catchment	D54	No NFEPA rivers occur on the project site.
D54B	U70E	The catchment drains in an easterly direction towards the Atlantic Ocean.

### 6.3 National Freshwater Ecosystem Priority Areas (NFEPA)(2014):

The National Freshwater Ecosystem Priority Areas (NFEPA) project provides strategic spatial priorities for conserving South Africa’s freshwater ecosystems and supports sustainable use of water resources. There priority areas are called Freshwater Ecosystem Priority Areas, or “FEPAs”. The FEPAs were identified based on:

- Representation of ecosystem types and flagship free-flowing rivers;
- Maintenance of water supply areas in areas with high water yield;
- Identification of connected ecosystems;
- Representation of threatened and near-threatened fish species associated with migration corridors;
- Preferential identification of FEPAs that overlapped with:
  - Any free-flowing river;

- Priority estuaries identified in the National Biodiversity Assessment (2011); and
- Existing protected area and focus area for protected area expansion identified in the National Protected Area Expansion Strategy.

Based on the above criteria, the database has identified no rivers within the project site that meet these criteria. The database further identified no wetland features within the project area.

#### **6.4 South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (2018)**

A South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was established during the National Biodiversity Assessment of 2018 (NBA 2018). The SAIIAE offers a collection of data layers pertaining to ecosystem types and pressures for both rivers and inland wetlands.

The SAIIAE builds on previous efforts while also introducing improvements and several new elements. An inventory of inland aquatic ecosystems responds to a multi-stakeholder need for the planning, conservation and management of these systems, as mandated by a number of Legislative Acts, including the South African National Water Act (NWA) and the National Environmental Management: Biodiversity Act (NEMBA).

Similar to the findings of the NFEPA Database, no wetland features for the project site is included in this database.

#### **6.5 Surveyor General 1 in 50 000 topographical map sheet (3021DD)**

The assessment of the Surveyor General 1 in 50 000 topographical map sheet (3021DD) for the project site indicated the presence of a number of drainage lines located to the west of the project site that are small seasonal tributaries of the Die Leegte River. This watercourse passes the project site to the west and drains in a southerly direction in the vicinity of the site. No part of this watercourse is located on the project site.



**Figure 6-1: Watercourses as per the 1 in 50 000 topographical map sheet 3021DD**

### **6.6 Historical aerial imagery from the Surveyor General's Office**

Dated aerial imagery of the site (1967 to 2021) shows the presence of disturbances on the site. These disturbances are directly associated with the presence of a farmstead on the property. The farmstead makes provision for a farmhouse, storage areas, workshops, parking areas, livestock pens, access road, pasture, etc.



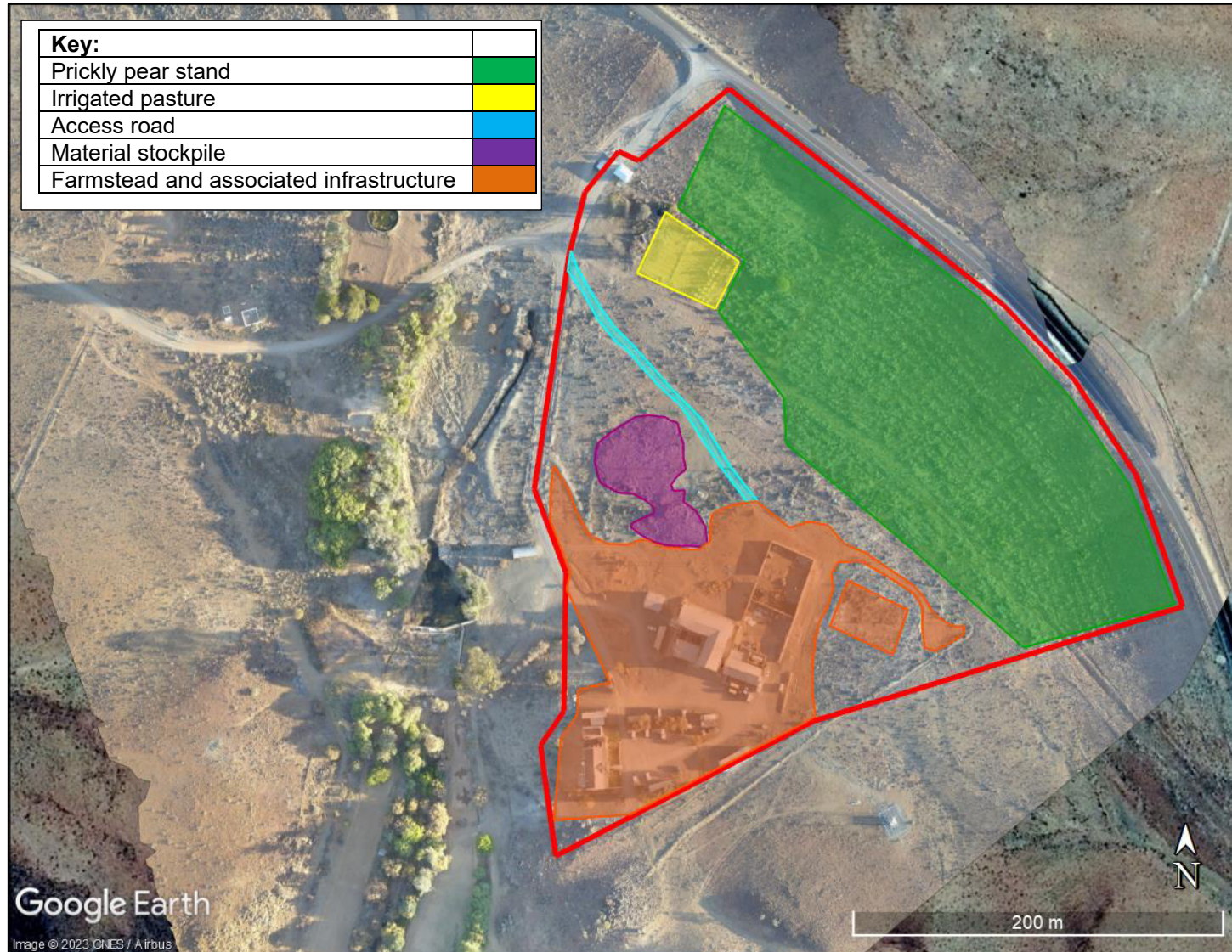
**Figure 6-2: Dated aerial image, 1967, showing the presence of a farmstead on the study site**



**Figure 6-3: Dated aerial image, 2021, showing the presence of a farmstead on the study site**

The disturbance of the area has continued from before 1967 all the way to the present date. The most recent aerial image of the site taken in 2021, see Figure 6-4, shows the location and extent of the disturbances on the study site. The total extent of the disturbed areas is approximately 5.8ha and is made up of the following, Prickly Pear stand (3.3ha), access road (.01ha), farmstead and associated infrastructure (2ha), material stockpile (0.25ha) and irrigated pasture (0.15ha).





**Figure 6-4:** Location and extent of the current disturbed areas within the study site

## 7 METHODOLOGY

The methodology that was followed in completing this study is in line with the requirements and specifications of the Department of Water and Sanitation and includes the following aspects.

### 7.1 Wetland Identification and Mapping

The initial wetland identification process was conducted at a desktop level during which available GIS databases were interrogated to determine the presence of any wetland and watercourse areas that have been determined in the past. The key database that was interrogated was the National Freshwater Ecosystem Priority Area (NFEPA) as managed and updated by the South African National Biodiversity Institute (SANBI).

In addition to the database interrogation, the most recent Google Earth and Zoom Earth Imagery of the site was considered to see if any wetland areas or “anomalies” within the site are visible.

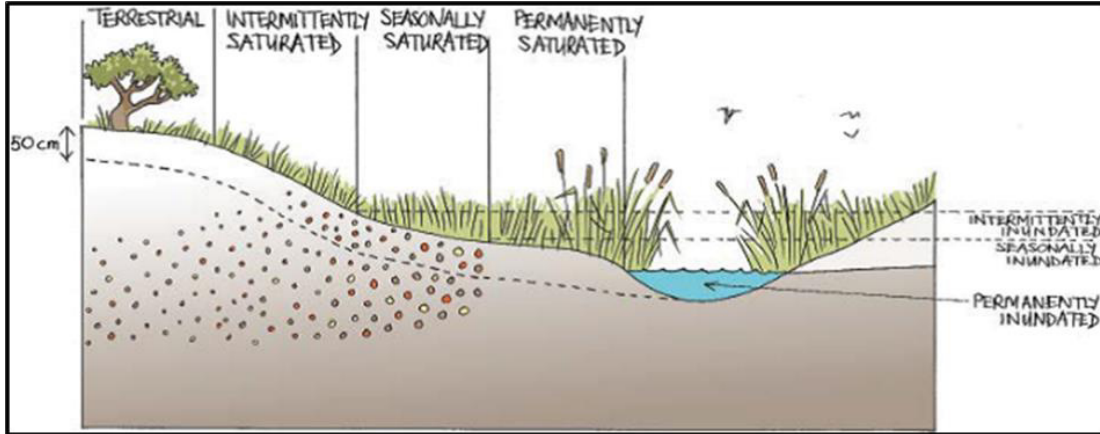
Following the desktop assessment of the site, a site visit was conducted on 7 and 8 October 2021. During the site visit, the potential aquatic features identified through the desktop assessment were verified and any other aquatic features were identified and their boundaries accurately delineated.

### 7.2 Wetland Delineation

The delineation of these wetlands areas was conducted in accordance with the Department of Human Settlement, Water and Sanitation document, “*A practical field procedure for identification and delineation of wetlands and riparian areas*” (2005).

This field guide makes use of several specific indicators which show the presence and the boundaries of wetlands. The presence of the following indicators was used during the identification and delineation of the site:

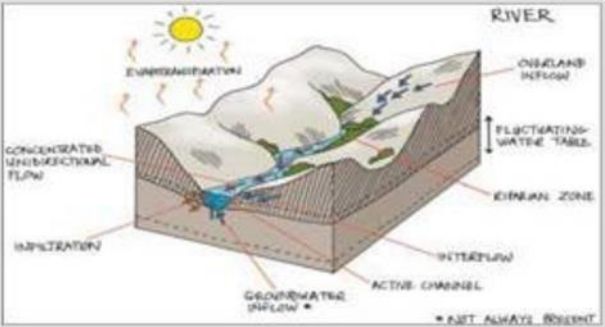
- **Terrain Unit Indicator** – Identification of the part of the landscape where wetlands are more likely to occur;
- **Soil Form Indicator** – Identification of the soil types which are associated with prolonged and frequent saturation;
- **Soil Wetness Indicator** – Identification of the morphological signatures that develop in soil profiles as a result of prolonged and frequent saturation; and
- **Vegetation Indicator** – Identification of the hydrophilic vegetation associated with frequently saturated soil.



**Figure 7-1: Cross section through a wetland, indicating the interaction between the soil wetness and vegetation**

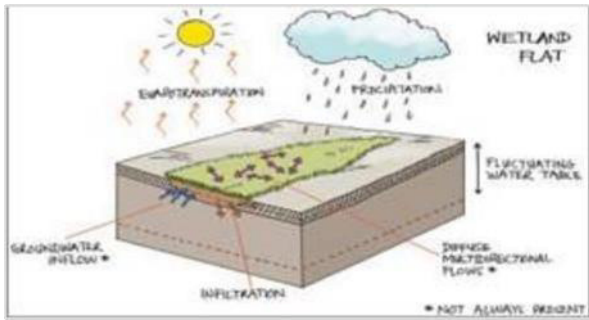
Following the identification of the wetland areas on the site, these are then classified into specific hydrogeomorphic (HGM) units according to the Classification System for Wetlands and other Aquatic Ecosystems in South Africa (inland systems) (Ollis et al., 2013).

**Table 7-1: Wetland hydrogeomorphic (HGM) types typically supporting inland wetlands in South Africa (Ollis et al., 2013)**

Hydrogeomorphic types	Description
<p data-bbox="252 1263 277 1323">River</p> 	<p>Rivers are linear landforms with clearly discernible banks and a channel, which permanently or periodically, carries a contained and defined flow of water. A river is taken to include both the active channel and the riparian zone.</p>

Hydrogeomorphic types		Description
Floodplain		<p>Valley bottom areas with a well-defined stream channel, gently sloped and characterised by floodplain features such as oxbow depressions and natural levees and the alluvial (by water) transport and deposition of sediment, usually leading to a net accumulation of sediment. Water inputs from main channel (when channel banks overspill) and from adjacent slopes.</p>
Valley bottom with channel		<p>Valley bottom areas with a well-defined stream channel but lacking characteristic floodplain features. May be gently sloped and characterised by the net accumulation of alluvial deposits or may have steeper slopes and be characterised by the net loss of sediment. Water inputs from main channel (when channel banks overspill) and from adjacent slopes.</p>
Valley bottom without a channel		<p>Valley bottom areas with no clearly defined stream channel, usually gently sloped and characterised by alluvial sediment deposition generally leading to a net accumulation of sediment. Water inputs mainly from channel entering the wetland and also from adjacent slopes.</p>

Hydrogeomorphic types		Description
Hillslope seepage linked to a stream channel		<p>Slopes on hillsides, which are characterised by the colluvial (transported by gravity) movement of materials. Water inputs are mainly sub-surface flow and outflow is usually via a well- defined stream channel connecting the area directly to a stream channel.</p>
Isolated Hillslope seepage		<p>Similar to other hillslope seeps but with no direct surface water connection to a stream channel. Slopes on hillsides, which are characterised by the colluvial (transported by gravity) movement of materials. Water inputs mainly from sub-surface flow and outflow primarily by diffuse sub-surface and/or limited surface flow.</p>
Depression (includes Pans)		<p>A basin shaped area with a closed elevation contour that allows for the accumulation of surface water (i.e. it is inward draining). It may also receive sub-surface water. An outlet is usually absent, and therefore this type is usually isolated from the stream channel network.</p>

Hydrogeomorphic types		Description
Wetland Flat	 <p>The diagram illustrates a cross-section of a wetland flat. It shows a flat surface with a fluctuating water table below it. Processes depicted include evapotranspiration (water vapor rising from the surface), precipitation (rain falling from a cloud), groundwater inflow (water entering from the left), infiltration (water seeping into the ground), and diffuse multidirectional flow (water moving in various directions within the ground). A note at the bottom right states '* NOT ALWAYS REIGNIT'.</p>	<p>A flat wetland with no apparent inlet or outlet points. Water is obtained from surface or near surface flows and is lost either by downward percolation or evapotranspiration. May be only seasonal in terms of its wetness and hydromorphic soils may be only weakly developed or else be absent. Vegetation may be the strongest indicator.</p>

### 7.3 Riparian Delineation

The delineation of the riparian areas was conducted in accordance with the Department of Human Settlement, Water and Sanitation document, “*A practical field procedure for identification and delineation of wetlands and riparian areas*” (2005).

Like wetlands, riparian areas have their own unique set of indicators. It is possible to delineate riparian areas by checking for the presence of these indicators. The riparian delineation process takes the following physical aspects into consideration:

- **Topography associated with the watercourse** – The topography is a good rough indicator of the outer edge of the riparian area as the riparian edge is the same as the edge of the macro channel bank;
- **Vegetation** – The delineation of riparian areas relies primarily on the vegetative indicators. Using vegetation, the outer boundary of a riparian area must be adjacent to a watercourse and can be defined as the zone where a distinctive change occurs:
  - In species composition relative to the adjacent terrestrial area; and
  - In the physical structure, such as vigour or robustness of growth forms of species similar to that of adjacent terrestrial areas. Growth form refers to the health, compactness, crowding, size, structure and/or numbers of individual plants.
- **Alluvial soils and deposited material** – Alluvial soils can be defined as relatively recent deposits of sand, mud, etc. set down by flowing water, especially in the valleys of large rivers. Riparian areas often, but not always, have alluvial soils.

## 7.4 Wetland Functional Assessment

Once the wetland areas had been identified and their boundaries determined, the assessment of the ecosystem services these wetland areas provide to the hydraulic system that they contribute to, as well as the immediate natural and social environment, was undertaken. An understanding of this functionality of the wetland contributes directly to the level of importance that is attributed to the specific wetland that is developed. The assessment was conducted by using a wetland modelling tool that forms part of the WET-Management Series (issued by the Water Research Commission), WET-EcoServices (Kotze *et al.* 2008).

The WET-EcoServices tool makes provision for the rapid assessment of the ecosystem services provided by a wetland and is designed for inland palustrine wetlands, i.e. marshes, floodplains, vleis and seeps. The process of applying the tool is based on the characterisation of hydrogeomorphic wetland types based on desktop and field assessment and observations of identified and delineated wetland areas. This model, furthermore, considers the biophysical and social conditions around a wetland and converts these considerations into a fixed score for a series of defined ecosystem services that the wetland delivers. The services include the following:

- Flood Attenuation
- Sediment trapping
- Nitrate Assimilation
- Erosion control
- Maintenance of biodiversity
- Provision of harvestable resources
- Cultural significance
- Education and research
- Streamflow regulation
- Phosphate assimilation
- Toxicant Assimilation
- Carbon storage (sequestration)
- Provision of water for human use
- Provision of cultivated food
- Tourism and recreation

The maximum score for any service is a value of 4 and the rating of the probable extent of the service is shown in the table below.

**Table 7-2: Ecoservices rating of the probable extent to which a benefit is being supplied**

Score	Rating of likely extent to which a benefit is being supplied
< 0.5	Low
0.6 - 1.2	Moderately Low
1.3 - 2.0	Intermediate
2.1 - 3.0	Moderately High
> 3.0	High

## 7.5 Determining the Present Ecological State of Wetlands

The determination of the present ecological state (PES) of wetlands was conducted by using a tool from the WET-Management Series (issued by the Water Research Commission), the WET-Health (Macfarlane et al. 2008).

This tool is designed to assess the health or integrity of a wetland. Wetland health is defined as a measure of the deviation of wetland structure and function from the wetland's natural reference condition. The tool therefore attempts to assess the hydrological, geomorphological and vegetation impacts that has been imparted on the wetland at the time of assessment.

The overall approach is to quantify the impacts of human activity or clearly visible impacts on wetland health, and then to convert the impact scores to a PES score. This takes the form of assessing the spatial extent of impact of individual activities/occurrences and then separately assessing the intensity of impact of each activity in the affected area. The extent and intensity are then combined to determine an overall magnitude of impact. The impact scores and Present State categories are provided in the tables below.

**Table 7-3: The magnitude of impacts on wetland functionality (Macfarlane et al, 2008)**

Impact Category	Description	Score
None	No Discernible modification or the modification is such that it has no impacts on the wetland integrity	0 to 0.9
Small	Although identifiable, the impact of this modification on the wetland integrity is small.	1.0 to 1.9
Moderate	The impact of this modification on the wetland integrity is clearly identifiable, but limited.	2.0 to 3.9
Large	The modification has a clearly detrimental impact on the wetland integrity. Approximately 50% of wetland integrity has been lost.	4.0 to 5.9
Serious	The modification has a highly detrimental effect on the wetland integrity. More than 50% of the wetland integrity has been lost.	6.0 to 7.9
Critical	The modification is so great that the ecosystem process of the wetland integrity is almost totally destroyed, and 80% or more of the integrity has been lost.	8.0 to 10

The level of impacts on these three parameters is a direct indication of the PES of the wetland as well as the functioning of the wetland. A wetland area that has undergone severe impacts on its hydrology, geomorphology or vegetation or a combination of all three will reflect a low present ecological state while the converse is also true for pristine wetlands. Since hydrology, geomorphology and vegetation are interlinked in the model, their scores are aggregated to obtain the overall PES health score using the formula:

$$\text{Health} = ((\text{Hydrology value} \times 3) + (\text{Geomorphology value} \times 2) + (\text{Vegetation value} \times 2))/7$$

Table 7-4: Definitions of the PES categories (Macfarlane et al, 2008)



Impact Category	Description	Impact Score Range	Present State Category
None	Unmodified, natural	0 to 0.9	A
Small	Largely Natural with few modifications. A slight change in ecosystem processes is discernible and a small loss of natural habitats and biota may have taken place.	1.0 to 1.9	B
Moderate	Moderately Modified. A moderate change in ecosystem processes and loss of natural habitats has taken place, but the natural habitat remains predominantly intact.	2.0 to 3.9	C
Large	Largely Modified. A large change in ecosystem processes and loss of natural habitat and biota has occurred.	4.0 to 5.9	D
Serious	Seriously Modified. The change in ecosystem processes and loss of natural habitat and biota is great, but some remaining natural habitat features are still recognizable.	6.0 to 7.9	E
Critical	Critical Modification. The modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8.0 to 10	F

## 7.6 Determining the Ecological Integrity of the Wetlands

The ecological integrity (EI) of a wetland is determined by combining the findings of the WET-EcoServices and WET-Health tool as both these tools provide considerations in this regard. For instance, a wetland that makes very little ecosystem services contribution to the hydraulic system that it is linked to and has a low PES score will consequently have a low ecological integrity. The converse is also therefore true for wetlands making a large ecological contribution to the hydraulic system it is linked to as well as a high PES score.

## 7.7 Determining the Ecological Importance and Sensitivity of Wetlands

The outcomes of the implementation of the WET-EcoServices tool discussed above, is key in the determination of the ecological importance and sensitivity of wetlands as the results is a direct indication of the contribution that the wetland is making to the hydraulic system with which it is linked. This contribution is linked to the sensitivity of this wetland to any possible change and how this will impact on the hydraulic system it is linked to.

## **7.8 Ecological Classification and Description**

The ecological classification and description are direct results of the implementation of the methodology and tools described above as the results of these determinations contribute to the understanding of the ecology of the wetland. The description of the wetland will therefore make provision for a description of the physical attributes of the wetland (location, size, etc.), the ecosystem services that the wetland provides, the current ecological state of the wetland and the importance of the wetland as well as its sensitivity.

## **8 SITE ASSESSMENT FINDINGS**

The site assessment has as a goal to verify the findings of the desktop assessment discussed above. The site assessment was conducted on 14 January 2021 and 7 and 8 October 2021. The site visits were therefore conducted in mid- and early summer. The seasonality of the assessment is not considered to compromise the findings of the assessment.

### **8.1 Watercourses**

The site assessment confirmed the presence of the watercourses indicated in the 1 in 50 000 topographical map sheet 3021DD (see Figure 6-1) and served to refine their extent further.

This was conducted by walking the ill-defined channels where they were visible and tracking the routes with a handheld GPS. This provided an exact indication of the location and extent of the watercourses that are present in the study area (see Figure 7-1).

With the exception of the Die Leegte River, all the watercourses within the study area are very small, seasonal and characterised by poorly defined channels. Water will flow in these watercourse channels for a very short period of time (5 – 10 days) and only after significant rainfall events. As such, no clear riparian vegetation is present along these channels as a result of the very limited periods of flow in the channels which prevents this vegetation from developing. The beds of the channels consist of sandy material with smaller rocks which have washed from the geology of the catchment.



**Figure 8-1: Location and extent of the watercourses within the project site**

The Present Ecological State of these watercourses could not be determined as there was no flow of water in the poorly defined channels. However, based on the impacts the small catchment that they occur in, they hydrological and geomorphological drivers were significantly affected which will translate to a Class E (seriously modified) classification.



**Plate 8-1: View of the poorly defined watercourse channel within the study site**



**Plate 8-2: View of the poorly defined watercourse channel within the study site**

## 8.2 Wetlands

No wetland features were identified within the project site.

## 9 OUTCOME OF THE SITE SENSITIVITY VERIFICATION

The outcome of the Site Sensitivity Verification has confirmed the low theme rating produced by the DFFE Screening Tool. This is based on the nature, size and impact of the watercourses/drainage lines that are present on the project site. The low rating is therefore supported.

## 10 COMPLIANCE STATEMENT

### 10.1 Background

As the Site Sensitivity Verification completed, above, has indicated that the “LOW” aquatic biodiversity theme is supported, a Compliance Statement will be completed, the contents of which is provided in the table below.

**Table 10-1: Minimum contents requirements of the Compliance Statement**

<b>Compliance statement requirement</b>	<b>Section of this report</b>
Contact details of the specialist, their SACNASP registration number, their field of expertise and curriculum vitae	Appendix A
A signed statement of independence by the specialist	Page ii
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment	Section 3
A baseline profile description of biodiversity and ecosystems of the site	Section 6 and 8
The methodology used to verify the sensitivities of the aquatic biodiversity features on the site including the equipment and modelling used where relevant	Section 7
Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr	Section 10
A description of the assumptions made as well as any uncertainties or gaps in knowledge or data	Section 3
Any conditions to which this statement is subjected	Section 10 and 11

### 10.2 Impact of the layout

The project layout makes provision for the construction to take place two separate by linked areas within the larger project site. The proposed layout is provided in Figure 10-1. The two construction areas make provision for the following infrastructure:

- New iEOC and SARAO Parking Area;
- New EOC and associated parking areas;
- New communication mast location,

- RFI Chamber; and
- HIRAX.



**Figure 10-1: Outline of the layout of the proposed Klerefontein Support Base and associated infrastructure**

Figure 10-2 provides an indication of how these two construction footprints will impact on the watercourse/drainage lines that were identified on the project site. As can be seen, the construction footprint that has been earmarked for the Engineering Operations Centre impacts on a the western most extent of the small seasonal watercourse with a poorly defined channel.

The Present Ecological State of this watercourse is believed to be serious modified as a result of modifications to its hydrological and geomorphological drivers in its catchment. As such, the diversion of flow in this watercourse can be diverted to make provision for the infrastructure. It is recommended that the diversion associated with the watercourse be incorporated in the stormwater management of the site. The impact of such a diversion will be negligible to the hydrology of the watercourse and the Die Leegte River further downstream.



**Figure 10-2: Construction footprints in relation to the identified watercourses**

### **10.3 Management, mitigation, and monitoring requirements**

The management and requirements that must be included in the Environmental Management Programme Report (EMPr) are provided in Table 10-2.



**Table 10-2: Management and mitigation requirements**

Impact	Management and mitigation measures
The increased runoff from the hard surfaces might result in increased levels of silt to be washed into the Die Leegte River.	<ol style="list-style-type: none"> <li>(1) The civil works associated with the earthworks must be prioritised for the dry season to limit the risk of runoff from these areas entering the river area.</li> <li>(2) A Stormwater Management Plan must be developed for the construction phase of the development that will ensure that the stormwater runoff into the river will not exceed the pre-development levels.</li> <li>(3) The Stormwater Management Plan must also make provision for the specification of measures to limit/capture silt moving into the river during rainfall events.</li> <li>(4) The areas to be cleared for construction must be limited as far as possible. Once the areas have been determined they must be clearly demarcated to ensure that no increase in construction footprints is allowed.</li> </ol>
Hydrocarbons are toxic to aquatic plants and animals and are readily spread by flowing water.	<ol style="list-style-type: none"> <li>(1) All plant and equipment that will be used in the construction activities must be inspected on a regular basis to ensure that any leaks are detected as soon as possible.</li> <li>(2) Any leaking plant and equipment must be removed from the construction site and only be allowed to return when the leaks have been addressed.</li> <li>(3) A Spill Contingency Plan must be in place for the duration of the construction phase that details the steps that needs to be taken if spills of various sizes are to occur.</li> <li>(4) No plant or equipment will be allowed to be parked within a 40m buffer from the delineated edge of the Die Leegte River riparian edge.</li> </ol>
Solid wastes can be unsightly and even dangerous. Uncured concrete is toxic to aquatic life.	<ol style="list-style-type: none"> <li>(1) Provision must be made for a Waste Management Strategy to be implemented during the construction phase of the development.</li> <li>(2) This strategy must make provision for the on-site collection of construction and domestic waste materials in designated containers (skips, etc.).</li> <li>(3) The collected waste must be disposed of at a Municipal Landfill Site.</li> <li>(4) If the design parameters allow, preference should be given to "pre-cast" components to be used. This will decrease the risk of contamination of the aquatic system by uncured concrete.</li> </ol>
The spilled goods could be toxic to aquatic life.	<ol style="list-style-type: none"> <li>(1) In the event that any hydrocarbon materials are to be stored within the site during the construction phase, provision must be made that the storage facility is fully bunded in a bund that has a volume of 110% of the total volume of hydrocarbons that are stored.</li> <li>(2) The bund must be provided with a closable drainage tap for use when fluid needs to be drained from the bund.</li> <li>(3) The hydrocarbon storage facility may not be located within the 40m buffer from the delineated riparian edge of the Die Leegte River.</li> <li>(4) A Spill Contingency Plan must be in place for the construction phase that details the management and mitigation actions that needs to be undertaken in the event of any spillages from the hydrocarbon storage facility.</li> </ol>
Spillage or leakage could impact on the water quality that moves through the Die Leegte River, which will negatively impact on the PES.	<ol style="list-style-type: none"> <li>(1) All portable ablution facilities that will be used on site must be located 40m away from the delineated riparian edge of the Die Leegte River.</li> <li>(2) The portable ablution facilities must be provided with sealed wells in which the sewage is collected.</li> <li>(3) The servicing of these portable ablution facilities must be conducted by a registered service provider who must dispose of the material at a Municipal facility.</li> <li>(4) A Spill Contingency Plan must be put in place to provide the appropriate management and mitigation measures to be implemented in the event of any spillages from these ablution facilities.</li> </ol>

Impact	Management and mitigation measures
Higher sediment loads could impact on the aquatic biota in the Die Leegte River which can further reduce the PES of these features.	<p>(1) If the construction plan allows, construction should be conducted during the dry season.</p> <p>(2) The construction footprint required for each of the construction footprints must be determined and clearly demarcated before construction can commence. This will limit the area of movement associated with the construction which will limit the impact on the riparian habitat which in turn will limit the risk of siltation from bare areas.</p>
The change to the hydrological characteristic of the catchment (more hard surfaces) could impact on the hydrological nature of the Die Leegte River which could impact on the PES of this aquatic feature. In addition, uncontrolled stormwater discharge into the river could lead to erosion and downstream siltation.	<p>(1) The stormwater outlet design of all the stormwater outlets must make provision for energy dissipation to ensure that the velocity of the discharge is controlled.</p> <p>(2) Provision must be made during the routine maintenance and management of the facility that these outlets be inspected for any blockages. If any blockages occur, these must be cleared.</p>

The following monitoring requirements must be put in place:

- Identify a surface water monitoring point in the Die Leegte River, upstream of the Klerefontein Support Base where bi-annual (twice a year) water samples can be taken. This point will be the control point. These samples must be collected bi-annually during the construction phase and annually (in the wet season) during the operational phase.
- Identify a surface water monitoring point on the Die Leegte River immediately downstream of the Klerefontein Support Base where bi-annual (twice a year) water samples can be collected. These samples must be collected bi-annually during the construction phase and annually (in the wet season) during the operational phase.
- These water samples must be analysed for key determinants which must include, total dissolves salts, petrochemical traces, N, P and K and *E. coli* levels.
- It is recommended that a biomonitoring event is scheduled for the Die Leegte River at points upstream and downstream of the Klerefontein Support Base. This biomonitoring events must take place during the wet season and must be conducted annually during the construction and operational phase until such time that the results show a stable trend. At this stage the sampling events can be discontinued.

## 11 CONCLUSIONS AND REASONED OPINION BY THE SPECIALIST

The DFFE Online Screening Tool has indicated that the aquatic biodiversity theme associated with the project site is rated as LOW. The finding of the Site Sensitivity Assessment has supported this rating. This is based on the nature and extent of the aquatic features on the project site and their seriously modified present ecological state.

The possible impacts to the aquatic biodiversity that may occur during the construction and operation of the Klerefontein Support Base can be managed and mitigated by the implementation of the measure provided above.

It is therefore the opinion of the specialist that there are no fatal flaws in terms of the aquatic biodiversity, associated with the implementation of SARAO Klerefontein Support Base and that the project should be authorised.

## 12 REFERENCES

BOON, R., 2010. Pooley's Trees of Eastern South Africa – A Complete Guide. Flora and Fauna Publication Trust.

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MUCINA, L. and RUTHERFORD, M.C. (eds.), 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia Publishers.

POOLEY, E., 2005. A Field Guide to Wild Flowers of KwaZulu-Natal and the Eastern Region. Natal Flora Publication Trust.

VAN OUDTSHOORN, F., 2006. Guide to grasses of Southern Africa. Briza Publications.

**APPENDIX A**  
**SPECIALIST CURRICULUM VITAE**



Magnus van Rooyen

## Technical Director - Environment

### CORE SKILLS

- Environmental Impact Assessment
- Specialist Ecological (Terrestrial and Aquatic) Assessment
- Environmental Screening Assessment
- Due Diligence Assessment and Feasibility Studies
- Mining Applications
- Environmental Management Programmes and Plans
- Strategic Environmental Assessments
- Wildlife Management Plans

### DETAILS

#### Qualifications

- MPil. Environmental Management
- BSc (Hon) Botany
- BSc (Botany and Zoology)
- Post Graduate Certificate in Education (Science and Biology)

#### Memberships

- South African Council for Natural Scientific Professions (Pr. Sci. Nat. 400335/11)
- International Association of Impact Assessors (Ref No. 1839)

#### Languages

- Afrikaans - fluent
- English - fluent
- German - fair
- Zulu - communication

#### Countries worked in:

South Africa, Namibia, Lesotho, Mozambique, Botswana, Guinea, Liberia, United States, United Kingdom

### PROFILE

Mr van Rooyen is currently a Technical Director – Environment and the Branch Manager of the KwaZulu-Natal Office of GCS in Durban.

In addition to holding a Masters degree in Environmental Management, he also holds a BSc degree in Botany and Zoology, an Honors degree in Botany and a Post Graduate Certificate in Education. He has in excess of 18 years' experience in the environmental consulting field through conducting and managing Environmental Impact Assessments, Specialist Terrestrial and Aquatic Ecology Assessments and Strategic Environmental Management inputs into various project feasibility studies.

Through these services, he has been exposed to projects in a range of sectors which include the general public infrastructure sector (national and provincial roads, harbour and rail developments, water (dams and supply) and wastewater (treatment works and reticulation), private infrastructure sector (small and large scale housing developments, lodges, private dams, etc.), agricultural sector (dams, establishment of orchards, plantations and feedlots), mining sector (coal mines, gold mine, manganese mines, aggregates and associated mining infrastructure) and the industrial sector (light and heavy industrial infrastructure development).

In addition, Mr van Rooyen has extensive experience in conducting specialist terrestrial and aquatic ecological assessments for various infrastructure (roads, dams, ports) and industrial (smelters, power plants) development projects in a number of diverse ecosystems across Africa. He has experience in the compilation of Resettlement Policy Framework Plans, Due Diligence Assessments and Feasibility Studies associated with infrastructure development projects. Mr van Rooyen has experience in working on various private and public sectors as well as rural and urban environments in various countries

## Previous Experience

Client	Project Description	Role/ Responsibility
Private client	<b>Wetland Assessment for the farm dam on the Farm Compentation near Matatiele</b> Undertaking of the wetland assessment for the development of an irrigation dam on the Farm Compensation near Matatiele in KwaZulu-Natal.	Wetland Specialist
Senekal Boerdersy	<b>Wetland and Biodiversity Assessment for the Mkuze Township Establsishment</b> Undertaking of the wetland and biodiversity assessment associated with the township establishment in the town of Mkuze, KwaZulu-Natal.	Wetland and Biodiversity Specialist
WSP Consulting	<b>Wetland Assessment associated with the establishment of a flood protection berm at the SAPPI Saiccor Mill</b> Undertaking of the wetland assessment for the construcion of a flood protection berm between the uMkomaas River and the SAPPI Saiccor Mill in KwaZulu-Natal.	Wetland Specialist
Transnet National Ports Authority	<b>Forest mapping within the Port of Richards Bay</b> Undertaking of the mapping and classification of all the indigenous forest areas within the Port of Richards Bay, KwaZulu-Natal.	Biodiverstiy Specialist
RHDHV	<b>KwaMathanya Water Supply Scheme Wetland Assessment</b> Undertaking of the wetland assessment of the KwaMathanya water supply scheme near town of Ixopo in KwaZulu-Natal.	Wetland Specialist
Private client	<b>Brownsdrift Hydropedological Assessment</b> Undertaking of the wetland and hydropedological assessment associated with the proposed residential developmnet on the site in Brownsdrift, eThekwini Municipality, KwaZulu-Natal.	Wetland Specialist
GreenScene Environmental	<b>Wetland and Biodiversity Assessment for a residential property in Pumula</b> Undertaking of the wetland and biodiversity assessment for the residential development on Lot 967 Pumula, KwaZulu-Natal.	Wetland and Biodiversity Specialist
GreenScene Environmental	<b>Wetland and Biodiversity Assessment for Lot 962 and 965 Port Edward</b> Undertaking of the wetland and biodiversity assessment for the residential development on Lot 962 and 965 Port Edward, KwaZulu-Natal.	Wetland and Biodiversity Specialist
Msunduzi Municipality	<b>Wetland and Biodiversity Assessment for various Military Veterans Housing sites within the Msduzi Municipality</b> Undertaking of the wetland and biodiversity assessment for the various sites earmarked for the establishment of residential houses for the Military Veterans in the Msunduzi Municipality, KwaZulu-Natal.	Wetland and Biodiversity Specialist
Private client	<b>Forest delineation of a private property in Munster</b> Undertaking of the delineation of the forest margins on the residential property in Munster, KwaZulu-Natal.	Biodiverstiy Specialist

## Previous Experience

JG Afrika (Pty) Ltd	<b>Gunyana Water Supply Scheme Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity assessment of the Gunyana community water supply scheme near town of Pomeroy in KwaZulu-Natal.	Wetland and Biodiversity Specialist
GreenScene Environmental	<b>Wetland and Vegetation Assessment associated with the construction of the Ingwebaba Pedestrian Bridge near Shelly Beach</b> Undertaking of the wetland and vegetation assessment for the construction of the Ingwebaba Pedestrian Bridge near Shelly Beach in KwaZulu-Natal.	Wetland and Biodiversity Specialist
Terratest (Pty) Ltd	<b>Wetland and Vegetation Assessment associated with the construction of the KwaHlokoheko Rural Water Supply Scheme near Eshowe</b> Undertaking of the wetland and biodiversity assessment of the KwaHlokoheko community water supply scheme near town of Eshowe in KwaZulu-Natal.	Wetland and Biodiversity Specialist
Coastal Macadamias	<b>Wetland Assessment associated with the development of an irrigation dam for Coastal Macadamias near Ramsgate</b> Undertaking of the wetland assessment for the development of an irrigation dam for the Coastal Macadamias property near Ramsgate, KwaZulu-Natal.	Wetland Specialist
South African National Roads Agency Limited	<b>Ballito to Tinley Manor Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity study to support the preliminary design for the upgrade of the N3 between Ballito and Tinley Manor.	Wetland and Biodiversity Specialist
Vale Limitada	<b>Biodiversity Assessment for the alternative water supply pipeline</b> Undertaking of the biodiversity assessment to support the preliminary design of the proposed alternative water supply pipeline at the Moatize Mine in Tete, Mozambique.	Biodiversity Specialist
GIB Consulting Engineers	<b>Aquadene Wetland Assessment</b> Undertaking of the wetland assessment for the Aquadene housing development in Richards Bay.	Wetland Specialist
JG Afrika (Pty) Ltd	<b>Wetland Assessment for the pipeline route for the drought relief pipeline in Laingsburg</b> Undertaking of the wetland assessment associated with the 25km pipeline route from the water source to the town of Laingsburg in the Western Cape.	Wetland Specialist
Seche International	<b>Wetland and Biodiversity Assessment for the proposed new uMgungundlovu Landfill Site</b> Preliminary wetland and biodiversity assessment for the proposed new uMgungundlovu Landfill site outside of Pietermaritzburg.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	<b>Wetland and Vegetation Assessment associated with the upgrading of the N1 between Heuningspruit and Koppies</b> Undertaking of the wetland and biodiversity assessment for the upgrading of the N1 between Heuningspruit and Koppies in the Free State Province.	Wetland and Biodiversity Specialist
Terratest (Pty) Ltd	<b>Wetland and Vegetation Assessment associated with the upgrading of the Nelson Mandela Museum at Qununu</b>	Wetland and Biodiversity Specialist



## Previous Experience

	Undertaking of the wetland and vegetation assessment associated with the upgrading of the Nelson Mandela Museum in Qunu in the Eastern Cape Province.	
GreenScene Environmental	<b>Wetland and Vegetation Assessment associated with the construction of the Ulundi Water Supply Scheme</b> Undertaking of the wetland and biodiversity assessment of the Ulundi water supply scheme near town of Eshowe in KwaZulu-Natal.	Wetland and Biodiversity Specialist
MOZAL	<b>Biodiversity Assessment for the raw water supply pipeline for the Mozal Aluminium Smelter in Mozambique</b> Undertaking of the biodiversity assessment for the raw water supply pipeline from the desalination plant in the Port of Matola to the MOZAL smelter in Boane, Maputo, Mozambique.	Biodiversity Specialist
JG Afrika (Pty) Ltd	<b>Wetland and Biodiversity Assessment for various water supply schemes in the Cedarberg Municipality</b> Undertaking of the wetland and biodiversity assessments for the water supply schemes for the town of Whupperthal, Clanwilliam and Citrusdal in the Western Cape.	Biodiversity Specialist
uKhozi Environmentalists	<b>Phalanndwa Coal Mine Biodiversity and Wetland Assessment</b> Undertaking the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the Phalanndwa Coal Mine Expansion near Delmas.	Wetland and Biodiversity Specialist
Kongiwe Environmental Consultants	<b>Lephalale Coal Mine Biodiversity and Wetland Assessment</b> Undertaking the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the Lephalale Coal Mine near Lephalale.	Wetland and Biodiversity Specialist
Nzingwe Consultancy	<b>Riversdale Coal Mine Wetland Assessment</b> Undertaking the wetland specialist study in support of the Application for Environmental Authorisation and the Water Use Licence Application for the Riversdale Coal Mine near Vryheid.	Wetland Specialist
WSP Environmental	<b>SAPPI Saiccor Wetland Assessment</b> Undertaking the wetland specialist study in support of the Application for Environmental Authorisation for the construction of flood protection measures associated with the SAPPI Saiccor Mill, uMkomaas.	Wetland Specialist
WSP Environmental	<b>11th Avenue Interchange Wetland Assessment</b> Undertaking the wetland specialist study in support of the Application for Environmental Authorisation for the construction of the 11 <sup>th</sup> Avenue Interchange, Durban	Wetland Specialist
WSP Environmental	<b>SAPPI Saiccor Alien Invasive Plant – Risk Assessment</b>	Vegetation Specialist

## Previous Experience

	Undertaking of the risk assessment of the presence of various listed category I and II alien invasive plant species on the SAPPI Saiccor Mill site, uMkomaas.	
Environmental Resources Management	<b>Bhangazi Community Tented Camp Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the establishment of the Bhangazi Community Tented Camp in the isiMangoliso Wetland Park, St. Lucia.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	<b>N3 – Market Road Interchange Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N3 – Market Road Interchange, Pietermaritzburg.	Wetland and Biodiversity Specialist
ESKOM SOC	<b>ESKOM 22 kVA Lines Vegetation Assessments</b> Undertaking of vegetation assessments for the establishment of various 22kVA electrification lines in KwaZulu-Natal.	Vegetation Specialist
ESKOM SOC	<b>Tombo to Mafini 300kVA Line Vegetation Assessments</b> Undertaking of vegetation assessment for the route alignment of the 300kVA high voltage electricity line from the Tombo Substation to Mafini, Port St. Johns.	Vegetation Specialist
Element Consulting Engineers	<b>Port St. Johns Water Treatment Works Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the establishment of the Port St. Johns Water Treatment Works, Port St. Johns.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	<b>N2 – uMgeni Road Interchange Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N2 – uMgeni Road Interchange, Durban.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	<b>N2 – Mt Edgecombe Interchange Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N2 – Mt Edgecombe Interchange, Durban.	Wetland and Biodiversity Specialist
Afrimat	<b>Ladysmith Quarry Wetland and Biodiversity Assessment</b> Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Afrimat Quarry, Ladysmith.	Wetland and Biodiversity Specialist

## Previous Experience

South African National Roads Agency Limited	<b>N3 – Epworth Road Interchange Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N3 – Epworth Road Interchange, Pietermaritzburg	Wetland and Biodiversity Specialist
Millennium Challenge Account - Mozambique	<b>Nacala Dam rehabilitation Biodiversity Assessment</b> Undertaking of the biodiversity specialist study in support of the Application for an Environmental Permit for the rehabilitation and raising of the Nacala Dam, Mozambique.	Biodiversity Specialist
WSP Environmental	<b>SAPPI Ngodwana Mill Expansion Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the expansion of the Ngodwana Mill, Waterval Boven.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	<b>N3 – Chota Motala Road Interchange Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the N3 – Chota Motala Road Interchange, Pietermaritzburg.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	<b>R30 Glen Lyon to Brandfort Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the R30 between Glen Lyon and Brandfort.	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	<b>R30 Virginia to Beatrix Mine Wetland and Biodiversity Assessment</b> Undertaking of the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the upgrading of the R30 between Virginia and Beatrix Mine.	Wetland and Biodiversity Specialist
Miranda Minerals	<b>Sesikhona Colliery Wetland and Biodiversity Assessment</b> Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Sesikhona Colliery, Dannhauser.	Wetland and Biodiversity Specialist
Miranda Minerals	<b>Uithoek Colliery Wetland and Biodiversity Assessment</b> Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Uithoek Colliery, Dundee.	Wetland and Biodiversity Specialist
Miranda Minerals	<b>Burnside Colliery Wetland and Biodiversity Assessment</b> Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Burnside Colliery, Dundee.	Wetland and Biodiversity Specialist



## Previous Experience

Ultimate Goal	<p><b>Ultimate Goal Colliery Biodiversity Assessment</b>          Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Ultimate Goal Colliery, Dundee.</p>	Biodiversity Specialist
Canton Trading	<p><b>Taylor's Halt Quarry Wetland and Biodiversity Assessment</b>          Undertaking the wetland and biodiversity specialist study in support of the Mining Right Application for the establishment of the Taylor Halt Quarry, Pietermaritzburg.</p>	Wetland and Biodiversity Specialist
South African National Roads Agency Limited	<p><b>uMtamvuna Quarry Biodiversity Assessment</b>          Undertaking the biodiversity specialist study in support of the Mining Right Application for the establishment of the SANRAL Quarry, Kokstad.</p>	Biodiversity Specialist

**APPENDIX B**  
**DFFE SCREENING ASSESSMENT REPORT**

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS  
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE  
ENVIRONMENTAL SENSITIVITY**

**EIA Reference number:** NA

**Project name:** SARAO Klerefontein Support Base

**Project title:** SARAO Klerefontein Support Base

**Date screening report generated:** 31/05/2023 06:26:05

**Applicant:** NRF

**Compiler:** M van Rooyen

**Compiler signature:**

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**Application Category:** Transformation of land | Indigenous vegetation

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# Proposed Project Location

## Orientation map 1: General location





## Map of proposed site and relevant area(s)



## Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	KLEDERENFONTEIN	527	0	30°59'16.64S	22°0'52.97E	Farm
2	KLEDERENFONTEIN	527	0	30°58'33.62S	21°59'44.36E	Farm Portion

Development footprint<sup>1</sup> vertices:  
No development footprint(s) specified.

## Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

## Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

<sup>1</sup> “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

## Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

**Transformation of land | Indigenous vegetation.**

### Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

No intersection with any development zones found.

### Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme				X
Animal Species Theme		X		
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Paleontology Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

### Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

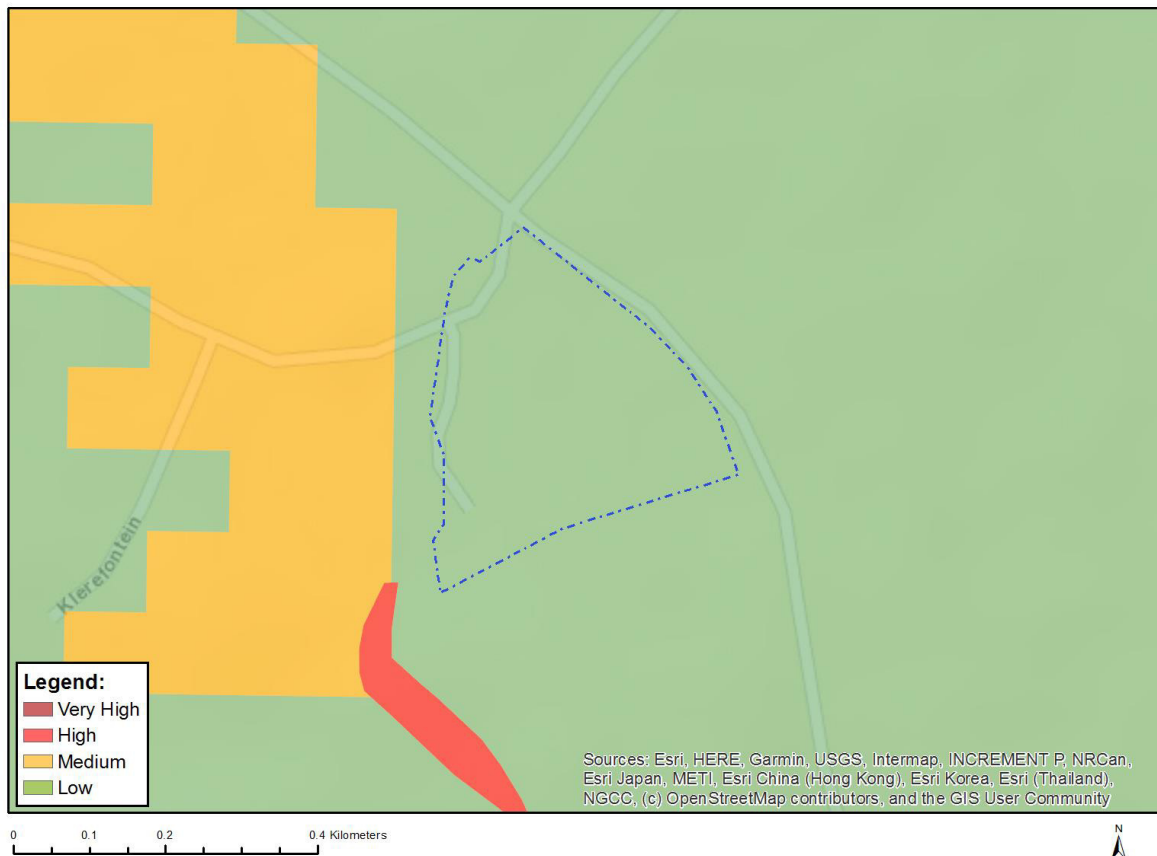
No	Specialist assessment	Assessment Protocol
1	Landscape/Visual Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>
2	Archaeological and Cultural Heritage Impact	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>

	Assessment	<a href="#">rotocols.pdf</a>
3	Palaeontology Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>
4	Terrestrial Biodiversity Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf</a>
5	Aquatic Biodiversity Impact Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf</a>
6	Socio-Economic Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf</a>
7	Plant Species Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf</a>
8	Animal Species Assessment	<a href="https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf">https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf</a>

## Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

### MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

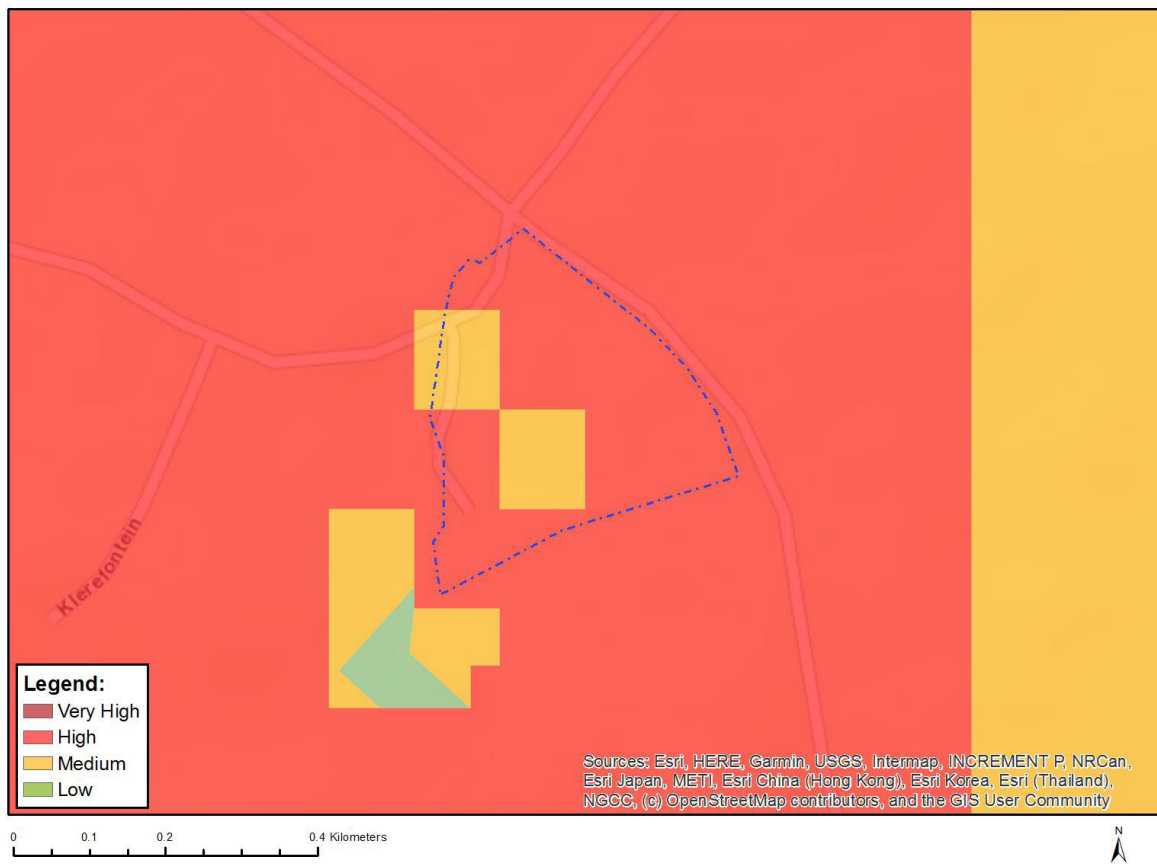


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

#### Sensitivity Features:

Sensitivity	Feature(s)
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low

## MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



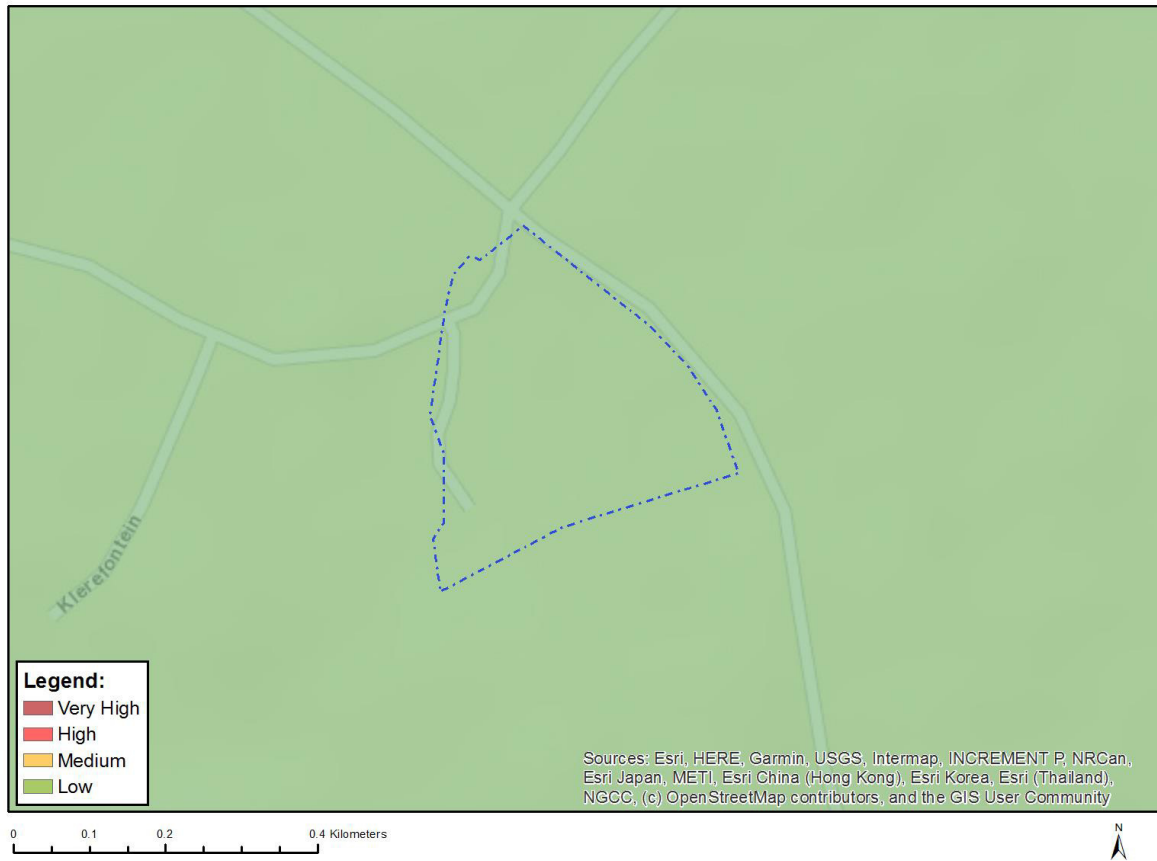
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

### Sensitivity Features:

Sensitivity	Feature(s)
High	Aves-Neotis ludwigii
Medium	Reptilia-Chersobius boulengeri

## MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

### Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

# MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

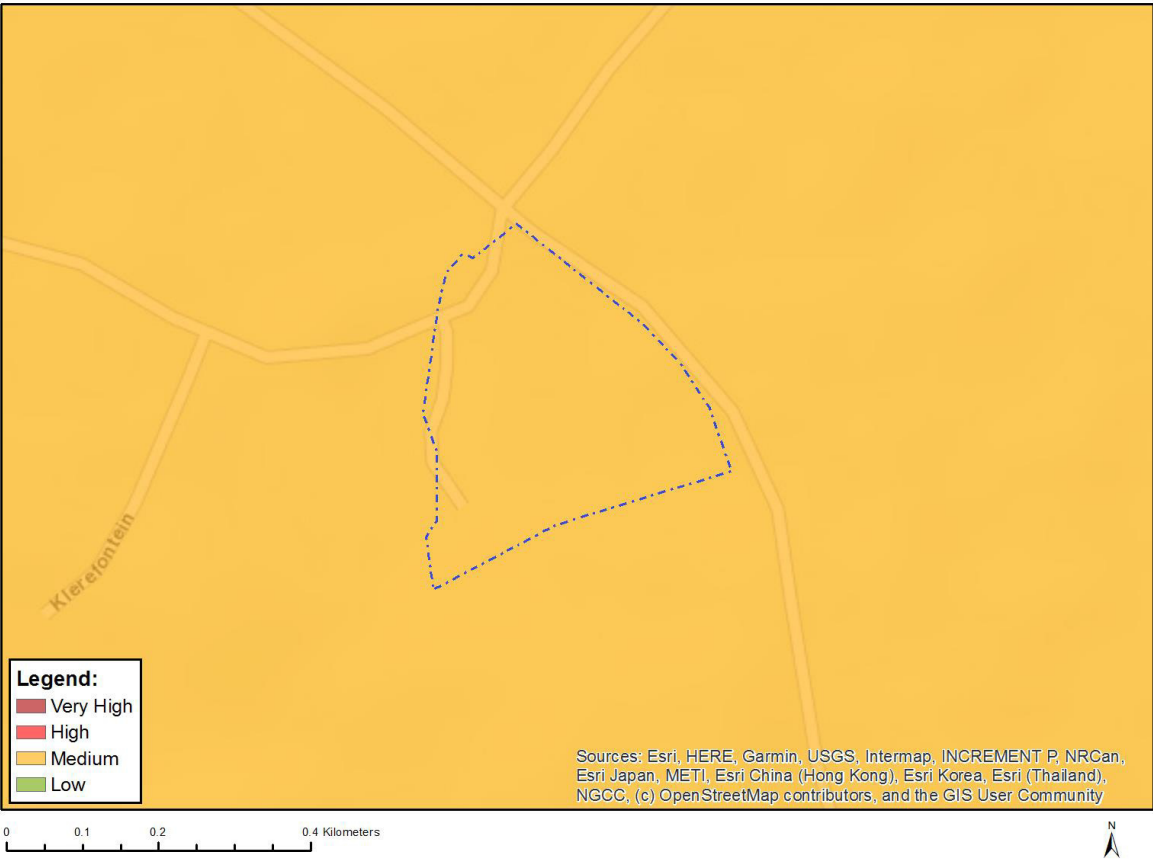


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

**Sensitivity Features:**

Sensitivity	Feature(s)
Low	Low sensitivity

# MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

**Sensitivity Features:**

Sensitivity	Feature(s)
Medium	Between 8 and 15 km of other civil aviation aerodrome



## MAP OF RELATIVE DEFENCE THEME SENSITIVITY

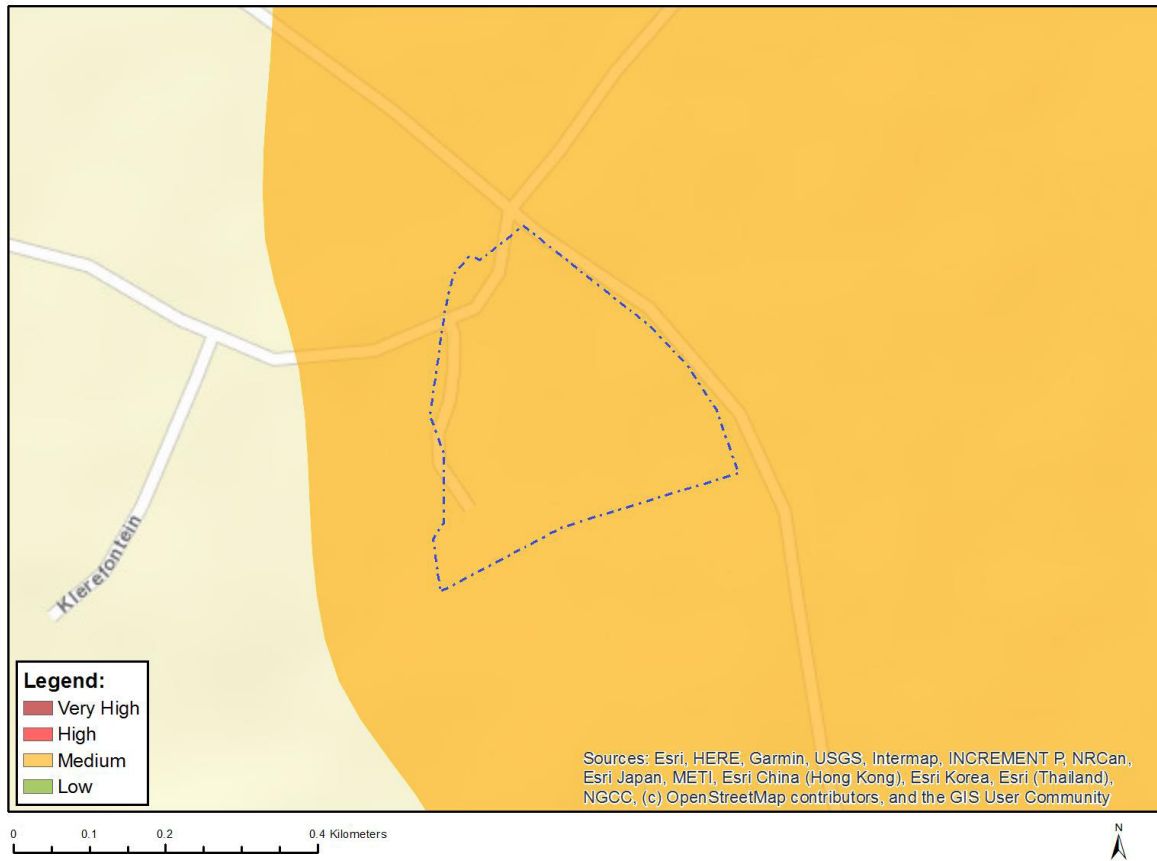


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

### Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

## MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

### Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity

## MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



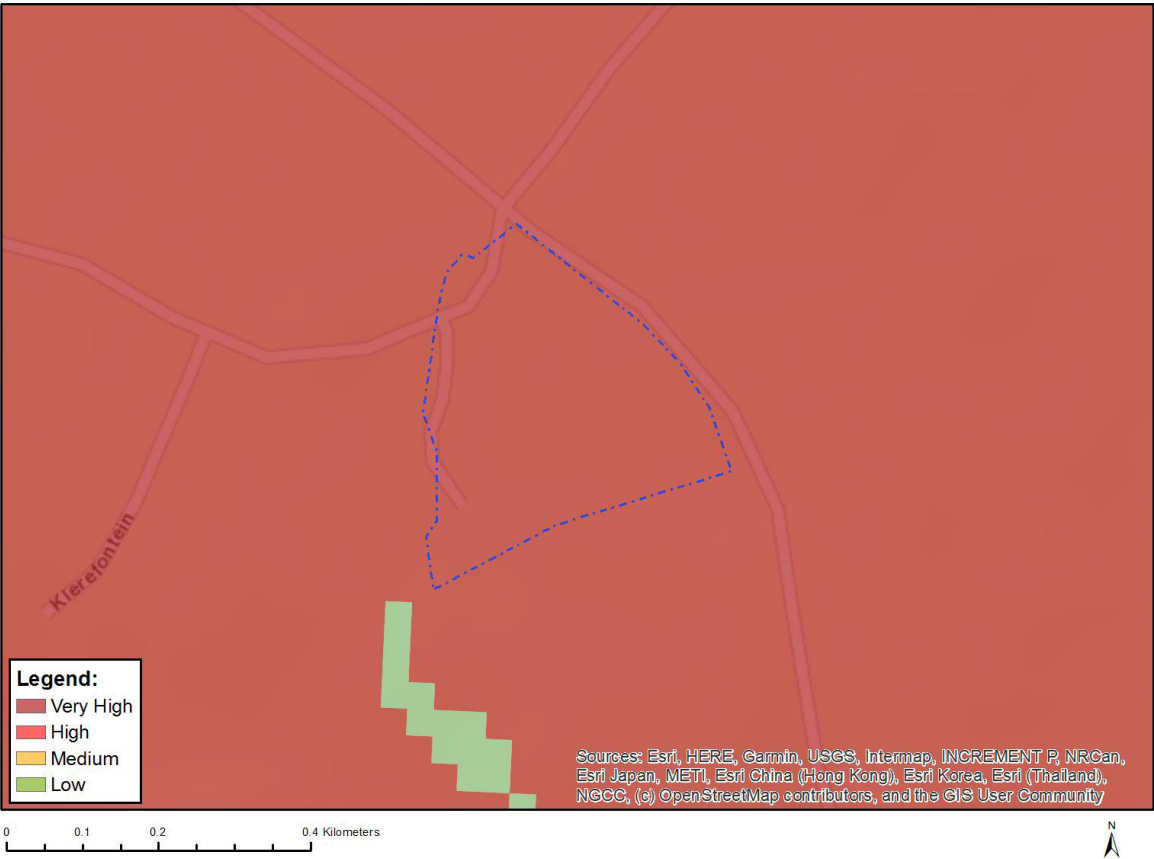
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at [eiadatarequests@sanbi.org.za](mailto:eiadatarequests@sanbi.org.za) listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

### Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

# MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

**Sensitivity Features:**

Sensitivity	Feature(s)
Very High	CBA 1