

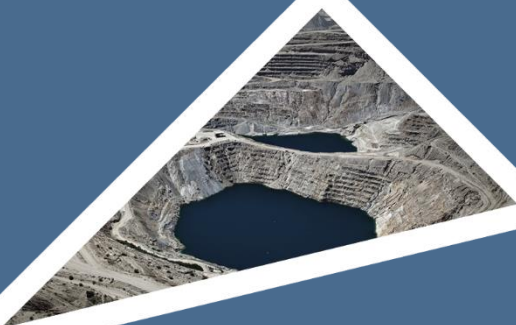


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## SCOPING REPORT

PROPOSED TAAIBOSCHFONTEIN PIVOT EXPANSION EIA





#### DOCUMENT DETAILS

**EIMS REFERENCE:** 1387

**DOCUMENT TITLE:** Proposed Taaiboschfontein Pivot Expansion EIA Project

#### DOCUMENT CONTROL

|                    | NAME                  | SIGNATURE | DATE       |
|--------------------|-----------------------|-----------|------------|
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#### REVISION AND AMENDMENTS

| REVISION DATE: | REV #             | DESCRIPTION                      |
|----------------|-------------------|----------------------------------|
| 2021/03/01     | ORIGINAL DOCUMENT | Scoping Report for Public Review |



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## EXECUTIVE SUMMARY

Genade Boerdery (Pty) Ltd (the applicant) has appointed Environmental Impact Management Services (Pty) Ltd (EIMS) as the Environmental Assessment Practitioner (EAP) to assist with undertaking the required Environmental Authorisation (EA) application processes (including the statutory public participation) for the proposed expansion of farming activities, in the form of additional pivots, on portion 2 of the Farm Taaiboschfontein 168 (registration division: Kimberley), near Douglas in the Northern Cape. This Scoping Phase Report is prepared in accordance with the requirements of Appendix 2 of the Environmental Impact Assessment Regulations, 2014, as part of the National Environmental Management Act (NEMA- Act 107 of 1998).

### PURPOSE OF THE SCOPING REPORT

The purpose of the scoping process is to:

- Identify the policies and legislation that are relevant to the activity;
- To motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- To identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking;
- Where appropriate, to identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process including cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- To identify the key issues to be addressed in the assessment phase;
- To agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required, as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- To identify suitable measures to avoid, manage, or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

### PUBLIC PARTICIPATION PROCESS

A Public Participation (PP) Plan has been prepared in accordance with the requirements of the National Environmental Management Act (Act 107 of 1998-NEMA), and the Directions issued by the Department of Environment, Forestry and Fisheries (GN 650 of 5 June 2020) in terms of the Disaster Management Act (Act 57 of 2002). The purpose of the PP Plan is to obtain agreement from the relevant Competent Authority on the public engagement and participation for the abovementioned project. A copy of the plan is available in Appendix E and is available upon request.

The Public Participation Process for the proposed project has been undertaken in accordance with the requirements the National Environmental Management Act in line with the principles of Integrated Environmental Management. The PPP commenced on the 29 September 2020 with an initial notification and call to register. The comments received from I&APs during the initial call to register and commenting period to date have been captured in the Public Participation Report in Appendix C, and a summary of the issues raised and section of this report where issues are addressed is presented in Section 0.

Comments received during this Scoping Report review period will be included in the finalised Scoping Report to be submitted to the Northern Cape Department of Agriculture, Environmental Affairs, Land Reform and Rural Development (DAEALRRD). Should the DALRRD accept the Scoping Report, an EIA Report including an



Environmental Management Programme Report, will be compiled and presented for public comment as part of this EIA phase.

This Scoping Report has been made available for public review and comment for a period of 30 days from the 1<sup>st</sup> April 2021 until the 5<sup>th</sup> May 2021. Contact details for EIMS are provided below:

- Environmental Impact Management Services (Pty) Ltd (EIMS)
- P.O. Box 2083 Pinegowrie 2123
- Phone: 011 789 7170 / Fax: 086 571 9047
- Contact: Cheyenne MuthukarapanD
- Email: taaiboschfontein@eims.co.za

## **PROJECT ALTERNATIVES AND ENVIRONMENTAL IMPACT ASSESSMENT**

A scoping assessment was undertaken to identify all the potential risks and impacts associated with each phase of the proposed pivot expansion activities as well as potentially feasible alternatives. After considering the broad range of alternative types that exist (i.e. location, process, technology, and activity options), no other feasible alternatives other than the preferred and No-Go alternatives could be identified. Certain incremental alternatives such as power sourcing to the proposed centre pivot system will be further considered during the EIA phase.

Background information review on the surrounding areas, the biodiversity and heritage/ palaeontological specialist assessment reports (Appendix D) as well as the Department of Environment, Forestry and Fisheries (DEFF) Screening Tool Report (Appendix F) helped to guide the identification of potential impacts. Each of the identified risks and impacts at the various project phases were assessed. The assessment criteria (See Section 9 for the EIMS Impact Assessment Methodology) include the nature, extent, duration, magnitude / intensity, reversibility, probability, cumulative impact, and irreplaceable loss of resources.

The most significant risks and impacts identified were those that remain high in terms of significance even post mitigation measures being considered. The visual impact of the proposed project was rated as having a medium negative significance and the socio-economic benefit was rated as having a medium positive impact. Additional impacts identified are listed below. All these impacts were rated as having low significance if mitigation measures are adhered to (See Section 9.2 for full list of identified impacts and the significance of each):

- Negative Impacts:
  - Anthropogenic disturbances, intentional and/or accidental killing of fauna.
  - Dust nuisance.
  - Erosion.
  - Fire damage.
  - Habitat fragmentation, loss of natural vegetation and alien invasion in a CBA 2
  - Impact on heritage resources.
  - Littering.
  - Loss of species of conservation concern.
  - Noise nuisance.
  - Oil/ fuel spillages causing soil and groundwater contamination.
- Positive Impacts:
  - Job Opportunities





The identified potential impacts, where required, will be further assessed during the EIA phase of the project. Potential mitigation measures have been identified and will be refined based on input from the EAP competent authority and public consultation. The associated EMP, drafted during the EIA phase, will identify appropriate mitigation mechanisms for avoidance, minimisation and / or management of the negative impacts and enhancement of the positive impacts.



# 1 INTRODUCTION

Genade Boerdery has appointed Environmental Impact Management Services (Pty) Ltd (EIMS) as the Environmental Assessment Practitioner (EAP) to assist with undertaking the required application processes (including the statutory public participation), and to compile and submit the required documentation in support of application for:

- Environmental Authorisation (EA) in accordance with the National Environmental Management Act (NEMA)- Listed activity:
  - GNR 984: Activity 15: “the clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for-
    - (i) The undertaking of a linear activity; or
    - (ii) Maintenance purposed undertaken in accordance with a maintenance management plan.”

The project will involve the clearance of ~450 hectares of indigenous vegetation for the purposes of creating new cultivation (pivot) areas. This is necessary to allow the farming operation to adequately rotate the potato cultivation every two years to prevent blight.

The proposed project is located on portion 2 of the Farm Taaiboschfontein 168 (registration division: Kimberly), located along the R357 from Kimberly to Douglas, in the Siyancuma Local Municipality, Pixley Ka Seme District Municipality. The site is located approximately 26km north-east of the town Douglas and 77km south-west of the town Kimberly. The centre point of the site is 28°59'1.90"S and 24°1'41.38"E.



## 1.1 REPORT STRUCTURE

This report has been compiled in accordance with the 2014 NEMA EIA Regulations, as amended. A summary of the report structure, and the specific sections that correspond to the applicable regulations, is provided in Table 1 below.

Table 1: Report Structure

| Environmental Regulation | Description – NEMA Regulation 982 (2014) as amended   | Section in Report          |
|--------------------------|---|----------------------------|
| Appendix 2(2)(a):        | Details of –<br>i. The Environmental Assessment Practitioner (EAP) who prepared the report; and<br>ii. The expertise of the EAP, including a curriculum vitae;  | Section 1.2<br>Section 1.3 |
| Appendix 2(2)(b):        | The location of the activity. Including –<br>i. The 21-digit Surveyor General code of each cadastral land parcel;<br>ii. Where available, the physical address and farm name;<br>iii. Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;   | Section 2                  |
| Appendix 2(2)(c):        | A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is –<br>i. A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or<br>ii. On a land where the property has not been defined, the coordinates within which the activity is to be undertaken; | Section 2<br>Figure 1      |
| Appendix 2(2)(d):        | A description of the scope of the proposed activity, including –<br>i. All listed and specified activities triggered;<br>ii. A description of the activities to be undertaken, including associated structures and infrastructure;  | Section 3<br>Table 4       |
| Appendix 2(2)(e):        | A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development  | Section 4                  |



| Environmental Regulation | Description – NEMA Regulation 982 (2014) as amended   | Section in Report           |
|--------------------------|---|-----------------------------|
|                          | planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;  |                             |
| Appendix 2(2)(f):        | A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;   | Section 5                   |
| Appendix 2(2)(g):        | <p>A full description of the process followed to reach the proposed preferred activity, site and location within the site, including –</p> <ul style="list-style-type: none"> <li>i. Details of all alternatives considered;</li> <li>ii. Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;</li> <li>iii. A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;</li> <li>iv. The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</li> <li>v. The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – <ul style="list-style-type: none"> <li>aa. Can be reversed;</li> <li>bb. May cause irreplaceable loss or resources; and</li> <li>cc. Can be avoided, managed or mitigated;</li> </ul> </li> <li>vi. The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;</li> <li>vii. Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</li> <li>viii. The possible mitigation measures that could be applied and level of residual risk;</li> <li>ix. The outcome of the site selection matrix;</li> <li>x. If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and</li> <li>xi. A concluding statement indicating the preferred alternatives, including preferred location of the activity;</li> </ul> | Section 6, 0, 8, 9, and 10. |



| Environmental Regulation | Description – NEMA Regulation 982 (2014) as amended   | Section in Report                    |
|--------------------------|---|--------------------------------------|
| Appendix 2(2)(h):        | <p>A plan of study for undertaking the environmental impact assessment process to be undertaken, including –</p> <ul style="list-style-type: none"> <li>i. A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;</li> <li>ii. A description of the aspects to be assessed as part of the environmental impact assessment process;</li> <li>iii. Aspects to be assessed by specialists;</li> <li>iv. A description of the proposed method of assessing the environmental aspects, including a description of the proposed method assessing the environmental aspects to be assessed by specialists;</li> <li>v. A description of the proposed method of assessing duration and significance;</li> <li>vi. An indication of the stages at which the competent authority will be consulted;</li> <li>vii. Particulars of the public participation process that will be conducted during the environmental impact assessment process; and</li> <li>viii. A description of the tasks that will be undertaken as part of the environmental impact assessment process;</li> <li>ix. Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored;</li> </ul> | Section 10                           |
| Appendix 2(2)(i)         | <p>An undertaking under oath or affirmation by the EAP in relation to –</p> <ul style="list-style-type: none"> <li>i. The correctness of the information provided in the report;</li> <li>ii. The inclusion of comments and inputs from stakeholders and interested and affected parties; and</li> <li>iii. Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;</li> </ul>  | Section 12                           |
| Appendix 2(2)(j):        | An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment;   | Section 12                           |
| Appendix 2(2)(k):        | Where applicable, any specific information required by the competent authority; and   | No additional requirements have been |



| Environmental Regulation | Description – NEMA Regulation 982 (2014) as amended                        | Section in Report   |
|--------------------------|--|---|
|                          |  | received from the competent authority to date.  |
| Appendix 2(2)(l):        | Any other matter required in terms of section 24(4)(a) and (b) of the Act. | No additional required matters were identified in terms of these sections of the Act. |



## 1.2 DETAILS OF THE EAP

The contact details of the EIMS consultant who compiled this Scoping Report are as follows:

- Name of the consultant: Cheyenne Muthukarapan
- Tel No.: 011 789 7170
- Fax No.: 086 571 9047
- E-mail address: [taaiboschfontein@eims.co.za](mailto:taaiboschfontein@eims.co.za)

## 1.3 EXPERTISE OF THE EAP

### 1.3.1 EAP QUALIFICATIONS

In terms of Regulation 13 of the EIA Regulations (GN R. 982) as amended, an independent EAP, must be appointed by the applicant to manage the application. EIMS has been appointed by the Applicant as the EAP to assist with compiling the necessary reports and undertaking the statutory public participation processes, in support of the proposed Taaiboschfontein project. EIMS is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations, as well as Section 1 of the NEMA. This includes, *inter alia*, the requirement that EIMS is:

- Objective and independent;
- Has expertise in conducting EIA's;
- Comply with the NEMA, the environmental regulations and all other applicable legislation;
- Considers all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

The Curriculum Vitae (indicating the experience with environmental impact assessment and relevant application processes) of the consultant that is involved in the EIA process and the compilation of this Scoping Report is presented in Appendix A.

### 1.3.2 SUMMARY OF THE EAP'S PAST EXPERIENCE

EIMS is a private and independent environmental management-consulting firm that was founded in 1993. EIMS has in excess of 25 years' experience in conducting EIA's. Please refer to the EIMS website ([www.eims.co.za](http://www.eims.co.za)) for examples of EIA documentation currently available.

Cheyenne Muthukarapan is a consultant at EIMS and has been involved in core aspects of numerous environmental impact assessment projects the past 4 years that she has been with the company. Her expertise lies in public consultation/participation processes and sustainability consulting. She has participated in numerous public/stakeholder consultations in relation to environmental impacts assessments, and the formulation of sustainable solutions to various environmental problems for a wide array of projects ranging from risk assessments, audits, EIAs and Basic Assessments for mining, gas exploration, wetland rehabilitation, road upgrades, etc.

### 1.3.3 SPECIALIST CONSULTANTS

Biodiversity and Heritage were the only pre-identified specialist study that was deemed essential by the EAP and conducted during the scoping phase of this project. Additional specialist studies that were identified through use of the Department of Environmental Affairs' Screening Tool were:

- Landscape/visual Impact Assessment
- Socio-Economic Impact Assessment



In terms of section 24(5)(h) of the NEMA, 1998 (Act No 107 of 1998) and regulation 16(1)(b)(v) of the EIA regulations, 2014, as amended, the required DEA Screening Report is provided as part of Appendix F. The above-mentioned specialist studies as identified through the tool were deemed by the EAP because of the proposed location and type of activities which form part of the farm expansion project. These specialist studies were deemed unnecessary by the EAP after a desktop thus disregarded during the scoping phase of this project.

The biodiversity and heritage and palaeontological specialist studies involved the gathering of data relevant to identifying and assessing preliminary environmental impacts that may occur as a result of the proposed pivots. These preliminary impacts were assessed according to the EIMS pre-defined impact significance rating methodology (Section 9). The specialists have also included recommendations preliminary mitigation/management or optimisation measures to minimise potential negative impacts or enhance potential benefits, respectively. The specialist's declaration of independence is included in the specialist report presented in Appendix D.

## 2 DESCRIPTION OF THE PROPERTY

Table 2 provides a description of the property details and size of the proposed pivots footprint as well as the distance to the nearest towns. Refer Figure 1 for the locality of the proposed pivots.

Table 2: Locality details

|  |   |
|--|---|
| <b>Property</b>                                  | Farm Taaiboschfontein 168 Portion 2   |
| <b>21-digit Surveyor General Code</b>            | C03700000000016800002   |
| <b>Application Area (Ha)</b>                     | The directly affected property (portion 2) comprises an area of 1713.0640 ha. The estimated combined area of the proposed pivots is approximately 456 ha.   |
| <b>Magisterial District</b>                      | Ward 6 of the Siyancuma Local Municipality, Pixley Ka Seme District Municipality  |
| <b>Distance and direction from nearest towns</b> | The proposed project is located on portion 2 of the Farm Taaiboschfontein 168 (registration division: Kimberly), located along the R357 from Kimberly to Douglas, in the Siyancuma Local Municipality, Pixley Ka Seme District Municipality. The site is located approximately 26km north-east of the town Douglas and 77km south-west of the town Kimberly. The centre point of the site is 28°59'1.90"S and 24°1'41.38"E. |

### 2.1 PROPERTY OWNERSHIP

As stated above, the proposed pivots will be located on portion 2 of the farm Taaiboschfontein 168 located along the R357. This property is currently registered under the Vickie Trust which is owned by the applicant. Refer to Figure 1 for the locality of the proposed development of pivots.

### 2.2 SURROUNDING LAND USES

The area immediately surrounding the proposed pivots development footprint can be described as combination of natural indigenous vegetation and transformed cultivated areas (pivots) located along the Riet and Vaal Rivers. The existing pivots for the applicant are situated south of the proposed pivots, just north of the Riet River. The property is located along the R357 from the town of Douglas to Kimberly.

On a regional scale, the town of Douglas is the closest major town located 26 km to the west-south-west of the proposed pivots. Refer to Figure 2 for a map of the landcover of the area of the proposed pivots.



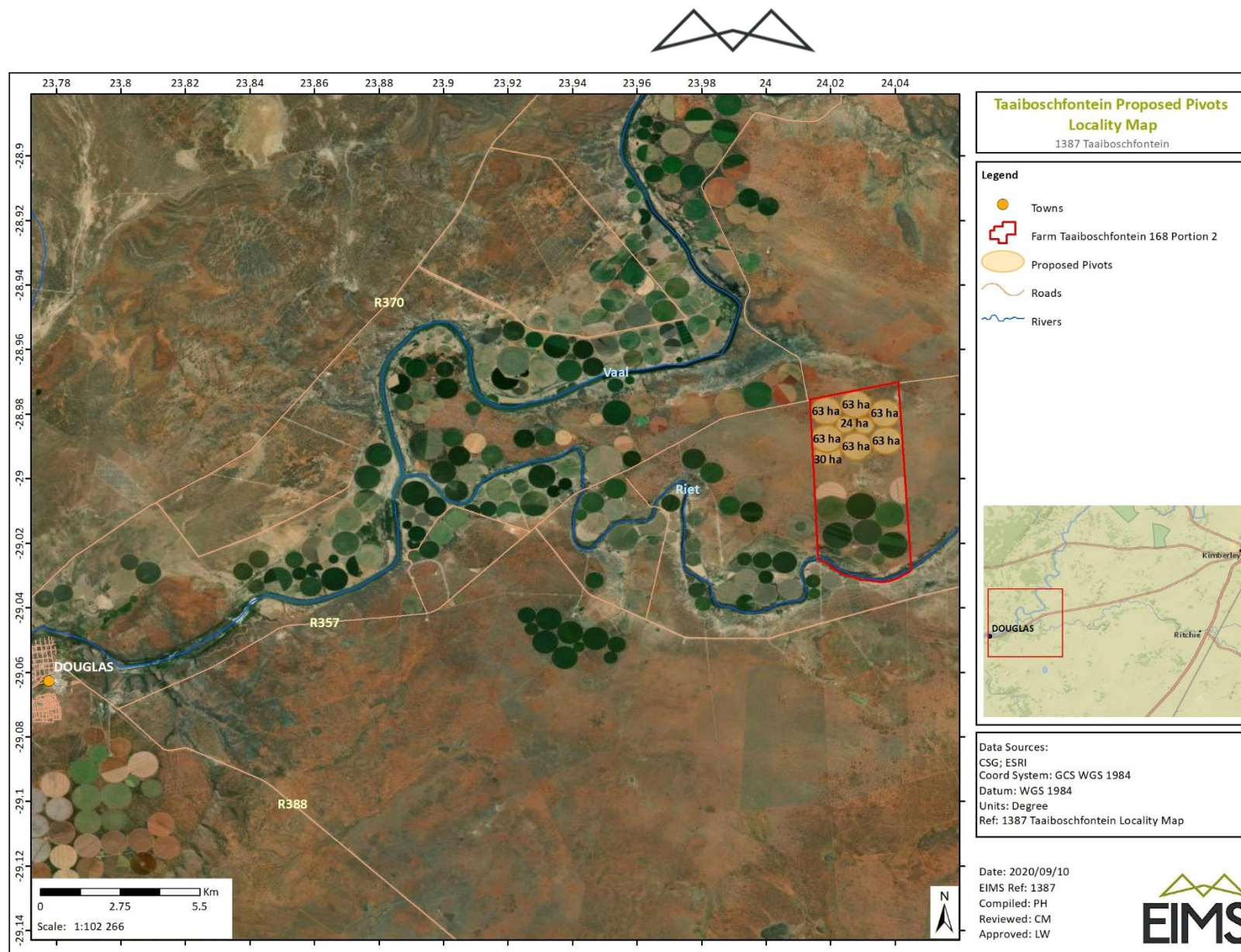


Figure 1: Aerial imagery indicating the proposed pivots site location.



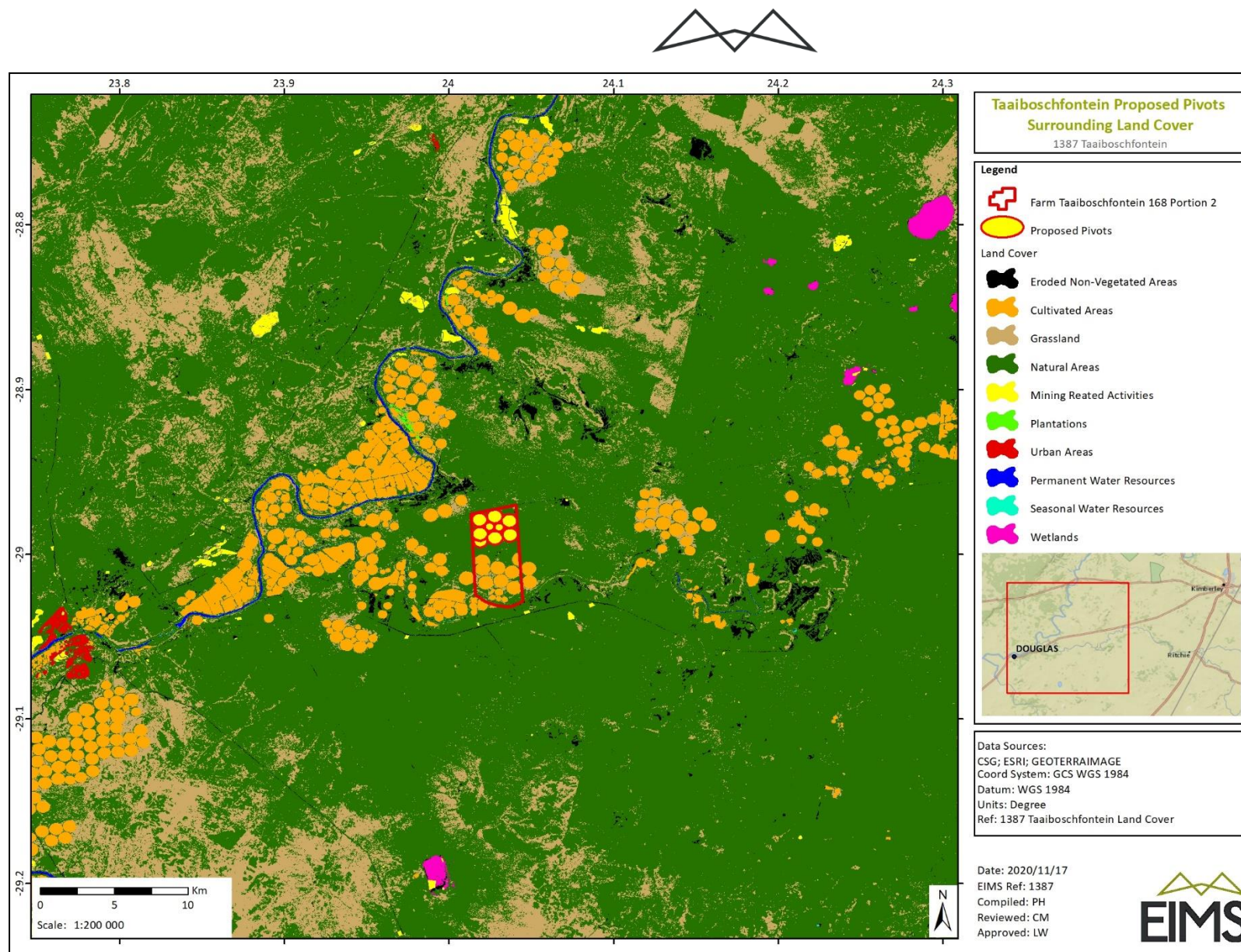


Figure 2: Land uses surrounding the proposed pivot area.



### 3 DESCRIPTION AND SCOPE OF THE PROPOSED PROJECT

The section below provides a detailed description for the proposed pivots. The aim of the project description is designed to facilitate the understanding of the proposed project related activities which are anticipated to lead to the preliminary impacts identified and assessed in this Scoping Report, and for which mitigation measures have been, or will be designed.

The proposed project involves the clearance of approximately 450 hectares of indigenous vegetation for the purposes of creating new cultivation (pivot) areas for the growing of potatoes. The proposed project will include the implementation of 1 pivot annually. Each pivot will be operational for two consecutive years upon which the soil will be returned to its natural inhabitation, cultivation will move on to the next pivot area and the cycle will repeat itself every 8 years for all pivots. Each pivot will be used to produce and harvest seed potatoes. It is necessary to allow the farming operation to adequately rotate the potato cultivation every two years to prevent blight (a potato fungal infection).

### 4 POLICY AND LEGISLATIVE CONTEXT

This section provides an overview of the governing legislation identified which may relate to the proposed project. A summary of the applicable legislation is provided in Table 3 below. The primary legal requirement for this project stems from the need for an EA to be granted by the competent authority, NCAEALRRD in accordance with the requirements of the NEMA. In addition, there are numerous other pieces of legislation governed by many acts, regulations, standards, guidelines and treaties on an international, national, provincial and local level, which should be considered in order to assess the potential applicability of these for the proposed project. More detail on the legislative framework is presented below.

Table 3: Applicable legislation and guidelines overview

| Applicable Legislation, Policies and Guidelines                | Description of Legislation, Policy or Guideline   | Relevance to the Proposed Project                                      |
|--|---|--|
| Constitution of the Republic of South Africa (Act 108 of 1996) | The constitution of any country is the supreme law of that country.<br><br>The Bill of Rights in chapter 2 section 24 of the Constitution of South Africa Act (Act 108 of 1996) makes provisions for environmental issues and declares that: "Everyone has the right -<br><br>a) to an environment that is not harmful to their health or well-being; and<br><br>b) to have the environment protected, for the benefit of present and future<br><br>c) generations, through reasonable legislative and other measures that: | This EIA is conducted to fulfil the requirement of the Bill of Rights. |



| Applicable Legislation, Policies and Guidelines  | Description of Legislation, Policy or Guideline   | Relevance to the Proposed Project  |
|--|---|--|
|  | i. prevent pollution and ecological degradation;<br>ii. promote conservation; and<br>iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".  |  |
| National Environmental Management Act (Act 107 of 1998 – NEMA); and the EIA Regulations (2014, as amended) | The NEMA (1998) requires that a project of this nature must undergo a Scoping and Environmental Impact Assessment (EIA); an Environmental Management Programme (EMPr) must also be compiled. Regulations applicable to this project include the following: <ul style="list-style-type: none"> <li>• EIA Regulations GN R. 982 (2014, as amended) in terms of the NEMA;</li> <li>• EIA Regulations GN R. 983 (2014, as amended) in terms of the NEMA;</li> <li>• EIA Regulations GN R. 984 (2014, as amended) in terms of the NEMA; and</li> </ul> | Activities that triggered the need for an EIA process to be followed are: <ul style="list-style-type: none"> <li>• GN R. 984, Listing Notice 2, Activity 15</li> </ul>   |
| National Water Act (Act 36 of 1998 – NWA)  | The NWA recognises that water is a scarce and unevenly distributed national resource which must be managed encompassing all aspects of water resources.   | It is understood that the proposed project is already covered under the existing water use licence for the existing pivots. If any water use authorisation is required an application will be lodged with the Department of Human Settlements, Water and Sanitation. |



| Applicable Legislation, Policies and Guidelines                               | Description of Legislation, Policy or Guideline  | Relevance to the Proposed Project  |
|---|--|--|
| National Heritage Resources Act, 1999 (Act no 25 of 1999)                     | The National Heritage Resources Act aims to promote good management of cultural heritage resources and encourages the nurturing and conservation of cultural legacy so that it may be bestowed to future generations.  | Due to the extent of the project, it is possible that some heritage resources and palaeontological features are likely to occur within the project boundary area. This will be assessed by the Heritage and Palaeontological specialists.  |
| National Environmental Management: Biodiversity Act (NEM:BA) (Act 10 of 2004) | The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. NEM:BA also deals with endangered, threatened and otherwise controlled species, under the Threatened or Protected Species Regulations (TOPS) | The project will involve the clearance of ~450 hectares of indigenous vegetation for the purposes of creating new cultivation (pivot) areas. It is possible that sensitive species could be located in the proposed project and area. A TOPS permit is required for any activities involving any TOPS species. |
| National Forests Act (No. 84 of 1998):  | The National Forests Act provides for the protection of forests as well as specific tree species.  | A permit will be required should a protected tree species be required to be destroyed, transported or transplanted.  |
| National Veld and Forest Fire Act (Act No. 101 of                             | The purpose of this Act is to prevent and combat veld, forest and mountain fires.  | The proposed project area is situated in the amongst natural indigenous vegetation and cultivated land. It is important to ensure that the necessary precautionary measures are included in EMPR in case of fires.   |
| Conservation of Agricultural Resources Act (Act 43 of 1983):                  | The Conservation of Agricultural Resources Act provides for the regulation of control over the   | The proposed project area is situated in the amongst natural indigenous vegetation and   |





| Applicable Legislation, Policies and Guidelines          | Description of Legislation, Policy or Guideline   | Relevance to the Proposed Project   |
|--|---|---|
|  | utilisation of the natural agricultural resources in order to promote the conservation of soil, water and vegetation and provides for combating weeds and invader plant species.  | cultivated land. It is important to ensure that the necessary precautionary measures are included in EMPR in order to conserve the soils and vegetation and to protect the proposed footprint area against combating weeds and invader species.   |
| Northern Cape Nature Conservation Act, Act No 9. Of 2009 | The Northern Cape Nature Conservation Act provides inter alia for the sustainable utilisation of wild animals, aquatic biota and plants as well as permitting and trade regulations regarding wild fauna and flora within the province. | The proposed project area is situated amongst natural indigenous vegetation and cultivated land. A permit may be required by the DENC office in Kimberly for the site clearing.<br><br>A permit would also be required to destroy or translocate any nationally or provincially listed species from the site. |

## 4.1 APPLICABLE NATIONAL LEGISLATION

The legal framework within which the proposed pivots is governed by many Acts, Regulations, Standards and Guidelines on an international, national, provincial and local level. Legislation applicable to the project includes (but is not limited to) those discussed below.

### 4.1.1 THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA)

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998 – NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA EIA Regulations, the applicant is required to appoint an EAP to undertake the EIA process, as well as conduct the public participation process towards an application for EA. In South Africa, EIA's became a legal requirement in 1997 with the promulgation of regulations under the Environment Conservation Act (ECA), NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed and reported on to the competent authority responsible for granting the relevant EA. On 21 April 2006, the Minister of Environmental Affairs and Tourism (now DEA) promulgated regulations in terms of Chapter 5 of the NEMA. These regulations, in terms of the NEMA, were amended in June 2010 and again in December 2014 as well as April 2017. The 2014 NEMA EIA Regulations (as amended) are applicable to this project.

The objective of the EIA Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the listed activities that have been identified as applicable by the proposed development. The purpose of these procedures is to provide the competent authority with adequate information to make decisions which ensure that activities which may impact negatively on the environment to



an unacceptable degree are not authorised, and that activities which are authorised are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

In accordance with the provisions of Sections 24(5) and Section 44 of the NEMA the Minister has published Regulations (GN R. 982) pertaining to the required process for conducting EIA's in order to apply for, and be considered for, the issuing of an EA. These EIA Regulations provide a detailed description of the EIA process to be followed when applying for EA for any listed activity. The Regulations differentiate between a simpler Basic Assessment Process (required for activities listed in GN R. 983 and GN R. 985) and a more complete EIA process (activities listed in GN R. 984). In the case of the proposed calcination plant project, there are activities triggered under GN R. 984 and as such a full EIA process is necessary. Table 4 presents all the anticipated listed activities under the NEMA 2014 EIA Regulations (as amended) that are applicable to this project.

Table 4: Listed activities in terms of the NEMA EIA Regulations (2014) as amended

| <b>Name of activity</b>     | <b>Aerial extent of the activity</b> | <b>Applicable listing notice</b>               |
|-----------------------------|--------------------------------------|--|
| Environmental Authorisation | ~ 456 ha                             | NEMA GN R. 984 (Listing Notice 2), Activity 15 |

An environmental Scoping and Impact Assessment process is reserved for activities which have the potential to result in significant impacts which are complex to assess. Scoping and Impact Assessment studies accordingly provide a mechanism for the comprehensive assessment of activities that are likely to have more significant environmental impacts. Figure 3 below provides a graphic representation of all the components of a full EIA process.

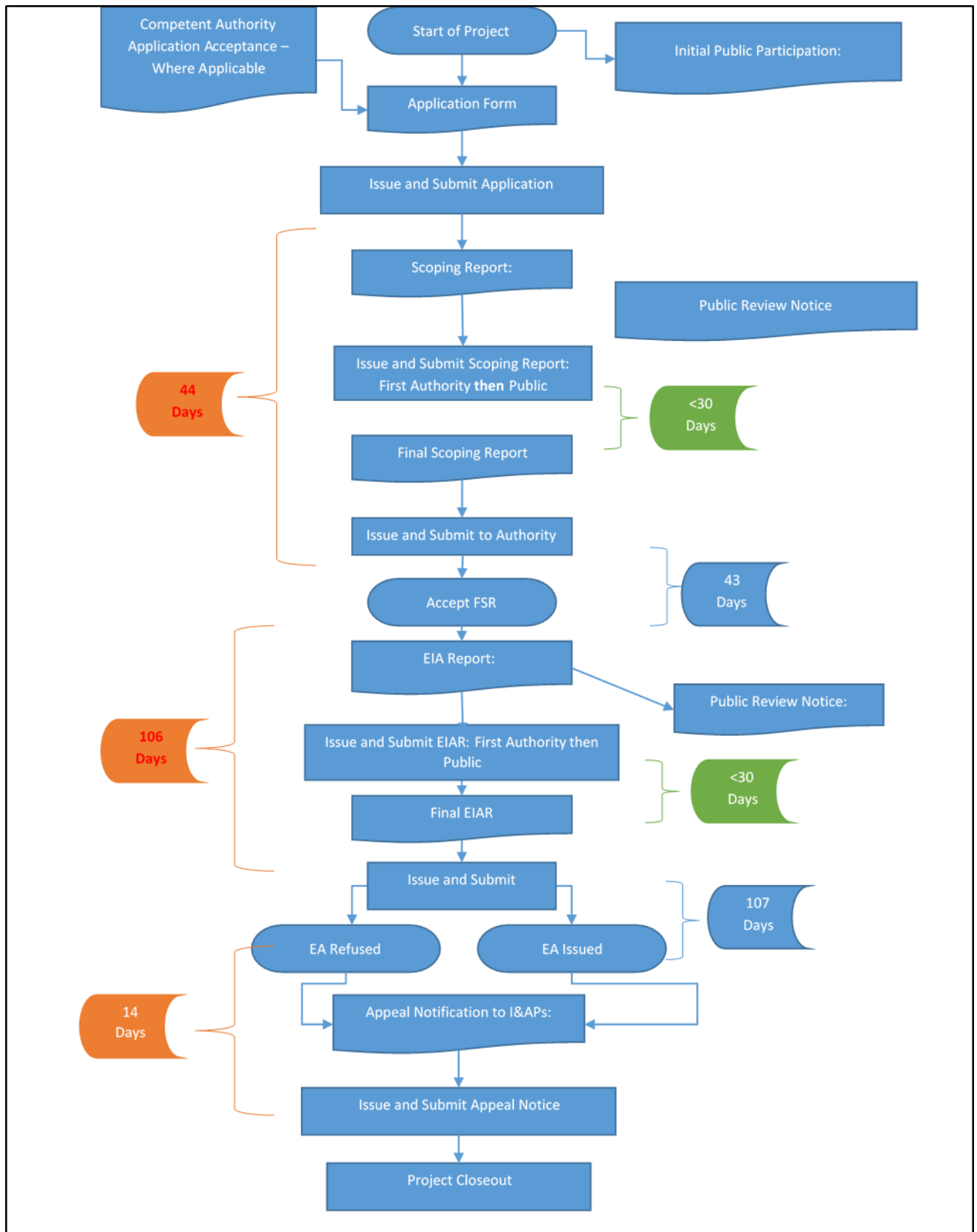


Figure 3: EIA process diagram





#### 4.1.1 THE NATIONAL WATER ACT (NWA)

The National Water Act, 1998 (Act 36 of 1998 – NWA) makes provision for two types of applications for water use licences, namely individual applications and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the applicant of the likely effect of the proposed licence on the resource quality, and that such assessment be subject to the NEMA EIA Regulations. A person may use water if the use is:

- Permissible as a continuation of an existing lawful water use (ELWU);
- Permissible in terms of a general authorisation (GA);
- Permissible under Schedule 1; or
- Authorised by a licence.

These water use processes are described in Figure 4 below.

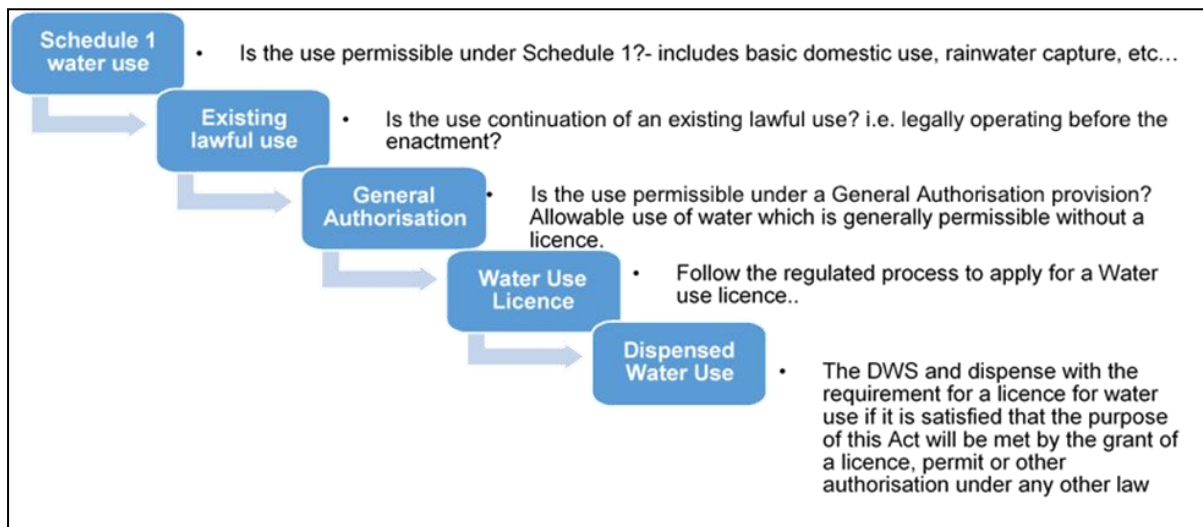


Figure 4: Authorisation processes for new water uses.

The NWA defines 11 water uses. A water use may only be undertaken if authorised by the DHSWS. Water users are required to register certain water uses that took place on the date of registration, irrespective of whether the use was lawful or not. The water uses for which an authorisation or licence can be issued include:

- Taking water from a water resource;
- Storing water;
- Impeding or diverting the flow of water in a watercourse;
- Engaging in a stream flow reduction activity contemplated in section 36;
- Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits;
- Disposing of waste in a manner which may detrimentally impact on a water resource;
- Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- Altering the bed, banks, course or characteristics of a watercourse;
- Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and



- Using water for recreational purposes.

No further water use authorisation should be required for the proposed project as water to be used on the farm was already listed with the Oranje Riet Water Users Association on 13 August 2020 for 11 000 m<sup>3</sup>/ha (See Appendix G for the certificate of enrolment).

#### 4.1.2 THE NATIONAL HERITAGE RESOURCES ACT

The National Heritage Resources Act (NHRA) (Act 25 of 1999) stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34(1) of the NHRA states that, “no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...”. The last few years have seen a significant change towards the inclusion of heritage assessments as a major component of Environmental Impacts Processes required by NEMA. This change requires us to evaluate the Section of these Acts relevant to heritage (Fourie, 2008b):

The NEMA 23(2)(b) states that an integrated environmental management plan should, “...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage”.

A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b) and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken account of in the Regulations under NEMA is the Specialist Report requirements laid down in Section 33 (Fourie, 2008b).

#### 4.1.3 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (SPLUMA)

The Spatial Planning and Land Use Management (Act 16 of 2013 – SPLUMA) is set to aid effective and efficient planning and land use management, as well as to promote optimal exploitation of minerals and mineral resources. The SPLUMA was developed to legislate for a single, integrated planning system for the entire country. Therefore, the Act provides a framework for a planning system for the country and introduces provisions to cater for development principles; norms and standards; inter-governmental support; Spatial Development Frameworks (SDFs) across national, provincial, regional and municipal areas; Land Use Schemes (LUS); and municipal planning tribunals.

#### 4.1.4 NATIONAL DUST CONTROL REGULATIONS

Dustfall is assessed for nuisance impact and not for inhalation health impact. The National Dust Control Regulations (Department of Environmental Affairs, 2013) prescribes measures for the control of dust in residential and non-residential areas. Acceptable dustfall rates are measured (using American Standard Testing Methodology at and beyond the boundary of the premises where dust originates. In addition to the dustfall limits, the National Dust Control Regulations prescribe monitoring procedures and reporting requirements.

#### 4.1.5 ENVIRONMENT CONSERVATION ACT (ECA)

The Environment Conservation Act (Act 73 of 1989 – ECA) was, prior to the promulgation of the NEMA, the backbone of environmental legislation in South Africa. To date the majority of the ECA has been repealed by various other Acts, however Section 25 of the Act and the Noise Regulations (GN R. 154 of 1992) promulgated under this section are still in effect. These Regulations serve to control noise and general prohibitions relating to noise impact and nuisance.

### 4.2 PERIOD FOR WHICH AUTHORIZATION IS REQUIRED

The authorisation will be required for the duration of the agricultural activities on-site.



## 5 NEED AND DESIRABILITY OF THE PROPOSED PROJECT

This section will examine the need and desirability of the proposed pivots and the importance of the project for the applicants continued operations and as a local economic stimulus. The proposed pivots will allow for favourable economic impacts on both the local and regional economy. The proposed pivots are consistent with the surrounding land use activities which is largely agricultural. Should the project proceed, an additional 200 temporary/seasonal jobs are anticipated to be created over a period of 20 years.

Furthermore, the additional pivots will ensure the sustained continuity of the applicants' operations and guard the crops against disease. The proposed new pivot developments will allow for the implementation of 1 pivot annually. Each pivot will be operational for two consecutive years upon which the soil will be returned to its natural inhabitation. After 8 years the cycle will repeat itself.

Pivot rotation is necessary in order to control lice in order to keep viruses at bay and to prevent early or late rust caused by fungi<sup>1</sup>.

### 5.1 NEED AND DESIRABILITY ANALYSIS

The needs and desirability analysis component of the *"Guideline on need and desirability in terms of the Environmental Impact EIA Regulations (Notice 819 of 2014)"* includes, but is not limited to, describing the linkages and dependencies between human well-being, livelihoods and ecosystem services applicable to the area in question, and how the proposed development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage sites, opportunity costs, etc.). Table 5 below presents the needs and desirability analysis undertaken for the proposed pivot development.

Table 5: Needs and desirability analysis for the proposed pivot development.

| Ref No.    | Question  | Answer   |
|------------|---|--|
| <b>1</b>   | <b>Securing ecological sustainable development and use of natural resources</b>   |  |
| <b>1.1</b> | How were the ecological integrity considerations taken into account in terms of: Threatened Ecosystems, Sensitive and vulnerable ecosystems, Critical Biodiversity Areas, Ecological Support Systems, Conservation Targets, Ecological drivers of the ecosystem, Environmental Management Framework, Spatial Development Framework (SDF) and global and international responsibilities. | <p>After running the DEA screening tool (Appendix F), specialist studies that were identified included:</p> <ul style="list-style-type: none"> <li>• Landscape/ Visual Impact Assessment;</li> <li>• Archaeological and Cultural Heritage Impact Assessment;</li> <li>• Palaeontology Impact Assessment;</li> <li>• Terrestrial Biodiversity Impact assessment;</li> <li>• Aquatic Biodiversity Impact Assessment;</li> <li>• Avian Impact Assessment;</li> <li>• Socio-economic Impact Assessment;</li> <li>• Plant Species Assessment; and</li> <li>• Animal Species Assessment.</li> </ul> <p>After further desktop analysis of the proposed project area, as well as a site visit, only a biodiversity and heritage and palaeontological was considered necessary by the EAP and was conducted by the required specialists. The decision of required specialist studies was informed based on the location of the proposed project, and the nature of the activity. The proposed project area is natural</p> |

<sup>1</sup> <https://www.farmersweekly.co.za/crops/field-crops/potato-farmers-virgin-soil-strategy-to-reduce-disease-risk/>



| Ref No.    | Question   | Answer   |
|------------|--|--|
|            |  | <p>vegetation and the surrounding land use activities is agricultural. The Vaal River and the Riet River runs north and south of the project area respectively however the proposed pivots are located more than 3km from the nearest river.</p> <p>The proposed development aligns with the Siyancuma Local Municipality Local Economic Development Plan (LED), which highlights agriculture and geoprocessing as an opportunity for economic growth in the municipality.</p> <p>The specialist impact assessments involved the gathering of data relevant to identifying and assessing preliminary environmental impacts that may occur because of the proposed pivots. These preliminary impacts were assessed according to the EIMS pre-defined impact significance rating methodology (Section 9). The specialists have also recommended appropriate preliminary mitigation/management or optimisation measures to minimise potential negative impacts or enhance potential benefits, respectively.</p> <p>The conclusions of these studies, and the identified preliminary impacts and associated mitigation measures will be further assessed in the EIA phase and the results thereof included in the EIA Report and accompanying EMPr. Any potential benefits and motivation for the proposed pivots are presented in this section.</p> |
| <b>1.2</b> | How will this project disturb or enhance ecosystems and / or result in the loss or protection of biological diversity? What measures were explored to avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts? | Refer to baseline ecological information in Section 8, and the impact assessment and mitigation measures in Section 9 of this Scoping Report. Efforts will be made to avoid any identified impacts/disturbance to sensitive environmental features. These sections will be further expanded on in the EIA Report and EMPr.   |
| <b>1.3</b> | How will this development pollute and / or degrade the biophysical environment? What measures were explored to either avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?   | Refer to the alternatives considered for this project in Section 6, the baseline ecological information in Section 8, and the impact assessment and mitigation measures in Section 9 of this Scoping Report. These sections will be further expanded on in the EIA Report and EMPr.  |
| <b>1.4</b> | What waste will be generated by this development? What measures were explored to avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and / or recycle the waste? What measures  | Waste impacts include the storage of waste and littering during the development of the pivots. Refer to Section 6 for alternatives considered and Section 9 for possible impact and mitigation measures relating to waste.   |



| Ref No.      | Question   | Answer  |
|--------------|--|---|
|              | have been explored to safely treat and/or dispose of unavoidable waste?  |   |
| <b>1.5</b>   | How will this project disturb or enhance landscapes and / or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?   | The proposed development will clearance of ~450 hectares of indigenous vegetation for the purposes of creating new cultivation (pivot) areas. Refer to Section 9 for possible impact and mitigation measures,   |
| <b>1.6</b>   | How will this project use and / or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy the impacts? What measures were explored to enhance positive impacts?   | It is anticipated that no non-renewable natural resources will be impacted on.  |
| <b>1.7</b>   | How will this project use and / or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and / or impacts on the ecosystem jeopardise the integrity of the resource and / or system considering carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? | The proposed project will result in the clearance of ~450 hectares of indigenous vegetation for the purposes of creating new cultivation (pivot) areas.<br><br>This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr. |
| <b>1.7.1</b> | Does the proposed project exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)?   | It is not anticipated that the project is anticipated to exacerbate the increased dependency of the natural resource however, the proposed project pivots will contribute towards to economic growth in the area.   |
| <b>1.7.2</b> | Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used?   | The proposed pivot area is natural vegetation and the surrounding land use activities is agricultural. The alternative use for the proposed area would be for to remain undeveloped.  |



| Ref No. | Question  | Answer   |
|---------|---|--|
| 1.7.3   | Do the proposed location, type and scale of development promote a reduced dependency on resources?  | The proposed pivots will be located on the same property as older pivots. While the proposed project will not reduce the dependency on the natural resource, the output of the proposed pivots will result in an increase in employment and food security.   |
| 1.8     | <b>How were a risk-averse and cautious approach applied in terms of ecological impacts</b>  |  |
| 1.8.1   | What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?  | <p>The exact number and location of protected plant species within the proposed development footprint is not known. The EMPr will include a requirement for a specialist walkthrough to identify any protected species within the development footprint and to oversee the relocation of these plants, if required, prior to any developments. Additionally, chance finds with regards to cultural heritage and palaeontology is a possibility. A chance find protocol was developed by the heritage/ palaeontology specialist.</p> <p>Another gap in knowledge is the exact soil composition. It will be required as part of the EMPr that soil testing be done prior to development to identify and add any substances that is required to ensure a good crop yield.</p> |
| 1.8.2   | What is the level of risk associated with the limits of current knowledge?  | In terms of location the level of risk with regards to soil composition is low due to the proposed project being within the vicinity of other successful pivot operations. The uncertainties mentioned in 1.8.1 above will be mitigated in the EMPr, which if followed, will attribute a low risk to any uncertainties.  |
| 1.8.3   | Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?  | Sufficient information was gathered prior to the onset of this process to indicate that positive impacts will outweigh low risk for the proposed project. The proposed project will positively influence the local economy through temporary/seasonal job creation as well as contribute to food security.   |
| 1.9     | <b>How will the ecological impacts be resulting from this development impact on people's environmental right in terms following?</b>  |  |
| 1.9.1   | Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? | Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.  |
| 1.9.2   | Positive impacts: e.g. improved access to resources, improved amenity, improved air   | Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further   |



| Ref No.     | Question  | Answer  |
|-------------|---|---|
|             | or water quality, etc. What measures were taken to enhance positive impacts?  | <p>explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p> <p>In summary, the only positive impacts will be to the local economy as a result of job creation and contribution to food security.</p>  |
| <b>1.10</b> | Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?   | <p>Refer to baseline ecological information in Section 8, and the impact assessment and mitigation measures in Section 9 of this Scoping Report. These sections will be further expanded in the EIA Report and EMPr.</p> <p>No dependencies are expected to be negatively impacted on because the proposed development will be on the applicant's property. The pivots will not negatively impact on any water sources that might be used by the surrounding communities. If any cultural or heritage resources are identified during development, a chance find procedure as described by the heritage specialist will be implemented to mitigate any negative impacts.</p> <p>The proposed project will provide 200 temporary/seasonal jobs over the next 20 years.</p> |
| <b>1.11</b> | Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets / considerations of the area?   | <p>Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p> <p>The proposed project will result in the loss of natural vegetation however, the impact is anticipated to be low.</p>  |
| <b>1.12</b> | Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations? | <p>Refer to Section 6 for details of the alternatives considered, as well as this section of the Scoping Report for the advantages and disadvantages of the proposed activity. This aspect will be further expanded on in the EIA Report.</p> <p>The alternative assessed for the proposed pivots is the no-go option.</p>  |
| <b>1.13</b> | Describe the positive and negative cumulative ecological / biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?  | <p>Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p> <p>The proposed project will contribute to the loss of natural vegetation and potential impact on cultural resources. The proposed pivot development is consistent with the surrounding land use activities in the area.</p>   |





| Ref No. | Question   | Answer  |
|---------|--|---|
| 2       | Promoting justifiable economic and social development  |   |
| 2.1     | What is the socio-economic context of the area, based on, amongst other considerations, the following?   |   |
| 2.1.1   | The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks or policies applicable to the area, | <p>Siyancuma LM, part of the Pixley Ka Seme DM, has three major urban settlements: Douglas, Griekwastad and Campbell and a few rural areas. The rest of the municipality consists of mainly commercial and small farming areas (which aligns with the proposed project) as well as small private game parks. This municipality was classified as a financially distressed municipality, mainly due to the strain that Eskom is putting on its cash flow. The LM's Integrated Development Plan (IDP, 2020) states that the main themes to focus on are increasing economic growth, improving community self-reliance, achieving service excellence and sustainability.</p> <p>According to StatsSA (2001 and 2011) the total population for Siyancuma Local Municipality showed a negative growth rate of -5.6 % with the population decreasing from 39 275 to 37 076. The 2016 Community Survey showed a further negative population growth rate of -3.1 % from 2011 to 2016 during which the population decreased from 37 067 to 35 938. The age group between 20 and 34 (characterised as the economically active group) forms 27.7 % of the total population in this LM.</p> <p>The LM's population can be broken down into the following (Community Survey, 2016):</p> <ul style="list-style-type: none"> <li>• Coloured – 67,80 %</li> <li>• African – 25,30 %</li> <li>• White – 6,69 %</li> <li>• Asian – 0,21 %</li> </ul> <p>Irrigated agriculture is among the major contributing factors to the Northern Cape provincial GDP, with a total area of 140 000 ha that is under irrigation. This sector uses approximately 80% of the total water used in the province to produce nearly 50% of the gross agricultural product.</p> <p>Agriculture forms the key economic activity within the Pixley Ka Seme District Municipality. According to the Pixley Ka Seme District Municipality IDP (2017) the agricultural sector provides around 39% of the employment opportunities in the district, which represent a significant and important economic sector, especially in this area that has limited job opportunities. The mechanisation by farmers has however resulted in declining job opportunities in this sector. According to the Pixley Ka Seme District Growth and Development Strategy</p> |





| Ref No.      | Question  | Answer   |
|--------------|---|--|
|              |   | <p>(2006) the Municipalities of Ubuntu, Siyathemba and Siyacuma contribute the most to this sector, with a total of 28,49 % contributed to the provincial Gross Geografic Product. Agriculture and agro-processing is one of the six critical sectors which was identified in the Growth and Development Strategy for unlocking economical potential.</p> <p>Douglas, 26 km southwest of the proposed project, is the economic hub of the municipality. This town has seen an influx of unskilled people from farms which is continuous. The agriculture, community, social and personal services sectors are the strongest economic sectors and biggest job providers in and around this town. The major employment agencies in the area include agricultural entities like GWK, the SLM and provincial government departments (IDP, 2020).</p>   |
| <b>2.1.2</b> | Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.), | <p>The LM has no Spatial Development Framework (SDF) or Land Use Scheme (LUS) to date. However, even though a small project, the proposed pivots align with the municipalities ideals as set out in the IDP as it will contribute to sustainable economic growth and job creation of unskilled people, which is much needed in the municipality. This is further exacerbated by the municipality's Key Performance Area 3- Local Economic Development and Tourism. Additionally, the project promotes self-reliance and fits in with one of the municipalities main themes, and Douglas's main job providing economic sectors, which is farming. The municipalities mission, among others, is to optimize all available resources and human skills to create an economically enabling environment.</p> <p>According to the Pixley Ka Seme DM SDF (2013-2018) the proposed project falls within a potential intensive irrigation agricultural area.</p> |
| <b>2.1.3</b> | Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and  | <p>The preferred location for proposed pivots falls within a potential intensive irrigation agricultural area according to the Pixley Ka Seme DM SDF (2013-2018). The proposed project aligns with the surrounding land uses.</p>  |
| <b>2.1.4</b> | Municipal Economic Development Strategy ("LED Strategy").   | <p>The LED strategy for Siyancuma LM focuses on 4 LED Pillars, each with supporting programmes, project and accompanying Key performance indicators (KPIs). Pillars 1 of the LED strategy focuses on Agriculture and Agro Processing Development</p> <p>The proposed pivot project aligns with the programmes and projects identified under Pillar 1 of the LED. The project will support agricultural growth and will create job opportunities for the local community as far as reasonably possible. Should the project proceed, an additional 200</p>   |



| Ref No.      | Question   | Answer  |
|--------------|--|---|
|              |  | temporary/seasonal jobs are anticipated to be created over a period of 20 years   |
| <b>2.2</b>   | Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?      | <p>Job creation for local residents as far as reasonably possible. Should the project proceed, an additional 200 temporary/seasonal jobs are anticipated to be created over a period of 20 years.</p> <p>Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p>  |
| <b>2.2.1</b> | Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?   | <p>The proposed development aligns and compliments the LED Pillar 1: local economic development, which includes various projects that focuses on agriculture and agro-processing development, including potato processing and packaging.</p> <p>The proposed pivot plant project will support the LED pillar 1 through the creation of job opportunities for the local community as far as reasonably possible.</p>   |
| <b>2.3</b>   | How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?  | <p>Refer to the public participation process undertaken to date in Section 7 of this Scoping Report. Public participation and consultation will continue during the EIA phase as described in Section 10.</p> <p>Furthermore, refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. The impacts will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p>   |
| <b>2.4</b>   | Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term? | <p>The need for additional pivots will support the need for short term and long-term food security through the provision of potato seeds.</p> <p>The proposed pivots will allow for favourable economic impacts on both the local and regional economy. Should the project proceed, an additional 200 temporary/ seasonal jobs are anticipated to be created over a period of 20 years. Furthermore, as per pillar 1 of the LED strategy, the proposed pivots will support the emerging potato farmers through the provision of seedlings and in turn will help increase the portion of crops that are beneficated locally.</p> |
| <b>2.5</b>   | <b>In terms of location, describe how the placement of the proposed development will:</b>  |   |
| <b>2.5.1</b> | Result in the creation of residential and employment opportunities in close proximity to or integrated with each other.  | The proposed project site located in the middle of agricultural land which is located approximately 26km north-east of the town Douglas and 77km south-west of the town Kimberly. Should the project proceed, an additional 200 jobs are  |



| Ref No. | Question  | Answer   |
|---------|---|--|
|         |   | anticipated to be created over a period of 20 years for the surrounding farming communities.   |
| 2.5.2   | Reduce the need for transport of people and goods.  | The proposed project will not have an increase on the need for transportation of goods and people as the proposed project will allow for the continuation of farming practices for the applicant.  |
| 2.5.3   | Result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),                                | The proposed project will not have an increase in the use of public transport as the proposed project will allow for the continuation of farming practices for the applicant.  |
| 2.5.4   | Compliment other uses in the area,  | The proposed project is consistent with the other land uses in the area, which is agricultural farming.  |
| 2.5.5   | Be in line with the planning for the area.  | Refer to item 2.1.2 of this table (above).   |
| 2.5.6   | For urban related development, make use of underutilised land available with the urban edge.  | Not applicable. The proposed pivots will be situated outside an urban area within an area classified as agricultural land.   |
| 2.5.7   | Optimise the use of existing resources and infrastructure.  | No existing infrastructure exist on the proposed site location.  |
| 2.5.8   | Opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement). | Refer to Section 6 of this Scoping Report.   |
| 2.5.9   | Discourage "urban sprawl" and contribute to compaction / densification.   | The proposed project will not have an impact n urban sprawl and compaction/densification as the project location is situated 26km north-east of the town Douglas and 77km south-west of the town Kimberly in an area zoned as agricultural land. |
| 2.5.10  | Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs.  | Refer to items 2.5.7 to 2.5.9 of this table (above).   |
| 2.5.11  | Encourage environmentally sustainable land development practices and processes.   | The proposed land use for the pivots is agricultural, which aligns with the nature of the development. Effort will be made towards being environmentally sustainable in the long term.   |
| 2.5.12  | Consider special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.).  | See item 1.7.3 of this table (above).  |
| 2.5.13  | The investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential).  | The proposed project will allow for contribution to the local, regional and national Gross Domestic Product (GDPs), and also to the local communities through employment opportunities contractors.  |
| 2.5.14  | Impact on the sense of history, sense of place and heritage of the area and the socio-  | The proposed locality is natural vegetation in the middle of agricultural land. Therefore, no sense of   |



| Ref No. | Question  | Answer  |
|---------|---|---|
|         | cultural and cultural-historic characteristics and sensitivities of the area.   | history or heritage will be lost. The proposed pivots will fit in with the surroundings, having no negative impacts on the sense of place.  |
| 2.5.15  | In terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?  | The proposed project will have no impact on settlement patterns as the proposed project area is in an area zoned as agricultural land.  |
| 2.6     | <b>How was a risk-averse and cautious approach applied in terms of socio-economic impacts</b>   |   |
| 2.6.1   | What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?  | <p>The location of the proposed pivots was chosen as it falls within agricultural land.</p> <p>The following gaps/ uncertainties are noted:</p> <ul style="list-style-type: none"> <li>• The scoping process and report is based on the technical information and process description provided by the client; and</li> <li>• The description of the baseline environment has been obtained from specialist studies and a desktop analysis.</li> </ul> |
| 2.6.2   | What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? | The level of risk is low as the project is not expected to have far reaching negative impacts on socio-economic conditions should the recommended mitigation and management measures be implemented and adhered to.   |
| 2.6.3   | Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?  | As the proposed project is a new development a cautious approach has been applied. An extensive public participation process was undertaken to ensure that the local community and relevant authorities were notified of the proposed project.  |
| 2.7     | <b>How will the socio-economic impacts resulting from this development, impact on people's environmental right in terms following:</b>  |   |
| 2.7.1   | Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?     | <p>Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p> <p>In summary the only negative effects identified will be that on the loss of natural vegetation.</p>   |
| 2.7.2   | Positive impacts. What measures were taken to enhance positive impacts?   | <p>Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p> <p>In summary, local employment will be prioritised.</p>   |
| 2.8     | Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's                  | Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.   |



| Ref No.       | Question   | Answer  |
|---------------|--|---|
|               | socioeconomic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?  | The proposed development will have a minimal impact on human-wellbeing and ecosystem services due to the location. Human livelihoods could however be positively impacted because of employment opportunities. There will be a negative impact on the ecology of the area as natural vegetation will need to be cleared in order to develop the pivots. These impacts could be minimised if the proposed mitigation measures are carried out. |
| <b>2.9</b>    | What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?   | Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.<br>Additionally, see item 2.8 of this table (above).  |
| <b>2.10</b>   | What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered? | Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.<br><br>The preferred alternative is considered the best practicable environmental option as it is located in an area zoned as agricultural land and is adjacent to the existing pivots.           |
| <b>2.11</b>   | What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?   | By conducting a Scoping and EIA process, with an adequate public participation process, the applicant ensures that equitable access to the environment has been considered. Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.                       |
| <b>2.12</b>   | What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?   | Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.   |
| <b>2.13</b>   | <b>What measures were taken to:</b>  |   |
| <b>2.13.1</b> | Ensure the participation of all interested and affected parties.   | Refer to the public participation process undertaken to date in Section 0 of this Scoping Report. Public participation and consultation will continue during the EIA phase as described in Section 10.  |
| <b>2.13.2</b> | Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation,  |   |



| Ref No. | Question   | Answer   |
|---------|--|--|
| 2.13.3  | Ensure participation by vulnerable and disadvantaged persons,  | <p>Advertisements as well as site notices were distributed in and around the project area in English and Afrikaans to assist in understanding the project. The notices and advertisements included contact details for easy access to the public participation specialist if any additional information is required by anyone from the public. The public is encouraged to participate and provide input which will then be recorded and submitted with the relevant reports to the competent authority.</p> <p>The scoping report will be made available on the at a local public place (Public Library) and the EIMS website after completion, and all registered I&amp;APs will be notified of the report availability.</p> |
| 2.13.4  | Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means,  |  |
| 2.13.5  | Ensure openness and transparency, and access to information in terms of the process,   |  |
| 2.13.6  | Ensure that the interests, needs and values of all interested and affected parties were considered, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge,  |  |
| 2.13.7  | Ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein will be promoted?   |  |
| 2.14    | Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)? | <p>Refer to the public participation process undertaken to date in Section 0 of this Scoping Report. Public participation and consultation will continue during the EIA phase as described in Section 10.</p> <p>Furthermore, refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. The impacts will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p>  |
| 2.15    | What measures have been taken to ensure that current and / or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?                                    | Workers at the farm will be educated on a regular basis through toolbox talks on the environmental and health risks that may occur within their work environment, and adequate measures will be taken to ensure that the appropriate personal protective equipment is issued to workers based on the areas that they work in as well as the requirements of their job.   |
| 2.16    | <b>Describe how the development will impact on job creation in terms of, amongst other aspects:</b>  |  |
| 2.16.1  | The number of temporary versus permanent jobs that will be created.  | The project pivots are located approximately 26km north-east of the town Douglas and 77km south-west of the town Kimberly. It is anticipated that workers currently employed or to be employed will travel from the surrounding towns. Should the project proceed, an additional 200 temporary/seasonal jobs are anticipated to be created over a period of 20 years for the surrounding farming communities.  |
| 2.16.2  | Whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area).   |  |
| 2.16.3  | The distance from where labourers will have to travel.   |  |



| Ref No. | Question  | Answer  |
|---------|---|---|
| 2.16.4  | The location of jobs opportunities versus the location of impacts.  |   |
| 2.16.5  | The opportunity costs in terms of job creation.   |   |
| 2.17    | What measures were taken to ensure:   |   |
| 2.17.1  | That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.  | The Scoping and EIA process requires governmental departments to communicate regarding any application. In addition, all relevant Departments and key stakeholders have been notified about the project by the EAP and registered as Interested and Affected Parties who will continue to be notified and engaged with regarding the project throughout the EIA process.  |
| 2.17.2  | That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures.  | The Scoping and EIA process requires governmental departments to communicate regarding any application. In addition, all relevant Departments and key stakeholders have been notified about the project by the EAP and registered as Interested and Affected Parties who will continue to be notified and engaged with regarding the project throughout the EIA process.  |
| 2.18    | What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?   | <p>Refer to the public participation process undertaken to date in Section 0 of this Scoping Report. Public participation and consultation will continue during the EIA phase as described in Section 10.</p> <p>Furthermore, refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. The impacts will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.</p> <p>Potato seedlings are sought in the agricultural industry and will contribute to food security on a national scale.</p> |
| 2.19    | Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?   | Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. The impacts will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.   |
| 2.20    | What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment? | This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.  |





| Ref No. | Question   | Answer  |
|---------|--|---|
| 2.21    | Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations? | Refer to Section 6 for details of alternatives considered in this Scoping Report. This aspect will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr.  |
| 2.22    | Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?  | Refer to the identified impacts, their assessment and recommended mitigation measures in Section 9 of this Scoping Report. The impacts will be further explored in the EIA phase and findings thereof presented in the EIA Report and EMPr. |

## 6 PROJECT ALTERNATIVES

The identification of alternatives is a key aspect of the success of the environmental scoping phase. All reasonable and feasible alternatives must be identified and screened to determine the most suitable alternatives to consider and assess in the EIA phase. There are, however, some significant constraints that have to be considered when identifying alternatives for a project of this scope. Such constraints include social, financial and environmental issues, which will be discussed as part of the evaluation of the alternatives for this project. Alternatives can typically be identified according to:

- Location alternatives (including design and layout);
- Process alternatives;
- Technology alternatives; and
- Activity alternatives (including the No-Go option).

For any alternative to be considered feasible such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. As mentioned in Section 5.1 of this Scoping Report, the need for the proposed project includes the following key drivers:

- The contribution of the proposed project to job creation; and the stimulation of the local economy;
- The need for integrated and zoned land uses; and
- The contribution of the proposed pivots to food security.

Essentially, alternatives represent different means of meeting the general purpose and need of the proposed project through the identification of the most appropriate and feasible methods of development/ production, all of which are discussed below. Alternatives can further be distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and or scoping phases of the EIA process (DEAT, 2004). Incremental alternatives typically arise during the EIA process and are usually suggested as a means of addressing identified impacts. These alternatives are closely linked to the identification of mitigation and management measures and are not specifically identified as distinct alternatives. Incremental alternatives to be considered by the applicant include the type of irrigation system to be used and the method of sourcing power to the pivot to turn around its centre. These will be investigated further during the EIA phase and will form part of the EMPr.

In this section the only discrete alternatives considered, as described in the sections that follow, was the **Preferred Alternative** and the **No-Go Alternative**, as no other feasible alternatives could be identified with regards to location, process, technology or the type of activity owing to the nature of the existing farming activities being undertaken by Genade Boerdery.





## 6.1 PREFERRED ALTERNATIVE

The preferred alternative will involve the expansion of agricultural activities on the farm Taaiboschfontein 168r (registration division: Kimberley) by introducing 9 new pivots that will require the clearance of approximately 456 ha of vegetation, primarily for the growing of seed potatoes. The 6 pivots will be 63 ha each, 2 pivots will be 24 ha each and a pivot will be 30 ha in size. The new development will include the implementation of 1 pivot annually. Each pivot will be operational for two consecutive years upon which the soil will be returned to its natural inhabitation. After 8 years the cycle will repeat itself. Refer to Figure 1 for a layout map of the proposed pivots.

Water to be used for the proposed pivots were already listed with the Oranje Vaal Water Users Association on 13 August 2020 for operations on portion 2 of the Farm Taaiboschfontein 168 for 11 000m<sup>3</sup> per/ha.

No other feasible alternatives other than the No-Go alternative could be identified. The proposed project is located on the applicant's property close to other pivots.. No significant negative environmental impacts are expected as because of the proposed project. No other land-uses seem more feasible within the proposed project area.

## 6.2 NO-GO ALTERNATIVE

The no-go alternative option means 'do nothing' or the option of not undertaking the proposed preferred activities, consequently leading to the continuation of the current land-use, which is leaving the location as a semi-vegetated area. As such, the 'do nothing' alternative or keeping the current status quo of a with no activities occurring on-site also provides the baseline against which the impacts of other alternatives should be compared.

# 7 STAKEHOLDER ENGAGEMENT

The Public Participation Process (PPP) is a requirement of several pieces of South African legislation and aims to ensure that all relevant Interested and Affected Parties (I&APs) are consulted, involved and their opinions are taken into account, and a record included in the reports submitted to relevant authorities. The process aims to ensure that all stakeholders are provided an opportunity as part of a transparent process which allows for a robust and comprehensive environmental study. The PPP for the proposed project needs to be managed sensitively and according to best practises in order to ensure and promote:

- Compliance with international best practise options;
- Compliance with national legislation;
- Establish and manage relationships with key stakeholder groups; and
- Encourage involvement and participation in the environmental study and authorisation / approval process.

As such, the purpose of the PPP and stakeholder engagement process is to:

- Provide an opportunity for I&APs to obtain clear, accurate and comprehensible information about the proposed activity, its alternatives or the decision and the environmental impacts thereof;
- Provide I&APs with an opportunity to indicate their viewpoints, issues and concerns regarding the activity, alternatives and / or the decision;
- Provide I&APs with the opportunity to suggest ways of avoiding, reducing or mitigating negative impacts of an activity and enhancing positive impacts;
- Enable the applicant to incorporate the needs, preferences and values of I&APs into the activity;
- Provide opportunities to avoid and resolve disputes and reconcile conflicting interests;



- Enhance transparency and accountability in decision-making;
- Identify all significant issues for the project; and
- Identify possible mitigation measures or environmental management plans to minimise and / or prevent environmental impacts associated with the project.

The PPP for this project has been undertaken in accordance with the requirements of the NEMA, as well as in line with the principles of Integrated Environmental Management (IEM). IEM implies an open and transparent participatory process, whereby stakeholders and other I&APs are afforded an opportunity to comment on the project.

## 7.1 LEGAL COMPLIANCE

The PPP must comply with the National Environmental Management Act (Act No. 107 of 1998 – NEMA); that requires public participation as part of an application for authorisation or approval. The details of the Integrated PPP followed are provided below.

## 7.2 GENERAL APPROACH TO PUBLIC PARTICIPATION

The PPP for the proposed pivots has been undertaken in accordance with the requirements of the NEMA as well as in line with the principles of Integrated Environmental Management (IEM). IEM implies an open and transparent participatory process, whereby stakeholders and other I&APs are afforded an opportunity to comment on the project.

## 7.3 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

The I&AP databases compiled for various past environmental authorisation processes in the vicinity of the proposed pivots have been utilised towards compiling a pre-notification register of key I&APs to be notified of the Environmental Authorisation Application. The I&AP database includes amongst others: landowners, communities, regulatory authorities and other specialist interest groups. Additional I&APs have been registered during the initial notification and call to register period. The I&APs database will continue to be updated throughout the duration of the EIA process. A full list of I&APs is attached in Appendix C: Public Participation.

### 7.3.1 LIST OF AUTHORITIES IDENTIFIED AND NOTIFIED

The following Government Authorities were notified of the proposed project:

- |   |   |
|---|---|
| • National Department of Agriculture, Land Reform and Rural Development;                        | • Pixley Ka Seme District Municipality;                 |
| • National Department of Human Settlements, Water and Sanitation;                               | • Provincial Land Claims Commissioner                   |
| • Northern Cape Department of Agriculture, Environmental Affairs and Rural Development;         | • Siyancuma Local Municipality;                         |
| • Northern Cape Department of Cooperative Governance, Human Settlement and Traditional Affairs; | • South African Civil Aviation Authority;               |
| • Northern Cape Department of Social Development;   | • South African Heritage Resource Agency (SAHRA); and   |
|   | • South African National Roads Agency Limited (SANRAL). |

### 7.3.2 OTHER KEY STAKEHOLDERS IDENTIFIED AND NOTIFIED

The following key stakeholders have been identified and notified of the proposed project:



- Irusma Boerdery CC;
- HF Mulke Trust;
- Almar Boerdery CC;
- Kaaldraai Trust;
- Youngberg Investments Pty Ltd;
- Tiaan Trust;
- Endangered Wildlife Trust (EWT);
- WESSA;
- Succulent Society of South Africa; and
- Vickie Trust

## 7.4 NOTIFICATION OF I&APS.

The PPP commenced on the 29<sup>th</sup> of September 2020 with an initial notification and call to register for a period of 30 days. I&APs were notified of the Initial call to register as presented below.

### 7.4.1 INITIAL NOTIFICATION OF I&APS

Registered letters, emails and facsimiles (faxes) were prepared and distributed to the identified relevant authorities, affected and adjacent landowners and legal occupiers, ward councillors and other pre-identified key stakeholders. The notification documents included the following information:

- The purpose of the proposed project;
- Details of the NEMA Regulations that are anticipated to be applicable and must be adhered to;
- List of anticipated activities to be authorised;
- Location and extent of activities to be authorised;
- Details of the affected properties (including a locality map or an indication of where the locality map may be viewed or obtained);
- Brief but sufficient detail of the intended operation to enable I&APs to assess/ surmise what impact the project will have on them or on the use of their land (if any);
- Initial call to register duration; and
- Contact details of the EAP.

### 7.4.2 SITE NOTICES AND POSTERS

4 Site notices were placed along, within and surrounding the perimeter of the proposed project area and its surroundings on 2<sup>nd</sup> October 2020. The on-site notices included the following information:

- Project name;
- Applicant name;
- Project location;
- Description of the environmental authorisation application process;
- Legislative requirements; and
- Relevant EAP contact person details for the project.

Please refer Appendix C for proof of site notice and poster placement.



### 7.4.3 NEWSPAPER ADVERTISEMENTS

One advertisement (English and Afrikaans) was placed on the 24<sup>th</sup> of September 2020 in the Noordkaap Bulletin newspaper with circulation in the vicinity of the project area. The details of the advertisements are presented below.

The newspaper advertisement included the following information:

- Project name;
- Applicant name;
- Project location;
- Description of the environmental authorisation application process;
- Legislative requirements; and
- Relevant EAP contact person details for the project.

### 7.5 NOTIFICATION OF AVAILABILITY OF SCOPING REPORT

Notification regarding the availability of this Scoping Report for public review has been given in the following manner:

- Registered letters with details on where the Scoping Report is available from, as well as the duration of the public review comment period, were distributed to all registered I&APs (which includes key stakeholders, affected and surrounding landowners, and registered occupiers);
- Facsimile notifications with information similar to that in the registered letter described above, were distributed to all registered I&APs; and
- Email notifications with a letter attachment containing the information described above were also distributed to all registered I&APs.

The Scoping Report was made available for public review with the (Local Public Library ) from the 1<sup>st</sup> April 2021 until the 5<sup>th</sup> May 2021, for a period of 30 days.

### 7.6 ISSUES AND RESPONSES.

Issues raised to date have been addressed in a transparent manner and the full details (such as the comment received, the name of the I&AP who commented, the issue raised and the main aspect of the raised issue, as well as the response provided to the I&AP) included in the Public Participation Report (Appendix C). A summary of the key issues/ comments raised and an indication of where these issues are addressed in this Scoping Report, is presented in Table 6.

Table 6: Summary of issues raised by I&APs

| Issue/ Comment Raised   | Aspect Affected | EAP Response/ Relevant Section in Scoping Report   |
|---|-----------------|--|
| Good afternoon,<br><br>Please note that all development applications are processed via our online portal, the South African Heritage Resources Information System (SAHRIS) found at the following link: <a href="http://sahra.org.za/sahris/">http://sahra.org.za/sahris/</a> . We do | Heritage        | No response required. EIMS will load the necessary documentation onto the SAHRIS website for comments from the SAHRA during the Scoping and EIA phase. |



| Issue/ Comment Raised   | Aspect Affected | EAP Response/ Relevant Section in Scoping Report |
|---|-----------------|--|
| <p>not accept emailed, posted, hardcopy, faxed, website links or DropBox links as official submissions.</p> <p>Please create an application on SAHRIS and upload all documents pertaining to the Environmental Authorisation Application Process. As per section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA), an assessment of heritage resources must form part of the process and the assessment must comply with section 38(3) of the NHRA.</p> <p>Once all documents including all appendices are uploaded to the case application, please ensure that the status of the case is changed from DRAFT to SUBMITTED. Please ensure that all documents produced as part of the EA process are submitted as part of the application.</p> |                 |  |

## 8 ENVIRONMENTAL ATTRIBUTES AND BASELINE

### 8.1 CLIMATE

#### 8.1.1 TEMPERATURE

The average monthly temperature was obtained from weatherbase.com (2021) for Kimberley, approximately 77 km northeast from the proposed project area, and is presented in According to the Siyancuma LM IDP (2020), temperatures during the day can vary between 1.7°C in winter and 34.8 °C in summer.

Table 7 and Figure 5 below. The average monthly temperatures were calculated based on 18 years on record. Average temperatures ranged between 11°C during winter months in June and July to 25°C in the summer during January. According to the Siyancuma LM IDP (2020), temperatures during the day can vary between 1.7°C in winter and 34.8 °C in summer.

Table 7: Monthly average temperature in Kimberley (weatherbase.com, 2021).

| Monthly Average Temperatures (°C) in Kimberley |     |     |     |     |     |     |     |     |     |     |     |        |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| Jan  | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
| 25   | 24  | 22  | 18  | 14  | 11  | 11  | 13  | 17  | 20  | 22  | 24  | 18     |

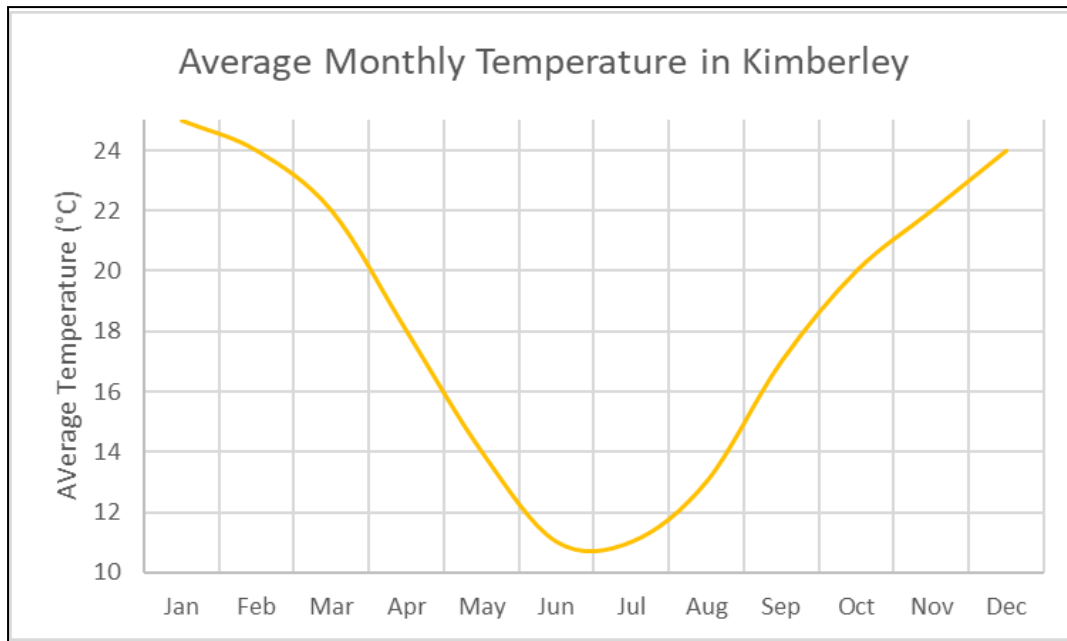


Figure 5: Monthly average temperature in Kimberley (weatherbase.com, 2021).

### 8.1.2 RAINFALL AND EVAPORATION

Rainfall data was collected from weatherbase.com (2021) and evaporation data was extracted from the Water Resources of South Africa 2005 Study (WR, 2005).

Average monthly precipitation values for Kimberly were extracted from weatherbase.com (2021) (see Table 8 and Figure 6). According to the site, these averages were derived from 114 years on record. The study area falls within quaternary catchments C51M and C92B, and according to the Water Resources of South Africa Study (WR2005) the study area has an average annual evaporation of more than 2600 mm.

Table 8: Average monthly precipitation in Kimberley (weatherbase.com, 2021).

| Average Monthly Precipitation (mm) in Kimberley |     |     |     |     |     |     |     |     |     |     |     |        |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| Jan   | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
| 60  | 60  | 70  | 40  | 10  | -   | -   | -   | 10  | 20  | 40  | 50  | 420    |

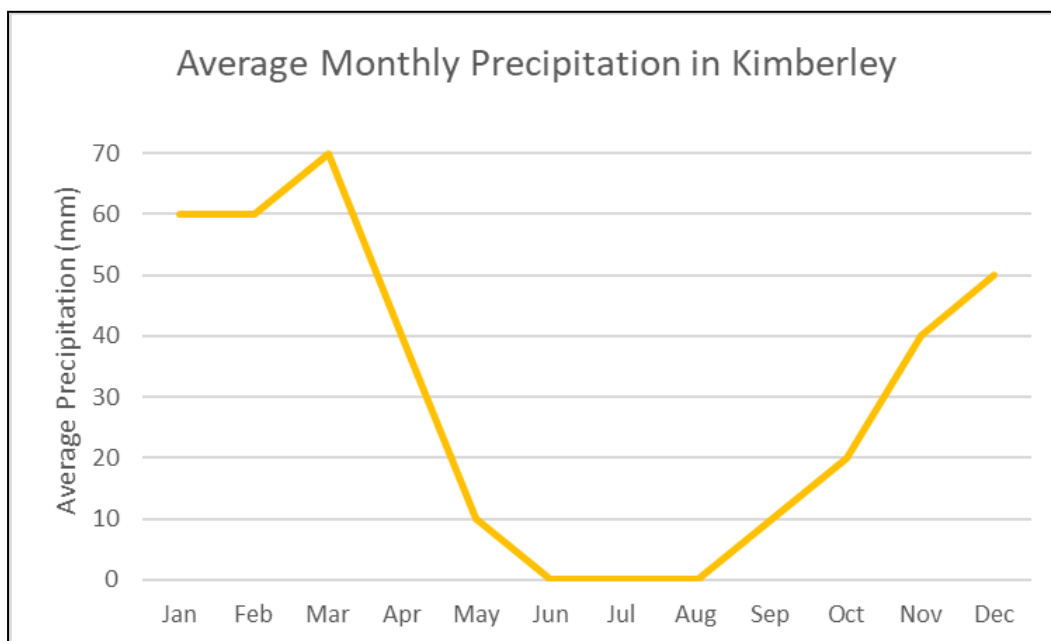


Figure 6: Average monthly precipitation in Kimberley (weatherbase.com, 2021).



## 8.2 TOPOGRAPHY

On a regional scale (50 km radius) the elevation ranges between approximately 980 and 1350 masl (Figure 8). The topography within the project area can be described as fairly flat (less than 10 % slope) with an elevation of 1050 masl. Some hills are located approximately 5 km northeast of the proposed project at 1140 masl and the Vaal river 2.4 km to the northwest of the proposed site at 1000 masl.

## 8.3 GEOLOGY AND PALAEONTOLOGY

Banzai Environmental was appointed as the specialists to conduct a Palaeontological Desktop Assessment (PDA) for the proposed pivot expansion project. The PDA was conducted to identify if fossils could be present within the area of the planned development and to evaluate the possible effect that construction can have on any palaeontological resources.

According to the specialist assessment done, the proposed pivot project is mantled by Late Cenozoic Superficial Sediments (see Figure 9 for a simplified geology map and for an extract of the 2824 Kimberley Geological Map). The Superficial deposits in the Douglas area consists of alluvial gravels, aeolian sands, calcretes of the Quaternary Gordonia Formation that overlies the older sediments. The Cenozoic Kalahari Group is the most widespread body of terrestrial sediments in southern Africa. The sands and calcretes of the Kalahari Group range in thickness from a few metres to more than 180m (Partridge et al., 2006). The pan sediments of the area originated from the Gordonia Formation and contains white to brown fine-grained silts, sands and clays. Some of the pans consist of clayey material mixed with evaporates that shows seasonal effects of shallow saline groundwaters.

The Gordonia dune sands are dated as Late Pliocene/Early Pleistocene to Recent times by the Middle to Later Stone Age stone tools recovered from them (Dingle et al, 1983). The boundary of the Pliocene-Pleistocene has been extended back from 1.8 Ma to 2.588 Ma placing the Gordonia Formation almost entirely within the Pleistocene Epoch.

The fossil assemblages of the Kalahari are generally low in diversity and occur over a wide range but has a high Palaeontological Sensitivity. These fossils represent terrestrial plants and animals with a close resemblance to living forms. Fossil assemblages include bivalves, diatoms, gastropod shells, ostracods and trace fossils. The palaeontology of the Quaternary superficial deposits has been relatively neglected in the past. Late Cenozoic calcrete may comprise of bones, horn cores as well as mammalian teeth. Tortoise remains have also been uncovered as well as trace fossils which includes termite and insect's burrows and mammalian trackways. Amphibian and crocodile skeletons have been uncovered where the depositional settings in the past were wetter.

According to the South African Heritage Resources Information System (SAHRIS), the Palaeontological Sensitivity of the Late Cenozoic Superficial Sediments is low, but locally high (see Figure 11 for Palaeontological sensitivity). The extension of the pivot irrigation on the Taaiboschfontein 168 farm was deemed appropriate and feasible by the specialist and will not lead to detrimental impacts on the palaeontological resources of the area. The specialist stated that construction and operation of the pivots may be authorised as the whole extent of the development footprint is not considered sensitive in terms of palaeontological resources.

It was consequently recommended by the specialist that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils. If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the farm manager in charge of these developments. These discoveries ought to be protected (if possible, in situ) and the farm manager must report to the South African Heritage Resources Agency (SAHRA).

## 8.4 HERITAGE

PGS Heritage (Pty) Ltd was appointed as the specialists to conduct a Heritage Impact Assessment (HIA) for the proposed pivot irrigation expansion project. Heritage resources are unique and non-renewable and as such, any impact on such resources must be seen as significant. Through data analysis and a site investigation, the were identified from a heritage perspective.



Intensive field surveys of the study area were undertaken on foot by comprising two field archaeologists on 20-22 September 2020. Despite an intensive walkthrough of the project area, no evidence for any archaeological or heritage sites could be identified.

## 8.5 SOIL

The study area falls within the land types Ia and Ae (ARC – Institute for Soil Climate & Water), a land-type being an area that is uniform with respect to terrain form, soil patterns and climate. The soils within the Ae land type are AC soils, which are red-yellow well drained soils lacking a strong texture contrast, with a high base status. They are eutrophic soils  $\geq 750$  mm deep with  $< 15\%$  clay. The soils within the Ia land type are classified as EE soils which are soils with a negligible to weak profile development, usually occurring on recent flood plains. They  $\geq 750$  mm deep with  $< 15\%$  clay.

## 8.6 VEGETATION

Ecological Management Services were appointed as the specialists to conduct a biodiversity assessment for the proposed pivot expansion project. The specialist conducted both a desktop and field investigation.

Kimberley Thornveld is classified as Least Threatened only 2% of this vegetation is formerly conserved and 18% is considered transformed, mostly by agricultural cultivation. Threats include bush encroachment by *Senegalia mellifera* owing to overgrazing. The Upper Gariep Alluvial Vegetation is classified as Vulnerable, with only 2% conserved and more than 20% transformed through cultivation. The planned additional pivots fall only within the Kimberley Thornveld. Focus areas for land-based protected area expansion are large, intact and unfragmented areas of high importance for biodiversity representation and ecological persistence, suitable for the creation or expansion of large, protected areas. The focus areas were identified through a systematic biodiversity planning process undertaken as part of the development of the National Protected Area Expansion Strategy 2008 (NPAES). They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with strong emphasis on climate change resilience and requirements for freshwater ecosystems. The project area does not fall within a NPAES focus area but is located approximately 25km north west of the Mokala National Park and its proposed expansion area for the eastern Kalahari bushveld.

The study area is not considered a threatened ecosystem in terms of NEM:BA and does not fall within a within a River FEPA (Fresh Water Ecosystem Priority Area), there are however two identified NFEPA wetlands within the study area, these are usually associated with pans that occur in this vegetation type. The study site and surrounding area does not fall within an Important Bird and Biodiversity Area (IBA). IBAs are sites of international significance for the conservation of the world's birds and other biodiversity.

The study site falls with a Critical Biodiversity Area 2 (CBA2). CBA2 are areas that have been selected as the best option for meeting biodiversity targets, based on complementarity, efficiency, connectivity and/or avoidance of conflict with other land or resources uses.

According to spatial data from Mucina and Rutherford, 2006, the project area falls within SVk 4, Kimberley Thornveld (Figure 13). According to the National Biodiversity Assessment (SANBI, 2018) this vegetation type is poorly protected and is listed as least concern on the Red List of Ecosystems. The specialist assessment report describes Kimberley Thornveld as having a well-developed tree layer with *Vachellia erioloba*, *V. tortilis* and *V. karroo* and *Boscia albitrunca*. The shrub layer is also described as well-developed with occasional dense stands of *T. camphoratus* and *S. mellifera*. The grass layer is open with a lot of uncovered soil. Upper Gariep Alluvial vegetation is found on the flat alluvial terraces supporting a complex of riparian thickets, flooded grasslands, reed beds and ephemeral herb-lands populating mainly sandy banks.

The vegetation within the proposed development area is uniform and the terrain is flat. The proposed new pivots are located within the Kimberley Thornveld vegetation type. The area of the proposed pivot development consisted of an open savannah dominated by *Vachellia* spp. Two distinct layers were evident within the area, namely a grassy layer and a tree/shrub layer. The grass layer which was between 10 – 30cm high, was poorly developed and open patches exposing the red substrate were clearly evident in some areas. The tree/shrub layer was between 2m-4m and consists of species such as *Vachellia haematoxylon*, *Vachellia tortilis*, *Vachellia*





*erioloba*, *Senegalia mellifera*, and *Lycium* spp. There was a low occurrence of karroid dwarf shrubs but species such as *Lasiosiphon polycephalus* and *Chrysocoma ciliata* were noted.

Two pans are located within the property, one is located within center of the property and the other is located on the edge of the north eastern corner, very little of this pan is actually within the boundary of the property. The limestone layer is exposed in most of this habitat, and it consists of an open grassy area with trees/shrubs only occurring on the outer edges. The grass layer was cropped extremely short and large bare patches of exposed substrate occur. The central pan contains some infrastructure and has been significantly disturbed.

The southern section of the property contains pivots as well as open grassy areas which at one time were cultivated. The southern boundary of the property is along the Riet River, the riparian area of the river is easily distinguishable from the surrounding vegetation however it has been invaded by *Eucalyptus* spp.

### VTU 3: mixed *Vachellia* Savannah

This vegetation community contains a tree layer which is mainly comprised of *Vachellia erioloba* and *Vachellia tortilis*. Three vegetation strata are evident within this vegetation unit. There is a prominent tree layer between 2.5m – 5m, a shrub layer, between 1.5m – 2.5m and a grass layer with an average height of 50cm. *Vachellia erioloba*, and *Vachellia tortilis* are prominent within this vegetation type. The density of the trees varies across the landscape, with some areas forming a more open savannah, while other areas have dense pockets of trees and shrubs. Other species recorded included, *Asparagus glaucus*, *Zygophyllum lichtensteinianum*, *Lycium hirsutum*, *Helichrysum arenicola*, *Selago multispicata*, and *Melhaniania rehmannii*. Grass species within this vegetation community included, *Eragrostis lehmanniana*, *Schmidtia pappophoroides*, *Aristida congesta*, *Centropodia glauca*, *Enneapogon scoparius*, *Stipagrostis hirtigluma*, *Stipagrostis uniplumis*, and *Tricholaena monachne*.

The biodiversity specialist consulted historical records of Red List plant species in order to determine the likelihood of any such species occurring in the study area and these were searched for in the field. Plant species observed as well as a list of threatened plant species previously recorded in the quarter degree grids in which the study area is situated which was obtained from the South African National Biodiversity Institute, are listed in Table 9 below.

Table 9: Protected species that possibly occur on-site.

| Species                       | Legislation                     | Conservation Status   | Potential of occurrence on-site  |
|-------------------------------|---------------------------------|-----------------------|--|
| <i>Vachellia erioloba</i>     | National Forests Act 1998       | Protected             | Recorded on property and within development footprint                                      |
| <i>Vachellia haematoxylon</i> | National Forests Act 1998       | Protected             | Recorded on property and within development footprint                                      |
| <i>Bosica albitrunca</i>      | National Forests Act 1998; NCNA | Protected; Schedule 2 | Recorded on property and within development footprint                                      |
| <i>Titanopsis calcarea</i>    | NCNCA                           | Schedule 2            | Not recorded during field survey, Low potential of occurrence within development footprint |
| <i>Plinthus karooicus</i>     | NCNCA                           | Schedule 2            | Not recorded during field survey, Low potential of occurrence within development footprint |
| <i>Ruschia ruralis</i>        | NCNCA                           | Schedule 2            | Not recorded during field survey, Low potential of occurrence within development footprint |
| <i>Bulbine abyssinica</i>     | NCNCA                           | Schedule 2            | Not recorded during field survey, Low potential of occurrence within development footprint |
| <i>Aloe claviflora</i>        | NCNCA                           | Schedule 2            | Not recorded during field survey, Low potential of occurrence within development footprint |
| <i>Ornithogalum nanodes</i>   | NCNCA                           | Schedule 2            | Not recorded during field survey, Low potential of occurrence within development footprint |
| <i>Nemesia pubescens</i>      | NCNCA                           | Schedule 2            | Not recorded during field survey, Low potential of occurrence within development footprint |



In order to remove species listed in Schedule 1 & 2 of the NCNCA, during site clearing activities, an integrated permit application will have to be made to the DENC to obtain the required permission to remove and/or translocate these species from site. In order to remove the protected trees a license application will have to be made to the Department of Environment Forestry and Fisheries. The specialist further recommended that prior to clearing an additional walk through should be conducted.

The biodiversity specialist also identified certain alien invasive plant species. These are divided in categories in accordance with the Government Gazette Notice No. 40166 of July 2016. The specialist specifically identified category 1b and category 3 species (see Table 10), which are defined below.

Table 10: Alien invasive species that occur in or around the property.

| Species                        | Common Name                   | Category |
|--------------------------------|-------------------------------|----------|
| <i>Argemone mexicana</i>       | Yellow flowered Mexican Poppy | 1b       |
| <i>Prosopis cf. glandulosa</i> | Mesquite                      | 3        |
| <i>Opuntia humifusa</i>        | Prickly pear                  | 1b       |
| <i>Argemone ochroleuca</i>     | White flowered Mexican poppy  | 1b       |
| <i>Eucalyptus amaldulensis</i> | Red River Gum                 | 1b       |

#### **Category 1b (prohibited / exempted if in possession or under control): Listed Invasive Species**

A person in control of a Category 1 b Listed Invasive Species must control the listed invasive species in compliance with sections 75(1), (2) and (3) of the Act. A person contemplated in sub-regulation (2) must allow an authorised official from the Department to enter onto the land to monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of the Act.

#### **Category 3 (prohibited): Listed Invasive Species**

Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the Act, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of the Act, as specified in the Notice. Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3.

## **8.7 FAUNAL SPECIES**

A substantial section of the property has already been disturbed by agricultural activity which has resulted in some disturbance to the faunal population on site. Disturbances that alter the natural environment have two effects namely, it may cause the loss of certain species due to the destruction of habitat. It may also cause the influx of other species previously unable to colonise an area owing to lack of suitable habitat or because they have been excluded through competition. It was not possible to compile a complete list of species present on the property during the field survey owing to the limited time frame of the assessment. It is therefore important to note that many species that potentially occur on-site may not have been identified thus emphasis was placed on the habitat in order to determine potential occurrence of species. The potential of occurrence is also assessed for the immediate surrounding area as to establish the possibility of ecological linking corridors for certain species.

No red data terrapin, tortoises, snakes or lizards were identified as occurring in the quarter degree square, based on the distribution maps available in the South African Red Data Book for reptiles (Bates et. al. 2014) and The Southern African Reptile Conservation Assessment (SARCA). The conservation status was cross checked on the IUCN website to determine most recent status listing for these species.

Eight red data bird species have been recorded for the quarter degree square, five have a high potential to occur on site. Most of these species will utilise the site for foraging purposes but they may not be totally dependent on the site. Table 11 lists these species and there potential for occurrence on-site.



Table 11: Bird species of conservation concern identified as occurring in and around the quarter degree squares and the potential for occurrence on-site.

| Common Name                  | Scientific Name                  | Potential for occurrence on-site and surrounding area   |
|------------------------------|----------------------------------|---|
| Blue Crane                   | <i>Anthropoides paradiseus</i>   | Very Low: Edge of distribution range, vegetation too dense.   |
| Kori Bustard                 | <i>Ardeotis kori</i>             | High: Recorded in the area Suitable habitat occurs on site.   |
| Greater Flamingo             | <i>Phoenicopterus ruber</i>      | Very Low: No large bodies of open water occur on the proposed development site.   |
| Lanner Falcon                | <i>Falco biarmicus</i>           | High: Suitable foraging habitat occurs on site.   |
| Lesser Flamingo              | <i>Phoenicopterus minor</i>      | Very Low: No large bodies of open water occur on the proposed development site.   |
| Secretary Bird               | <i>Asagittarius serpentarius</i> | High: Suitable habitat occurs on site.  |
| African White Backed Vulture | <i>Gyps africanus</i>            | High: Suitable habitat on the property, however no nests were recorded within the planned development area. The fact that the site is located near operating pivots reduces its suitability but does not exclude it as potential habitat. |
| Cape Vulture                 | <i>Gyps coprotheres</i>          | High: Suitable habitat on the property. The fact that the site is located near operating pivots reduces its suitability but does not exclude it as potential habitat.   |

The biodiversity specialist extrapolated a list of all red data mammal species occurring in the quarter degree squares from the Red Data Book for Mammals (EWT, 2004) and the MammalMAP, the Mammal Atlas of Africa database. Based on an evaluation of the habitat requirements for these red data species (EWT, 2004; Skinner and Chimimba, 2005), the potential of these species occurring either on-site or within 500m of the property boundary is provided in Table 12.

Table 12: Mammal species of conservation concern identified as occurring in and around the quarter degree squares and the potential for occurrence on-site.

| Common Name            | Scientific Name           | Potential for occurrence on-site and surrounding area   |
|------------------------|---------------------------|---|
| South African Hedgehog | <i>Atelerix frontalis</i> | High: Area has sufficient grassland and bushes thus suitable habitat is present.  |
| Brown Hyena            | <i>Hyaena brunnea</i>     | Low: For the most part, the vegetation cover of the proposed development site is suitable however the substantial amount of agricultural activity and its proximity to human habitation make it unlikely that this animal will occur in the area. |
| Spotted-Necked Otter   | <i>Lutra maculicollis</i> | Low: Although it is likely that it occurs around the river the proposed development site of the pivots is situated too far from the water margin.   |

## 8.8 BIODIVERSITY SITE SENSITIVITY

In terms of sensitivity of the region where the development is planned, the most important feature is that the project site falls within a CBA2. In terms of the Technical Guidelines for CBA Maps (June 2017), dryland and irrigated crop cultivation should not be allowed within a CBA2 area.

To understand the sensitivity of the area it is important to investigate why and how the area has been classified. The Northern Cape CBA map has been drawn up by means of a dual analysis which included a systematic target-based assessment using the actual extent of biodiversity features and a MARXAN analysis to identify areas of the landscape for meeting targets for broader features most efficiently.

The primary biodiversity features included in the MARXAN analysis were terrestrial vegetation types, however four additional criteria were applied when defining CBAs, namely ecosystem threat status (Critically Endangered and Endangered types), rarity, endemism and ecosystem process importance. The Upper Gariep Alluvial vegetation type is classified as vulnerable but has been prioritised in the ecosystem process importance category as evidence gathered by DENC suggests that degradation of this vegetation type is just as intense as the Lower



Gariep Alluvial (which is classified as endangered) and it is deemed to have significant process value for the maintenance of hydrological processes.

During the CBA mapping process, biodiversity features that needed to be included in the CBA map that were already precisely mapped were included as their actual extent (e.g. a wetland and its buffer) as a unit of assessment and a planning unit, however where these features were not available (i.e. had not been previously mapped or identified on the ground) a set of province-wide planning units were developed based on a hexagon grid, landcover and Protected Areas. The hexagons used were approximately 1600 ha in extent and had a 2.5km side. One of the reasons that such a large scale was used was because these larger units aimed to identify connected landscapes to secure areas for both fine-scale features such as wetlands, and broad units such as terrestrial ecosystem types. The large scale however can result in an inaccurate demarcation of an area, and thus some ground truthing operations are required to clarify the boundaries and validate these classifications of the CBA map.

According to the available literature the classification of the CBA2 is attributed to the presence of a threatened vegetation type (the Upper Gariep Alluvial vegetation type), its landscape connectivity and the buffer zone around protected areas and national protected areas expansion priorities, namely the Mokala National Park.

The Northern Cape CBA technical guidelines states that the buffer zone around National Parks is 10km and that this 10km area should be included in at least a CBA2 if intact. It should be noted that the study area falls outside of this 10km buffer zone as it is located more than 20km away from the Park. The area immediately surrounding the study site already contains a significant amount of irrigation land and therefore a large amount of transformation has already occurred and therefore can no longer be classified as being intact. In terms of sensitivity within the boundaries of the development site, areas of higher sensitivity include the pans and the riverine area. The central pan has already been disturbed as it contains some infrastructural development and some transformation has already occurred, lowering the significance of its conservation contribution. The riverine areas has unfortunately been subjected to some transformation most notably from the invasion of alien plants. The area of the pans and the riverine environment are however not within the development footprint for the expansion on the pivots and will not be directly affected by the proposed pivot development. There are a number of protected trees within the planned development area. These will be lost when the vegetation is cleared for the construction of the pivots. *Vachellia haematoxylon* is classified as a protected species under the National Forests Act of 1998 (Act 84 of 1998) and has a narrow distribution range. The *Vachellia erioloba* is also a protected species under the National Forests Act of 1998 (Act 84 of 1998). Larger trees are important as nesting and as perching sites but the groups of smaller trees provide a unique habitat acting as a nursery for other plant species and creating important habitats for faunal species.

The site sensitivity map includes areas of Low, Moderate, and High sensitivity. Moderate sensitivity areas are defined as those areas where the vegetation and habitats have had some disturbance but may include some potential habitat for red data species and/or the presence of some protected/red listed species. Areas identified as having a high sensitivity contain habitat for red data species, numerous threatened species or are listed as vulnerable or endangered and/or contains areas that have a low tolerance to disturbance. Areas of LOW sensitivity are already highly transformed and/or already contain development. Figure 7 shows the overlay of the areas of sensitivity with that of the planned expansion of the pivots.





Figure 7: The site sensitivity map of the planned development area showing the planned layout of the new pivots.



## 8.9 SURROUNDING LAND USES AND DEMOGRAPHICS

### 8.9.1 LAND USES

The current land use of the proposed pivot development area can be described as semi-natural, which is mostly made up of old lands where natural vegetation has re-established over the years. The proposed development is directly surrounded by natural areas to the north and east (semi-vegetated with bare patches in between), existing pivots. The R357 is adjacent to the proposed development to the south which connects Kimberley and Douglas. Just to the north of the proposed project is the Vaal River and to the south the Riet River. These rivers are surrounded by what is known as potential intensive irrigation agricultural areas, which comprises of mostly irrigation pivots.

On a regional scale, the town of Douglas is the closest major town located 26 km to the southeast of the proposed development. According to the South African Protected Areas Data (SAPAD, 2021) the Mokala National Park is located approximately 25 km to the southeast of the proposed project area along with the proposed Eastern Kalahari Bushveld expansion area. Both of these areas fall within a power corridor.

### 8.9.2 DEMOGRAPHICS AND EMPLOYMENT STATISTICS

Pixley Ka Seme DM is one of five district municipalities in the Northern Cape Province. Pixley Ka Seme is composed of eight local municipalities, of which Siyancuma LM is the one where the project is located. Siyancuma has three major urban settlements which Douglas, Griekwastad and Campbell and a few rural areas. The rest of the LM consists of mainly commercial and small farming areas (which aligns with the proposed project) as well as small private game parks. Siyancuma is situated to the southeastern regions of the Northern Cape and borders onto the Free State Province to the east, the ZF Mgcawu and Frances Baard Districts to the north, Siyathemba and Thembelihle Districts to the south and the ZF Mgcawu to the West. This LM covers an area of 16 753 km<sup>2</sup>, accounting for 16 % of the Pixley Ka Seme DM geographical area. The main economic sectors for Siyancuma are agriculture and mining (municipalities.co.za, 2021).

According to StatsSA (2001 and 2011) the total population for Siyancuma Local Municipality showed a negative growth rate of -5.6 % with the population decreasing from 39 275 to 37 076. The 2016 Community Survey showed a further negative population growth rate of -3.1 % from 2011 to 2016 during which the population decreased from 37 067 to 35 938.

Douglas, 26 km southwest of the proposed project, is the economic hub of the LM. This town has seen a continuous influx of unskilled people from farms. According to the 2011 Census, the official unemployment rate in the Siyancuma LM was 28.2 %, and for youth (between the ages of 15 and 34) it was 35.2 %. The agriculture, community, social and personal services sectors are the strongest economic sectors and biggest job providers in and around this town. The major employment agencies in the area include agricultural entities like GWK, the SLM and provincial government departments (IDP, 2020)

According to the Stats SA community Survey (2016), the Coloured population group account for the largest portion of the population at 67.8 % of the LM total, with the remaining made up of Black African (25.3 %), Indian/Asian (0.21 %) and White (6.7 %). The total population within the LM is 35 941. The most prominent language spoken at home (Census, 2011) is Afrikaans (88.9 %) followed by Setswana (5.1 %) and then English (1.3 %). The sex ratio in the municipality was calculated at 100.4 during the 2011 Census.

During 2011 (Census, 2011) in the Siyancuma LM there were 11 064 economically active people (those who are either employed or looking for work) of which 28.2 % were unemployed. 5 800 people in the area could be described as economically active youth (15- 34 years) of which 35.2 % were unemployed.

Agriculture forms the key economic activity within the Pixley Ka Seme District Municipality. According to the Pixley Ka Seme District Municipality IDP (2017) the agricultural sector provides around 39% of the employment opportunities in the district, which represent a significant and important economic sector, especially in this area that has limited job opportunities. The mechanisation by farmers has however resulted in declining job opportunities in this sector. According to the Pixley Ka Seme District Growth and Development Strategy (2006) the Municipalities of Ubuntu, Siyathemba and Siyacuma contribute the most to this sector, with a total of 28,49



% contributed to the provincial Gross Geographic Product. Agriculture and Agro-processing is one of the six critical sectors which was identified in the Growth and Development Strategy for unlocking economical potential. Irrigated agriculture is among the major contributing factors to the Northern Cape provincial GDP, with a total area of 140 000 ha that is under irrigation.



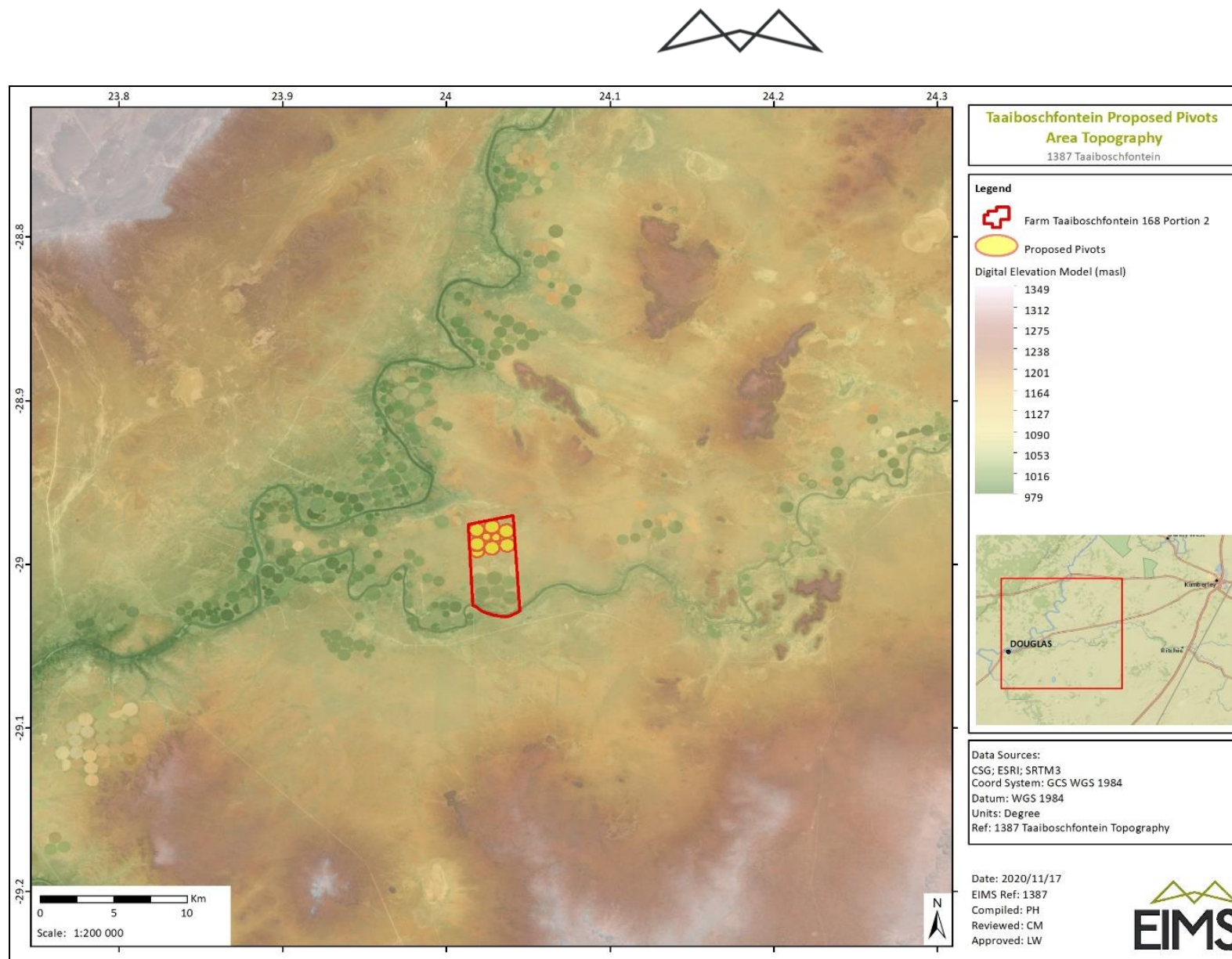


Figure 8: Regional topography.

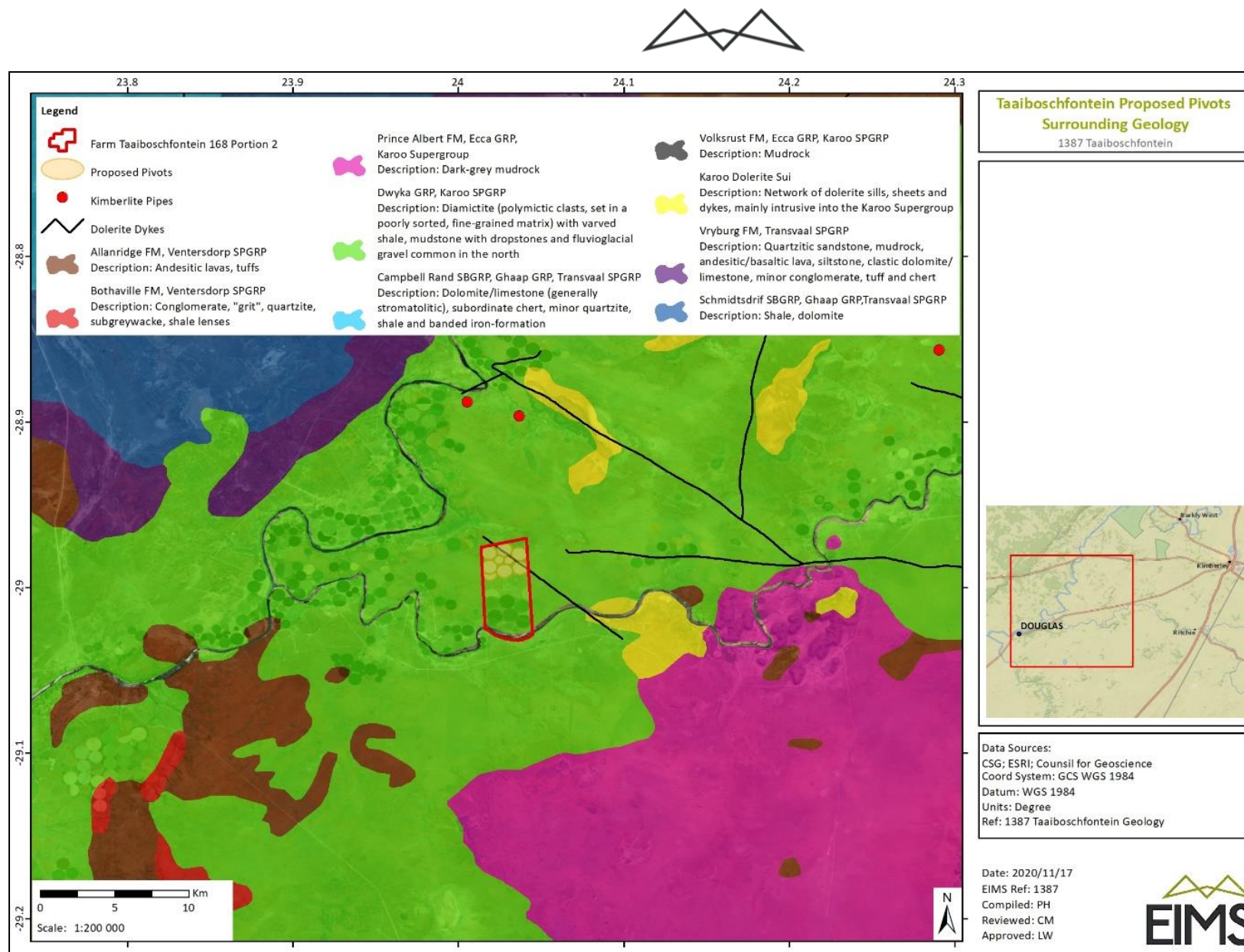


Figure 9: Project area simplified geology.



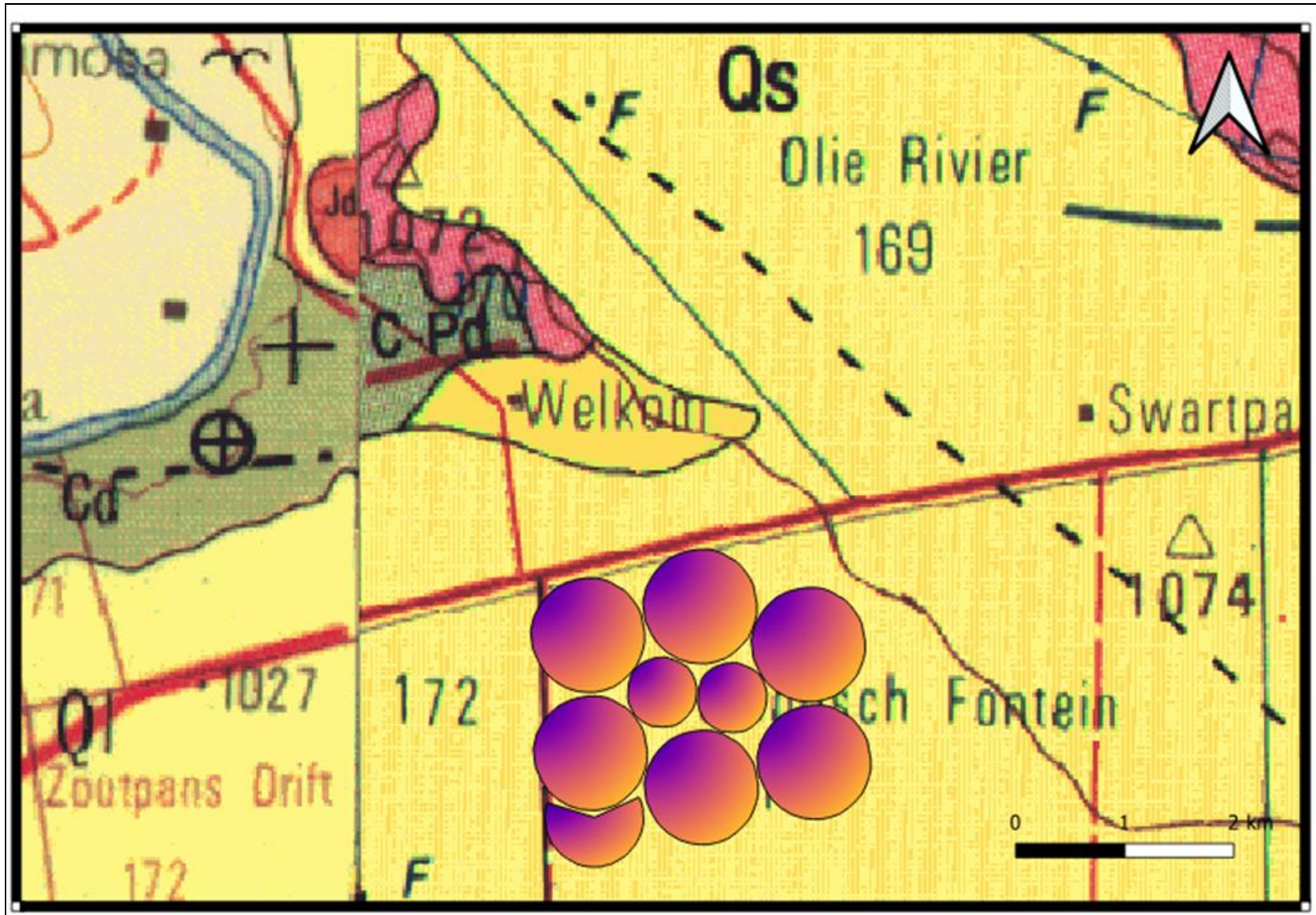


Figure 10: Extract of the 2824 Kimberley Geological Map.

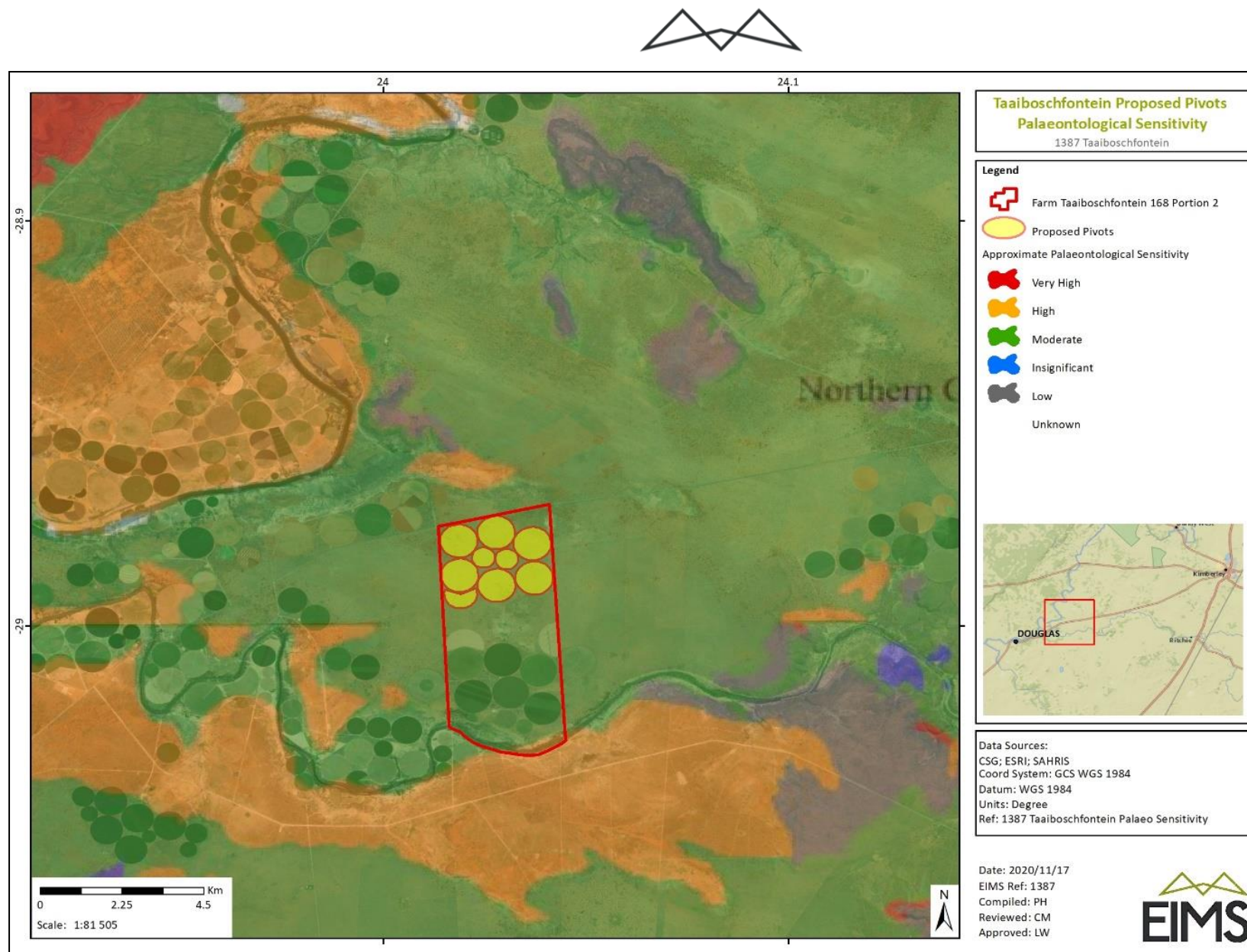


Figure 11: Palaeontological sensitivity of the project area.



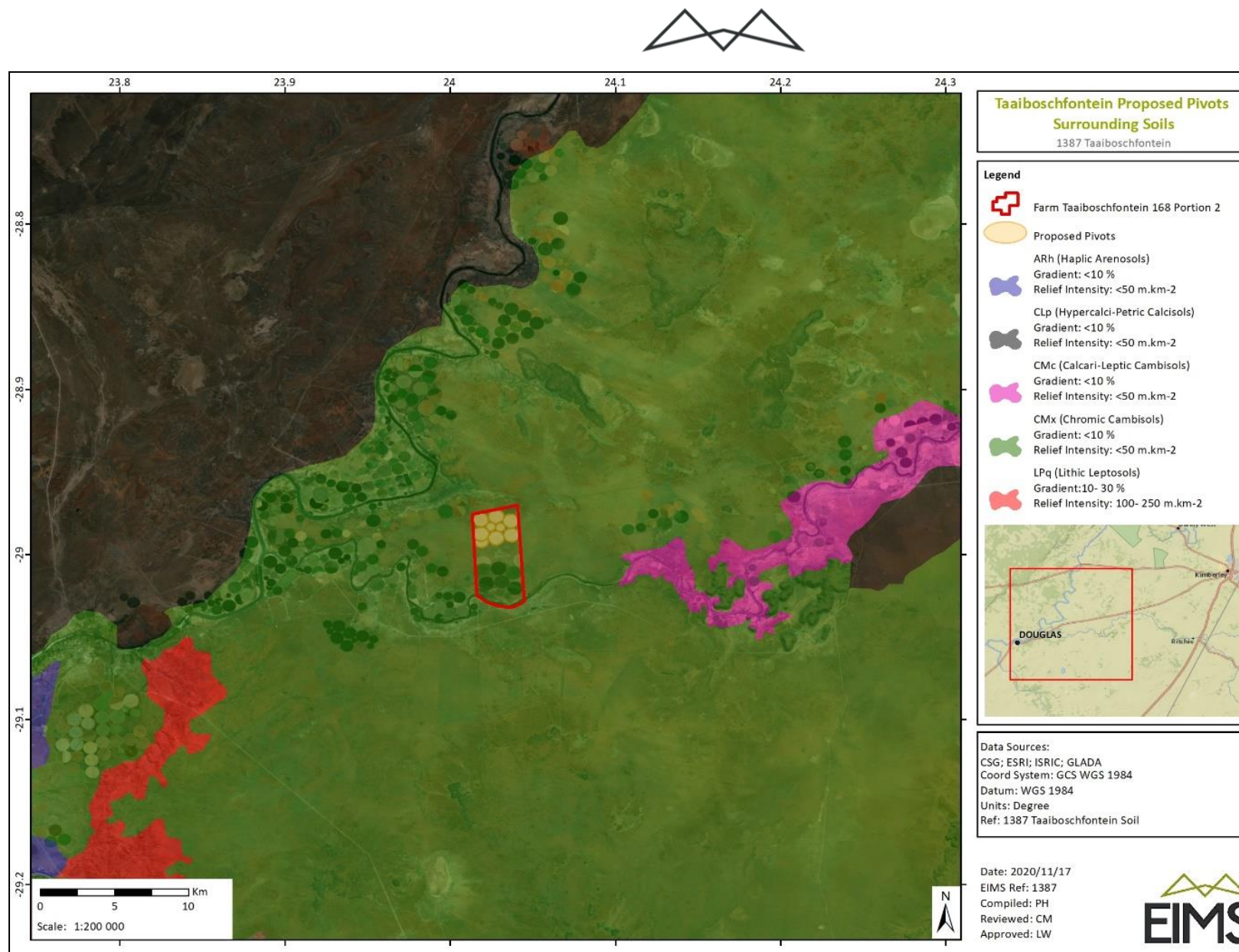


Figure 12: Soil types covering the study area.

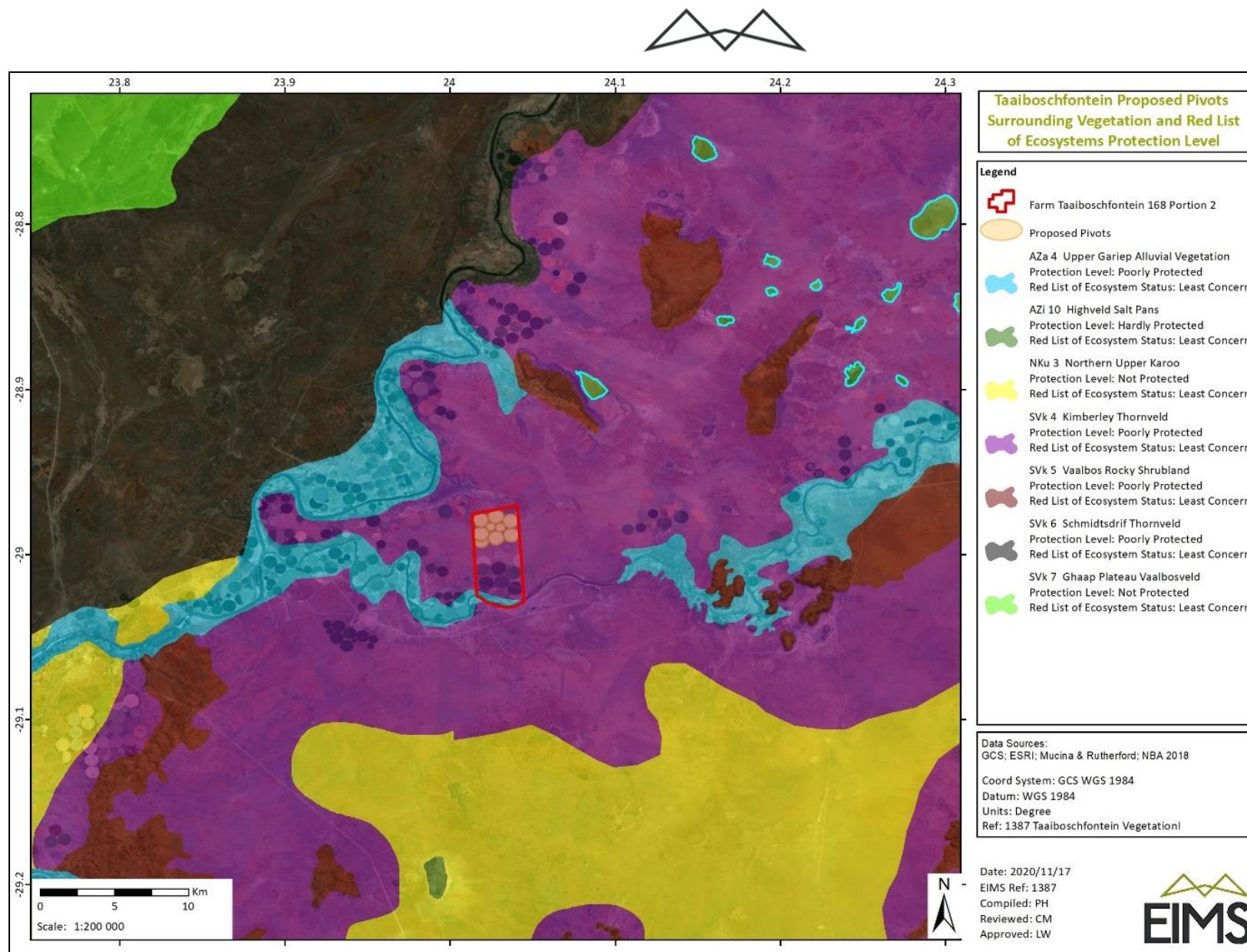


Figure 13: Study area vegetation.

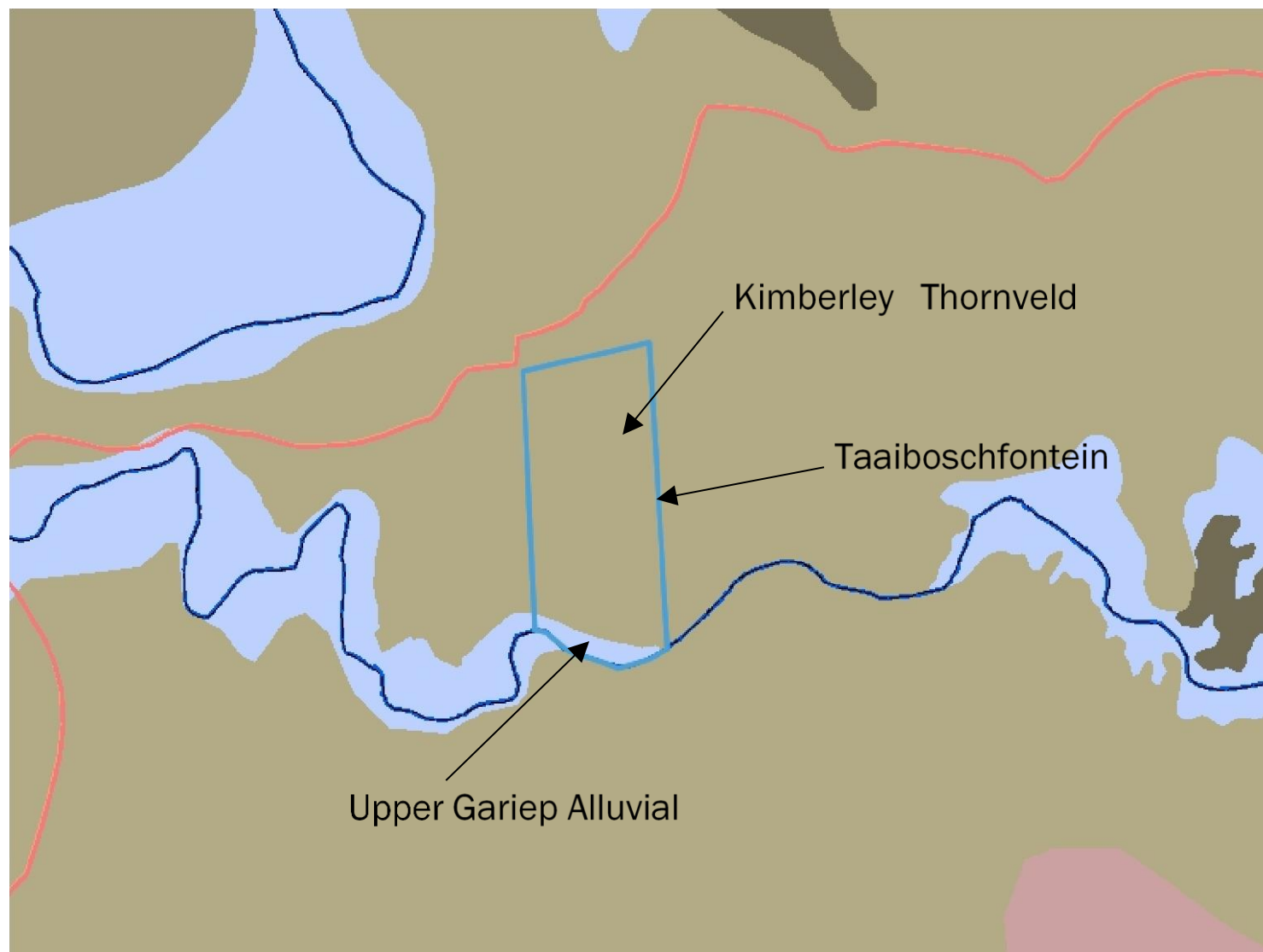


Figure 14: Specialist identified vegetation type units.



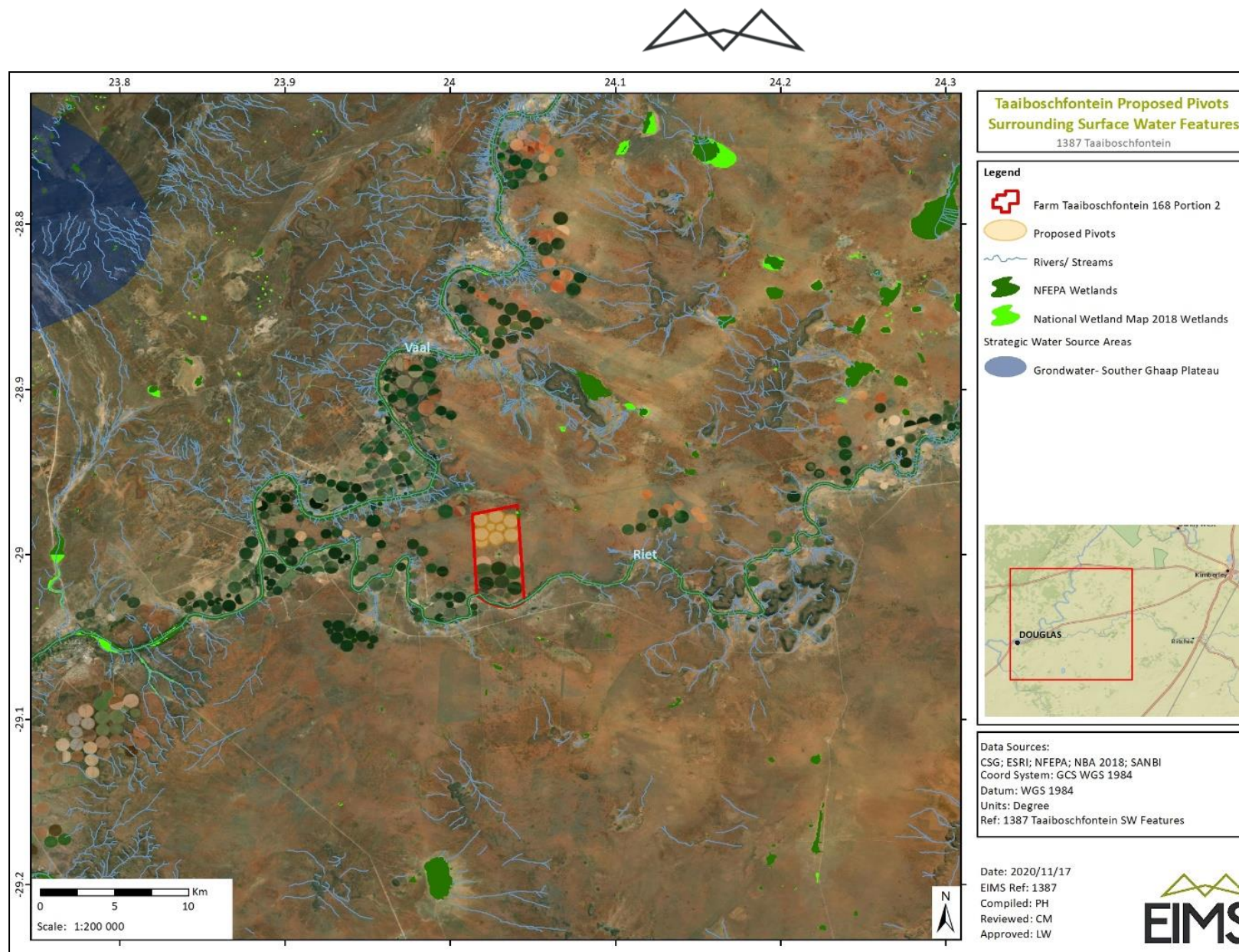


Figure 15: Surface Water Features Surrounding the proposed project area.



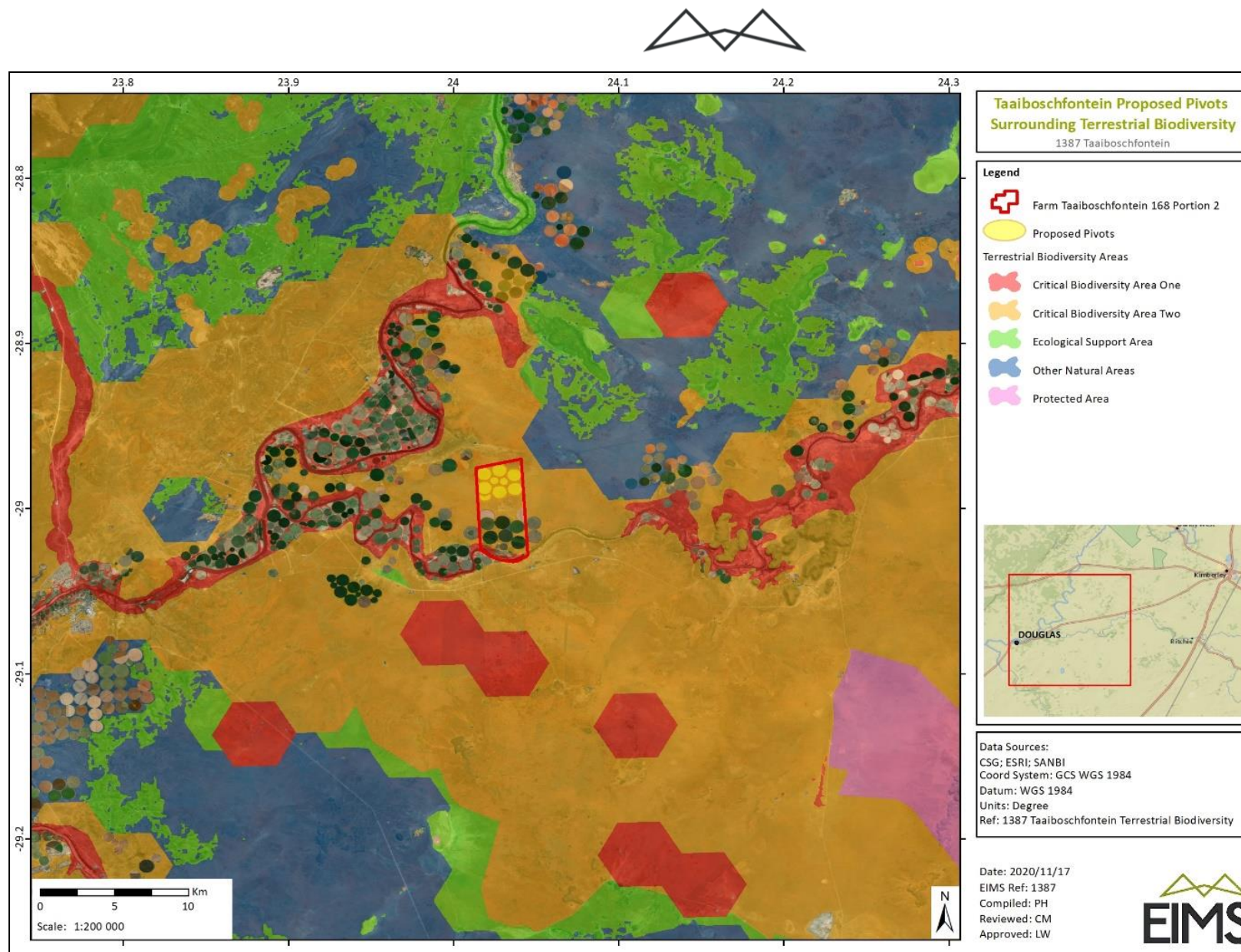


Figure 16: Terrestrial Biodiversity Areas.



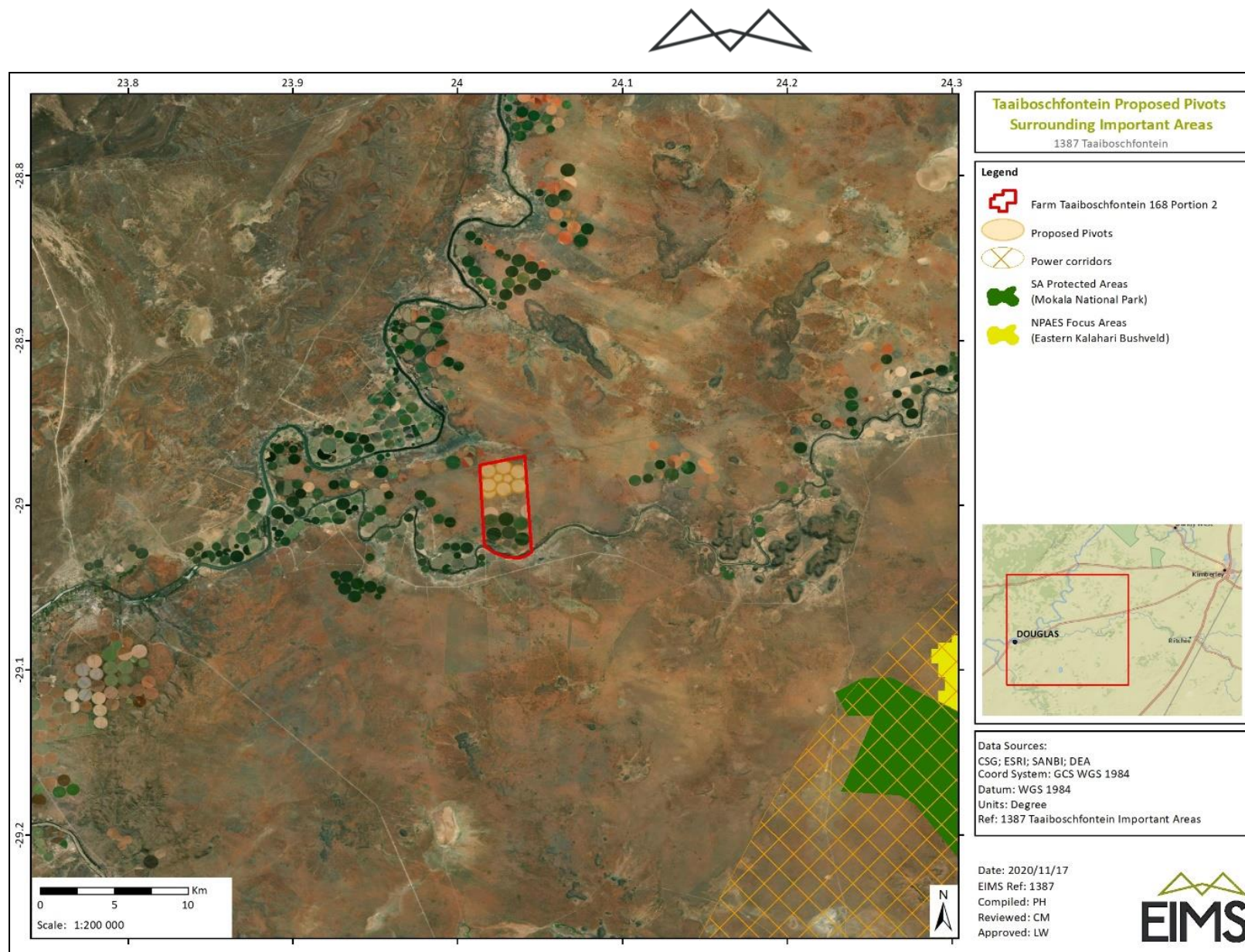




Figure 17: Important areas surrounding the proposed project site.



## 8.10 SITE SPECIFIC PHOTOGRAPHS

Table 13: Table of figures showing photos of the proposed project area.

| Photograph  | Description   |
|---|---|
|   | Vegetation typical of the open savannah within the planned development area.                                    |
|  | <i>Senegalia mellifera</i> dominates the shrub layer in some areas along the northern boundary of the property. |





The area adjacent to the river consists of open secondary grasslands. This area has historically been used as cultivation areas.



The riverine area where the existing pump station is located has been invaded by *Eucalyptus spp*



## 9 ENVIRONMENTAL IMPACT ASSESSMENT

This section aims to identify and do a preliminary assessment on the potential environmental impacts associated with the proposed pivot development. This impact assessment will be used to guide the identification and selection of preferred alternatives, and management and mitigation measures, applicable to the proposed activities. The preliminary assessment will also serve to focus the subsequent EIA phase on the key issues and impacts.

### 9.1 PROCEDURE

The impact significance rating methodology, as presented herein and utilised for all EIMS Impact Assessment Projects, is guided by the requirements of the NEMA EIA Regulations 2014 (as amended). The broad approach to the significance rating methodology is to determine the environmental risk (ER) by considering the consequence (C) of each impact (comprising Nature, Extent, Duration, Magnitude, and Reversibility) and relate this to the probability/ likelihood (P) of the impact occurring. The ER is determined for the pre- and post-mitigation scenario. In addition, other factors, including cumulative impacts and potential for irreplaceable loss of resources, are used to determine a prioritisation factor (PF) which is applied to the ER to determine the overall significance (S). The impact assessment will be applied to all identified alternatives.

#### 9.1.1 DETERMINATION OF ENVIRONMENTAL RISK

The significance (S) of an impact is determined by applying a prioritisation factor (PF) to the environmental risk (ER). The environmental risk is dependent on the consequence (C) of the particular impact and the probability (P) of the impact occurring. Consequence is determined through the consideration of the Nature (N), Extent (E), Duration (D), Magnitude (M), and Reversibility (R) applicable to the specific impact.

For the purpose of this methodology the consequence of the impact is represented by:

$$C = \frac{(E + D + M + R) * N}{4}$$

Each individual aspect in the determination of the consequence is represented by a rating scale as defined in Table 14 below.

Table 14: Criteria for Determining Impact Consequence.

| Aspect          | Score | Definition  |
|-----------------|-------|---|
| <b>Nature</b>   | - 1   | Likely to result in a negative/ detrimental impact                      |
|                 | +1    | Likely to result in a positive/ beneficial impact                       |
| <b>Extent</b>   | 1     | Activity (i.e. limited to the area applicable to the specific activity) |
|                 | 2     | Site (i.e. within the development property boundary)                    |
|                 | 3     | Local (i.e. the area within 5 km of the site)                           |
|                 | 4     | Regional (i.e. extends between 5 and 50 km from the site)               |
|                 | 5     | Provincial / National (i.e. extends beyond 50 km from the site)         |
| <b>Duration</b> | 1     | Immediate (<1 year)   |
|                 | 2     | Short term (1-5 years)  |



|                                 |   |   |
|---------------------------------|---|---|
|                                 | 3 | Medium term (6-15 years)  |
|                                 | 4 | Long term (15-65 years), the impact will cease after the operational life span of the project)  |
|                                 | 5 | Permanent (>65 years), no mitigation measure of natural process will reduce the impact after construction)  |
| <b>Magnitude/<br/>Intensity</b> | 1 | Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected)   |
|                                 | 2 | Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected)  |
|                                 | 3 | Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way, moderate improvement for +ve impacts) |
|                                 | 4 | High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease, high improvement for +ve impacts)                            |
|                                 | 5 | Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease, substantial improvement for +ve impacts)   |
| <b>Reversibility</b>            | 1 | Impact is reversible without any time and cost.   |
|                                 | 2 | Impact is reversible without incurring significant time and cost.   |
|                                 | 3 | Impact is reversible only by incurring significant time and cost.   |
|                                 | 4 | Impact is reversible only by incurring prohibitively high time and cost.  |
|                                 | 5 | Irreversible Impact.  |

Once the C has been determined, the ER is determined in accordance with the standard risk assessment relationship by multiplying the C and the P. Probability is rated/ scored as per Table 15.

Table 15: Probability Scoring.

|                    |   |  |
|--------------------|---|--|
| <b>Probability</b> | 1 | Improbable (the possibility of the impact materialising is very low as a result of design, historic experience, or implementation of adequate corrective actions; <25%), |
|                    | 2 | Low probability (there is a possibility that the impact will occur; >25% and <50%),  |
|                    | 3 | Medium probability (the impact may occur; >50% and <75%),  |
|                    | 4 | High probability (it is most likely that the impact will occur- > 75% probability), or   |
|                    | 5 | Definite (the impact will occur),  |

The result is a qualitative representation of relative ER associated with the impact. ER is therefore calculated as follows:

$$ER = C \times P$$





Table 16: Determination of Environmental Risk.

| Consequence | 5 | 5           | 10 | 15 | 20 | 25 |
|-------------|---|-------------|----|----|----|----|
|             | 4 | 4           | 8  | 12 | 16 | 20 |
|             | 3 | 3           | 6  | 9  | 12 | 15 |
|             | 2 | 2           | 4  | 6  | 8  | 10 |
|             | 1 | 1           | 2  | 3  | 4  | 5  |
|             |   | 1           | 2  | 3  | 4  | 5  |
|             |   | Probability |    |    |    |    |

The outcome of the environmental risk assessment will result in a range of scores, ranging from 1 through to 25. These ER scores are then grouped into respective classes as described in Table 4.

Table 17: Environmental Risk Scores.

| ER Score | Description  |
|----------|--|
| <9       | Low (i.e. where this impact is unlikely to be a significant environmental risk/ reward). |
| ≥9 ≤17   | Medium (i.e. where the impact could have a significant environmental risk/ reward),      |
| >17      | High (i.e. where the impact will have a significant environmental risk/ reward).         |

The impact ER will be determined for each impact without relevant management and mitigation measures (pre-mitigation), as well as post implementation of relevant management and mitigation measures (post-mitigation). This allows for a prediction in the degree to which the impact can be managed/mitigated.

### 9.1.2 IMPACT PRIORITISATION

Further to the assessment criteria presented in the section above, it is necessary to assess each potentially significant impact in terms of:

- Cumulative impacts; and
- The degree to which the impact may cause irreplaceable loss of resources.

To ensure that these factors are considered, an impact prioritisation factor (PF) will be applied to each impact ER (post mitigation). This prioritisation factor does not aim to detract from the risk ratings but rather to focus the attention of the decision-making authority on the higher priority/significance issues and impacts. The PF will be applied to the ER score based on the assumption that relevant suggested management/mitigation impacts are implemented.

Table 18: Criteria for Determining Prioritisation.

| Cumulative Impact (CI) | Low (1)    | Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change. |
|------------------------|------------|---|
|                        | Medium (2) | Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change. |



|   |            |  |
|---|------------|--|
|   | High (3)   | Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change. |
| <b>Irreplaceable Loss of Resources (LR)</b> | Low (1)    | Where the impact is unlikely to result in irreplaceable loss of resources.   |
|   | Medium (2) | Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.                            |
|   | High (3)   | Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).  |

The value for the final impact priority is represented as a single consolidated priority, determined as the sum of each individual criteria represented in Table 5. The impact priority is therefore determined as follows:

$$\text{Priority} = CI + LR$$

The result is a priority score which ranges from 2 to 6 and a consequent PF ranging from 1 to 1.5 (Refer to Table 19).

Table 19: Determination of Prioritisation Factor.

| Priority | Prioritisation Factor |
|----------|-----------------------|
| 2        | 1                     |
| 3        | 1.125                 |
| 4        | 1.25                  |
| 5        | 1.375                 |
| 6        | 1.5                   |

In order to determine the final impact significance, the PF is multiplied by the ER of the post mitigation scoring. The ultimate aim of the PF is an attempt to increase the post mitigation environmental risk rating by a factor of 0.5, if all the priority attributes are high (i.e. if an impact comes out with a high medium environmental risk after the conventional impact rating, but there is significant cumulative impact potential and significant potential for irreplaceable loss of resources, then the net result would be to upscale the impact to a high significance).

Table 20: Final Environmental Significance Rating.

| Significance Rating | Description   |
|---------------------|---|
| <-17                | High negative (i.e. where the impact must have an influence on the decision process to develop in the area).    |
| ≥-17, ≤-9           | Medium negative (i.e. where the impact could influence the decision to develop in the area).                    |
| >-9, < 0            | Low negative (i.e. where this impact would not have a direct influence on the decision to develop in the area). |



|         |   |
|---------|---|
| 0       | No impact   |
| >0, <9  | Low positive (i.e. where this impact would not have a direct influence on the decision to develop in the area). |
| ≥9, ≤17 | Medium positive (i.e. where the impact could influence the decision to develop in the area).                    |
| >17     | High positive (i.e. where the impact must have an influence on the decision process to develop in the area).    |

The significance ratings and additional considerations applied to each impact will be used to provide a quantitative comparative assessment of the alternatives being considered. In addition, professional expertise and opinion of the specialists and the environmental consultants will be applied to provide a qualitative comparison of the alternatives under consideration. This process will identify the best alternative for the proposed project.

## 9.2 IDENTIFICATION OF IMPACTS

Potential environmental impacts were identified during the Scoping phase. These impacts were identified by the EAP, the appointed specialist, as well as information received from the public. Section 9 provides the list of preliminary impacts identified during scoping, some of which will be further assessed in the EIA phase. Moreover Section 9 presents the combined details of the preliminary impact assessment calculations undertaken towards determining the pre- and post-mitigation impact significance, as well as the final significance scores.

Without proper mitigation measures and continual environmental management, most of the identified impacts may potentially become cumulative, affecting areas outside of their originally identified zone of impact. The potential cumulative impacts have been identified, evaluated, and mitigation measures suggested which will be updated during the detailed EIA phase level of investigation. When considering cumulative impacts, it is vitally important to bear in mind the scale at which different impacts occur. There is not much potential for a cumulative effect at a broad scale because of the proposed project, however, finer scale effects could occur in the area surrounding the activity.

Typically, a development is divided into the construction phase and the operational phase. The construction phase usually results in the most significant impacts. It is during this phase that most of the destruction of habitat and microhabitat takes place. For this development the construction of the pivot and the initial preparation of the land can be considered the construction phase. Planting and harvesting the pivots is considered the operational phase.

### 9.2.1 PLANNING PHASE IMPACTS

No planning phase impacts are expected because of the proposed project.

### 9.2.2 CONSTRUCTION PHASE IMPACTS

#### 9.2.2.1 HABITAT FRAGMENTATION, LOSS OF NATURAL VEGETATION AND ALIEN INVASION IN A CBA 2

Vegetation clearing will occur as a result of the development of irrigation pivots. This loss of natural vegetation will cause additional fragmentation and habitat disturbance in the landscape. The disturbance destroys primary vegetation. As primary vegetation is more functional in an ecosystem, this could irreversibly transform the vegetation characteristics and faunal populations in the area. This area is situated in a CBA 2, the management objective of these areas is to maintain a natural or near natural ecological condition. Clearing of surface areas has the effect of creating unnatural open spaces through the vegetation and the matrix of the landscape. For the smaller species, it limits movement and restricts access to foraging sites. This results in reduced population density of prey species (invertebrates and / or smaller birds and / or smaller mammals and / or herpetofauna) which then reduces the food availability for predators' invertebrates and / or larger birds and / or larger mammals and / or herpetofauna). The changes in the vegetation structure also alter the availability of suitable



cover for many faunal species. There is however a tarred road on the northern boundary of the property and a gravel road on the western boundary as well as pivots on the southern section, these structures already fragment the habitat and limit movement of smaller faunal species. Clearance of primary vegetation allows secondary pioneer species or invasive plants to enter and re-colonise disturbed areas, thus increasing the possibility of Alien species invading. Many alien species proliferate in disturbance areas such as the periphery of the irrigation lands. Invasive species affect our natural biodiversity in a number of ways. They may compete directly with natural species for food or space, may compete indirectly by changing the food web or physical environment, or hybridize with indigenous species. Rare species with limited ranges and restricted habitat requirements are often particularly vulnerable to the influence of these alien invaders. Invasive plants have claimed about 8 percent or 10 million hectares of land suitable for agricultural use in South Africa. These invasive alien plants steal about seven percent of South Africa's water bulk every year.

(i) Mitigation measures

- Vegetation clearing should be restricted to areas of the pivot only. The significance of the loss of habitat may be mitigated slightly if there are areas with suitable ecological corridors this may be possible by ensuring that no disturbance occurs in the areas outside the development area and between the pivots. Alien vegetation that has grown as a result of land clearing must be removed by methods recommended by DWA

(ii) Cumulative Impacts

- No cumulative impacts are expected because of habitat fragmentation, loss of natural vegetation and alien invasion in this CBA2 area.

(iii) Irreplaceable loss of Resources

- The disturbance to the biodiversity will be perpetuated throughout the life of the project.

#### 9.2.2.2 LOSS OF SPECIES OF CONSERVATION CONCERN

The clearing of vegetation will result in the loss of some protected flora. The cumulative impact of vegetation clearing and the subsequent loss of these trees for irrigation development in this area increases the significance of this impact as more of the vegetation type is transformed, however the development will not result in a loss of the resource from the area. The loss of suitable habitat for RDB faunal species which would result in these animals moving off the property into the surrounding areas. The reduction of suitable habitat from an area is always a cause for concern, and although suitable habitat may still be available it does impact on the number of these species that an area can carry.

(i) Mitigation measures

- A search and rescue operation should be performed prior to clearing, it is however not a feasible or practical option regarding the protected trees, so it is important to ensure that trees between the pivots remain undisturbed. A permit is required if any protected trees need to be cut or removed within the development footprint.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of the possible loss of species of conservation concern.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss is expected because of the possible loss of species of conservation concern.

#### 9.2.2.3 ANTHROPOGENIC DISTURBANCES, INTENTIONAL AND/OR ACCIDENTAL KILLING OF FAUNA

Anthropogenic disturbances include aspects such as, vibrations caused by machinery & vehicles. These aspects will impact on invertebrate species more than any other faunal species. These anthropogenic disturbances impact on the way invertebrates forage. For example; some invertebrates use vibrations caused by their prey to locate and catch them. Vibrations caused by construction equipment will make this impossible. Smaller fauna



will inevitably be killed during land clearing activities as these activities will destroy their habitat. In addition to unintentional killing of fauna, some faunal species, particularly herpetofaunal species, are often intentionally killed as they are thought to be dangerous.

(i) Mitigation measures

- There is unfortunately no mitigation for the vibrations caused by machinery/vehicles, except perhaps ensuring that activities are kept to a minimum. As the intentional killing of herpetofauna is considered a result of ignorance, this can be ameliorated through education. The labour force involved should be educated regarding the conservation importance of herpetofauna (especially snakes).

(ii) Cumulative Impacts

- No cumulative impacts are expected as a result of anthropogenic disturbances, intentional and/or accidental killing of fauna.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss is expected because of anthropogenic disturbances.

#### 9.2.2.4 IMPACT ON HERITAGE RESOURCES

Despite an intensive walkthrough of the footprint area, no evidence for any significant archaeological or heritage sites could be identified. As a result, a low impact is expected from the proposed development on heritage.

The project will encompass the removal of vegetation and the digging of trenches for the establishment of the irrigation pivots.

It is possible that cultural material will be exposed during construction and may be recoverable, keeping in mind delays can be costly during construction and as such must be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, however, foundation holes do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for.

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

(i) Mitigation measures

- Implement chance find procedures in case where possible heritage finds are uncovered.
  - The following Chance Find Protocol should be followed if fossils are uncovered during excavation:
    - If a chance find is made the person responsible for the find must immediately stop working and all work that could impact that finding must cease in the immediate vicinity of the find.
    - The person who made the find must immediately report the find to his/her direct supervisor which in turn must report the find to his/her manager and the farm manager. The farm manager or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: [www.sahra.org.za](http://www.sahra.org.za)). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.
    - A preliminary report must be submitted to the Heritage Agency within 24 hours of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.



- Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.
- Upon receipt of the preliminary report, the Heritage Agency will inform the farm manager (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.
- The site must be secured to protect it from any further damage. No attempt should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sandbags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.
- In the event that the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO (site manager). Fossil finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.
- Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of the loss of fossil heritage.

(iii) Irreplaceable loss of Resources

- Impacts on fossil heritage are irreversible. Scientifically, all well-documented reports of fossils uncovered during construction would be a positive impact. A negative impact can be limited by the application of adequate mitigation measures, in this case the chance find protocol. If mitigation is properly undertaken the project will fall within the beneficial category.

#### 9.2.2.5 NOISE NUISANCE

Heavy vehicles will be required for the removal of vegetation and ripping of the soil layer within the development footprint. This impact is not anticipated to be significant as there are no nearby receptors to any noise nuisance. This impact was rated as low negative before and after implementation of mitigation measures.

(i) Mitigation measures

- Ensure that all vehicles used during construction are serviced and in a good working condition.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of noise impacts.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of noise impacts.

#### 9.2.2.6 FIRE DAMAGE

The possibility of fire is a serious threat within the site area given the vegetation types and climate within the region. Fire should be prevented at all costs as it could spread easily and has the capability of quickly spreading to neighbouring areas. This impact was rated as medium negative before mitigation and was reduced to low negative after implementation of the proposed mitigation measures.

(i) Mitigation measures

- Ensure that construction vehicles are equipped with the necessary firefighting equipment, specifically fire extinguishers.
- Workers must be adequately trained in the handling of firefighting equipment.



- No open fires will be permitted on-site.
- No smoking will be allowed within close vicinity of the site.
- It is recommended that fire breaks be created around each pivot.

(ii) Cumulative Impacts

- If a fire is accidentally started and not managed promptly, it has the capability to quickly spread and cause major damage within the surrounding area. Damages can be caused to the environment, neighbouring crops, and nearby infrastructure.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of fire.

#### 9.2.2.7 DUST NUISANCE

Dust will be generated during the construction phase because of vegetation removal and soil ripping/ tillage. This is not anticipated to be a significant impact as there are no nearby receptors. This impact was rated as low negative before and after implementation of mitigation measures.

(i) Mitigation measures

- Ensure that access roads to the development footprint are well maintained.
- Construction vehicles should not exceed 30 km/h on access roads or in-field.
- Construction should preferably take place on non-windy days.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of dust impacts during construction.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of dust impacts during decommissioning.

#### 9.2.2.8 OIL/ FUEL SPILLAGES CAUSING SOIL AND GROUNDWATER CONTAMINATION

There are no surface water features close to the proposed development footprint. However, any leaks on construction vehicles or tractors or accidental spillages can seep into and contaminate soil and possibly the groundwater. This impact was rated as low negative before and after implementation of mitigation measures.

(i) Mitigation measures

- Ensure that all vehicles used during construction are serviced and in a good working condition.
- Ensure that every construction vehicle has a spill prevention kit, to be used for accidental spillages of oil or fuel.
- No storage of oil or fuel is allowed on-site. Any storage, if necessary, should be within a designated area and no direct contact between the storage containers and the ground is allowed.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of spillages during construction. It is not anticipated that large quantities of oil/ fuel will be required as part of construction. Only small amounts of oil/ fuel can spill because of leaks on construction vehicles. These could be easily managed.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of spillages.





#### 9.2.2.9 LITTERING

Littering is a possibility during the construction phase. This impact was rated as low negative before and after implementation of mitigation measures.

##### (i) Mitigation measures

- Every construction vehicle should have a dedicated waste bin, which should be emptied regularly.
- Littering in the environment is not allowed.

##### (ii) Cumulative Impacts

- Although littering is not expected, littering is a serious concern in our country. Every piece of waste that is littered into the environment decreases the aesthetic and visual value of the environment and could potentially cause harm to animals that get stuck because of the waste or ingest the waste.

##### (iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of littering.

#### 9.2.2.10 SOCIO-ECONOMIC IMPACTS

The proposed project will create employment opportunities and contribute to food security. Each of the 9 additional new pivots will be used to produce and harvest seed potatoes. The proposed project will create 200 temporary/seasonal job opportunities for the next 20 years (2021 – 2041). The crops will also be sold locally. This impact was rated as medium positive before and after implementation of improvement measures.

##### (i) Improvement measures

- The socio-economic impact can be improved by employing a work force from the local community as far as reasonably possible.
- Utilise existing community structures if available, to act as a communication link between the local community and the applicant for informing the local community of job opportunities and informing the Applicant of possible contractors in the local community.
- Opportunities should first be given to previously disadvantaged individuals where practically possible.
- Employees should be trained and continuously developed.
- It is proposed that the product also be sold locally if viable, to contribute to local food security.

##### (ii) Cumulative Impacts

- Every employment opportunity can positively contribute to certain livelihoods in the community through income generation. Overall, any job opportunities will contribute to reducing unemployment.

##### (iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of socio-economic impacts.

#### 9.2.2.11 VISUAL IMPACT

This impact was rated as medium negative; however, this is not anticipated to be a significant negative impact. No mitigation measures exist with regards to a visual impact for the proposed project. The impact is not expected to be significant as one of the major surrounding land uses in the area is pivot irrigation, however, the visual aesthetic of the directly affected footprint area will be different than its current.

##### (i) Mitigation measures

- None.

##### (ii) Cumulative Impacts

- No cumulative impacts are expected because of visual impacts.



(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of visual impacts.

#### 9.2.2.12 EROSION

Topographically the area is flat, which will prevent major erosion and water runoff during rainfall events. This impact was rated as low negative before and after implementation of mitigation measures.

(i) Mitigation measures

- It is recommended that construction take place during the dry season as far as possible.
- Possible water flow during rainfall events must be controlled, using preferred storm water management techniques, before discharge into natural existing drainage lines.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of erosion.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of erosion.

### 9.2.3 OPERATIONAL PHASE IMPACTS

#### 9.2.3.1 HABITAT FRAGMENTATION, LOSS OF NATURAL VEGETATION AND ALIEN INVASION IN A CBA 2

Vegetation clearing will occur as a result of the development of irrigation pivots. This loss of natural vegetation will cause additional fragmentation and habitat disturbance in the landscape. The disturbance destroys primary vegetation. As primary vegetation is more functional in an ecosystem, this could irreversibly transform the vegetation characteristics and faunal populations in the area. This area is situated in a CBA 2, the management objective of these areas is to maintain a natural or near natural ecological condition. Clearing of surface areas has the effect of creating unnatural open spaces through the vegetation and the matrix of the landscape. For the smaller species, it limits movement and restricts access to foraging sites. This results in reduced population density of prey species (invertebrates and / or smaller birds and / or smaller mammals and / or herpetofauna) which then reduces the food availability for predators invertebrates and / or larger birds and / or larger mammals and / or herpetofauna). The changes in the vegetation structure also alter the availability of suitable cover for many faunal species. There is however a tarred road on the northern boundary of the property and a gravel road on the western boundary as well as pivots on the southern section, these structures already fragment the habitat and limit movement of smaller faunal species. Clearance of primary vegetation allows secondary pioneer species or invasive plants to enter and re-colonise disturbed areas, thus increasing the possibility of Alien species invading. Many alien species proliferate in disturbance areas such as the periphery of the irrigation lands. Invasive species affect our natural biodiversity in a number of ways. They may compete directly with natural species for food or space, may compete indirectly by changing the food web or physical environment, or hybridize with indigenous species. Rare species with limited ranges and restricted habitat requirements are often particularly vulnerable to the influence of these alien invaders. Invasive plants have claimed about 8 percent or 10 million hectares of land suitable for agricultural use in South Africa. These invasive alien plants steal about seven percent of South Africa's water bulk every year.

(i) Mitigation measures

- (ii) Vegetation clearing should be restricted to areas of the pivot only. The significance of the loss of habitat may be mitigated slightly if there are areas with suitable ecological corridors this may be possible by ensuring that no disturbance occurs in the areas outside the development area and between the pivots. Alien vegetation that has grown as a result of land clearing must be removed by methods recommended by DWA.

(iii) Cumulative Impacts



- (iv) No cumulative impacts are expected because of habitat fragmentation, loss of natural vegetation and alien invasion in this CBA2 area.
- (v) Irreplaceable loss of Resources
  - In terms of irreplaceable loss, the construction phase will entail the initial clearing of the land the disturbance to the biodiversity will be perpetuated throughout the life of the project.

#### 9.2.3.2 ANTHROPOGENIC DISTURBANCES, INTENTIONAL AND/OR ACCIDENTAL KILLING OF FAUNA

Anthropogenic disturbances include aspects such as, vibrations caused by machinery & vehicles. These aspects will impact on invertebrate species more than any other faunal species. These anthropogenic disturbances impact on the way invertebrates forage. For example; some invertebrates use vibrations caused by their prey to locate and catch them. Vibrations caused by construction equipment will make this impossible. Smaller fauna will inevitably be killed during land clearing activities as these activities will destroy their habitat. In addition to unintentional killing of fauna, some faunal species, particularly herpetofaunal species, are often intentionally killed as they are thought to be dangerous.

- (i) Mitigation measures
  - There is unfortunately no mitigation for the vibrations caused by machinery/vehicles, except perhaps ensuring that activities are kept to a minimum. As the intentional killing of herpetofauna (especially snakes) is considered a result of ignorance, this can be ameliorated through education. The labour force involved should be educated regarding the conservation importance of herpetofauna.
- (ii) Cumulative Impacts
  - No cumulative impacts are expected because of anthropogenic disturbances, intentional and/or accidental killing of fauna.
- (iii) Irreplaceable loss of Resources
  - No irreplaceable loss of resources is expected because of anthropogenic disturbances, intentional and/or accidental killing of fauna.

#### 9.2.3.3 NOISE NUISANCE

Heavy operation vehicles will be required for ripping/ ploughing/ tilling of the soil layer, seed sowing, fertilizing, and harvesting within the development footprint. This impact is not anticipated to be significant as there are no nearby receptors to any noise nuisance. This impact was rated as low negative before and after implementation of mitigation measures.

- (i) Mitigation measures
  - Ensure that all vehicles used during operation are serviced and in a good working condition.
- (ii) Cumulative Impacts
  - No cumulative impacts are expected because of noise impacts.
- (iii) Irreplaceable loss of Resources
  - No irreplaceable loss of resources is expected because of noise impacts.

#### 9.2.3.4 FIRE DAMAGE

The possibility of fire is a serious threat within the site area given the vegetation types and climate within the region. Fire should be prevented at all costs as it could spread easily and has the capability of quickly spreading to neighbouring areas. This impact was rated as medium negative before mitigation and was reduced to low negative after implementation of the proposed mitigation measures.

- (i) Mitigation measures



- Ensure that operation vehicles are equipped with the necessary firefighting equipment, specifically fire extinguishers.
- Workers must be adequately trained in the handling of firefighting equipment.
- No open fires will be permitted on-site.
- It is recommended that if fire breaks were created around each pivot, that they be maintained and regularly cleared of any vegetation.

(ii) Cumulative Impacts

- If a fire is accidentally started and not managed promptly, it has the capability to quickly spread and cause major damage within the surrounding area. Damages can be caused to the environment, neighbouring crops, and nearby infrastructure.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of fire.

#### 9.2.3.5 DUST NUISANCE

Dust will be generated during the operation phase because of frequent movement of heavy vehicles over the development footprint. This is not anticipated to be a significant impact as there are no nearby sensitive receptors. This impact was rated as low negative before and after implementation of mitigation measures.

(i) Mitigation measures

- Ensure that access roads to the development footprint are well maintained.
- Production phase vehicles should not exceed 30 km/h on access roads or in-field.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of dust impacts during construction.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of dust impacts during decommissioning.

#### 9.2.3.6 OIL/ FUEL SPILLAGES CAUSING SOIL AND GROUNDWATER CONTAMINATION

There are no surface water features close to the proposed development footprint. However, any leaks on production phase vehicles or accidental spillages can seep into and contaminate soil and possibly the groundwater. This impact was rated as low negative before and after implementation of mitigation measures.

(i) Mitigation measures

- Ensure that all vehicles used are serviced and in a good working condition.
- Ensure that every vehicle used on-site has a spill prevention kit, to be used for accidental spillages of oil or fuel.
- No storage of oil or fuel is allowed on-site. Any storage, if necessary, should be within a designated area and no direct contact between the storage containers and the ground is allowed.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of spillages during operation. It is not anticipated that large quantities of oil/ fuel will be required as part of operation. Only small amounts of oil/ fuel can spill because of leaks on vehicles. These could be easily managed.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of spillages.



#### 9.2.3.7 LITTERING

Littering is a possibility during the operational phase. This impact was rated as low negative before and after implementation of mitigation measures.

##### (i) Mitigation measures

- Every vehicle on-site should have a dedicated waste bin, which should be emptied after every day of use or when full.
- Littering in the environment is not allowed.

##### (ii) Cumulative Impacts

- Although a large amount of litter is not expected, littering is a serious concern in our country. Every piece of waste that is littered into the environment decreases the aesthetic and visual value of the environment and could potentially cause harm to animals that get stuck because of the waste or ingest the waste.

##### (iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of littering.

#### 9.2.3.8 SOCIO-ECONOMIC IMPACTS

The proposed project will create employment opportunities and contribute to food security. The crops will be sold locally. This impact was rated as medium positive before and after implementation of improvement measures.

##### (i) Improvement measures

- The socio-economic impact can be improved by employing a work force from the local community as far as reasonably possible.
- Utilise existing community structures if available, to act as a communication link between the local community and the applicant for informing the local community of job opportunities and informing the Applicant of possible contractors in the local community.
- Opportunities should first be given to previously disadvantaged individuals where practically possible.
- Employees should be trained and continuously developed.
- It is proposed that the product also be sold locally, if viable, to contribute to local food security.

##### (ii) Cumulative Impacts

- Every employment opportunity can positively contribute to certain livelihoods in the community through income generation. Overall, any job opportunities will contribute to reducing unemployment.

##### (iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of socio-economic impacts.

#### 9.2.3.9 VISUAL IMPACT

This impact was rated as medium negative. No mitigation measures exist with regards to a visual impact. The impact is not expected to be significant as one of the major surrounding land uses in the area is pivot irrigation, however, the visual aesthetic of the directly affected footprint area will be different than its current, semi-vegetated natural state.

##### (i) Mitigation measures

- None.

##### (ii) Cumulative Impacts



- No cumulative impacts are expected because of a visual impact.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of a visual impact.

#### 9.2.3.10 EROSION

Topographically the area is flat, which will prevent major erosion and water runoff during rainfall events. This impact was rated as low negative before and after implementation of mitigation measures.

(i) Mitigation measures

- Possible water flow during rainfall events must be controlled, using preferred storm water management techniques, before discharge into natural existing drainage lines.

(ii) Cumulative Impacts

- No cumulative impacts are expected because of erosion.

(iii) Irreplaceable loss of Resources

- No irreplaceable loss of resources is expected because of erosion.

#### 9.2.4 Decommissioning, Rehabilitation and Closure Phase Impacts

Decommissioning of a pivot is not a high impact process. It will entail removal of the centre pivot system and allowing natural rehabilitation to occur over time. The applicant will be responsible for ensuring that alien/invasive species do not occur within the footprint and will have to remove these from time-to-time as they occur on the site while the land naturally rehabilitates. Alternatively, the farmer may remove the pivot system and still grow crops without artificial irrigation.

#### 9.2.5 NO-GO ALTERNATIVE

The no-go alternative option means 'do nothing' or the option of not undertaking the proposed pivot construction project or any of its activities, consequently leading to the continuation of the current land-use, which is leaving the location as a natural semi-vegetated area. As such, the 'do nothing' alternative or keeping the current status quo with no activities occurring on-site also provides the baseline against which the impacts of the preferred alternative was compared.

##### 9.2.5.1 HABITAT FRAGMENTATION, LOSS OF NATURAL VEGETATION AND ALIEN INVASION IN A CBA 2

If the No-Go alternative is considered, then no habitat fragmentation or loss of natural vegetation will occur because of the preferred alternative activities. The invasion of alien vegetation however could continue in nature without any interference from anthropogenic activities. This impact was rated as medium positive.

##### 9.2.5.2 LOSS OF SPECIES OF CONSERVATION CONCERN

No species of conservation concern will be killed, or their habitat destroyed because of activities proposed as part of the preferred alternative. This impact was rated as medium positive.

##### 9.2.5.3 ANTHROPOGENIC DISTURBANCES, INTENTIONAL AND/OR ACCIDENTAL KILLING OF FAUNA

Intentional or accidental killing will not occur because of the preferred alternative activities. However, intentional killing of fauna is not impossible. Sometimes individuals from local communities do set traps to hunt for animals illegally in natural areas, mostly without the knowledge of the landowner. This impact was rated as being low positive.

##### 9.2.5.4 LOSS OF FOSSIL HERITAGE

No fossil heritage, if any are present underground, will be destroyed if the No-Go option is considered. This impact has been rated as medium positive.



#### **9.2.5.5 NOISE NUISANCE**

No noise will be generated on site. This impact was rated as medium positive.

#### **9.2.5.6 FIRE DAMAGE**

Even though no fire damage will occur because of activities subject to the preferred alternative, fire damage is still a reasonable threat in the area, as a fire can start easily (accidental or intentional) and spread fast over a large area. Therefore, albeit lower than the preferred alternative, fire damage is still rated as a negative impact.

#### **9.2.5.7 DUST NUISANCE**

Dust will not be caused because of activities proposed in the preferred alternative. The current vegetation cover greatly lowers the risk of dust nuisance during windy days. This impact was rated as medium positive.

#### **9.2.5.8 OIL/ FUEL SPILLAGES CAUSING SOIL AND GROUNDWATER CONTAMINATION**

Oil/ fuel spillages are unlikely on-site if the No-Go alternative is considered as vehicle passage through the area is not expected. This impact was rated as medium positive.

#### **9.2.5.9 LITTERING**

Littering is considered a low negative impact. Even though the activities of the preferred alternative will not take place if the No-Go option is considered, litter is a universal problem and chances are good that litter will find its way on-site through wind, especially as the site is situated next to a road.

#### **9.2.5.10 SOCIO-ECONOMIC IMPACTS**

Socioeconomics was rated as a medium negative impact if the No-Go option is considered. The preferred alternative will create job opportunities as well as contribute to food security.

#### **9.2.5.11 VISUAL IMPACT**

No visual impact will occur if the No-Go option is considered. This impact was rated as low positive.

#### **9.2.5.12 EROSION**

Erosion will not occur because of activities which form part of the preferred alternative. This impact was rated as medium positive.

#### **9.2.5.13 IMPACT ON HERITAGE RESOURCES**

If any heritage resources exist underground, these will not be impacted on if the No-Go option is considered. This impact was rated as medium positive.

### **9.2.6 OVERALL PREFERRED ALTERNATIVE**

The proposed activities on site are preferred, considering that no other alternatives other than the preferred activities and the No-Go alternative could be identified. No other alternative seemed reasonable or feasible for the proposed project and site location. The reasoning is that the proposed activities, construction of new pivots, align with the surrounding land uses and current farming activities being undertaken by the applicant. The location of the proposed activities is ideally situated as it is on the applicant's property, mostly on previously cultivated lands (minimising the negative impact), and it falls within the potential intensive irrigation agriculture area. The preferred alternative will also have significant positive socio-economic impacts for its scale in creating employment opportunities and contributing to food security.

No significant/ detrimental negative impacts were identified with regards to the preferred alternative. All impacts and associated risks can be minimised if the mitigation measures are adhered to.





### 9.3 SUMMARY OF PRELIMINARY IMPACTS

A summary of all the identified preliminary impact, their associated phase, as well as their impact calculations and significance are presented in Table 21 below. The No-Go alternative was also included in this table.



Table 21: Significance rating of identified impacts

| Impact Description  |               |                   | Pre-Mitigation |        |          |           |               |             | Post Mitigation   |        |        |          |           |               |             | Post-mitigation    |            | Priority Factor   |                    |                 |             |
|---|---------------|-------------------|----------------|--------|----------|-----------|---------------|-------------|-------------------|--------|--------|----------|-----------|---------------|-------------|--------------------|------------|-------------------|--------------------|-----------------|-------------|
|   |               |                   |                |        |          |           |               |             |                   |        |        |          |           |               |             |                    |            |                   |                    |                 |             |
| Impact  | Alternative   | Phase             | Nature         | Extent | Duration | Magnitude | Reversibility | Probability | Pre-mitigation ER | Nature | Extent | Duration | Magnitude | Reversibility | Probability | Post-mitigation ER | Confidence | Cumulative Impact | Irreplaceable loss | Priority Factor | Final score |
| Habitat fragmentation, loss of natural vegetation and alien invasion in a CBA 2 | Alternative 1 | Construction      | -1             | 3      | 4        | 4         | 3             | 5           | -17.5             | -1     | 3      | 4        | 3         | 3             | 4           | -13                | High       | 2                 | 2                  | 1.25            | -16.25      |
| Loss of species of conservation concern   | Alternative 1 | Construction      | -1             | 1      | 4        | 4         | 3             | 5           | -15               | -1     | 1      | 4        | 3         | 3             | 4           | -11                | High       | 2                 | 1                  | 1.13            | -12.375     |
| Anthropogenic disturbances, intentional and/or accidental killing of fauna      | Alternative 1 | Construction      | -1             | 1      | 3        | 2         | 2             | 3           | -6                | -1     | 1      | 3        | 1         | 2             | 2           | -3.5               | Medium     | 2                 | 1                  | 1.13            | -3.9375     |
| Impact on heritage resources  | Alternative 1 | Construction      | -1             | 1      | 5        | 2         | 5             | 2           | -6.5              | -1     | 1      | 5        | 1         | 1             | 1           | -2                 | Low        | 1                 | 1                  | 1.00            | -2          |
| Noise nuisance  | Alternative 1 | Construction      | -1             | 1      | 4        | 3         | 2             | 2           | -5                | -1     | 1      | 4        | 1         | 2             | 1           | -2                 | Medium     | 1                 | 1                  | 1.00            | -2          |
| Fire damage   | Alternative 1 | Construction      | -1             | 3      | 2        | 4         | 4             | 4           | -13               | -1     | 2      | 2        | 2         | 2             | 2           | -4                 | Medium     | 1                 | 1                  | 1.00            | -4          |
| Dust nuisance   | Alternative 1 | Construction      | -1             | 3      | 4        | 2         | 2             | 3           | -8.25             | -1     | 2      | 4        | 1         | 2             | 2           | -4.5               | Medium     | 1                 | 1                  | 1.00            | -4.5        |
| Oil/ fuel spillages causing soil and groundwater contamination                  | Alternative 1 | Construction      | -1             | 1      | 2        | 3         | 3             | 2           | -4.5              | -1     | 1      | 2        | 2         | 2             | 2           | -3.5               | Medium     | 1                 | 1                  | 1.00            | -3.5        |
| Littering   | Alternative 1 | Construction      | -1             | 2      | 4        | 2         | 2             | 2           | -5                | -1     | 1      | 4        | 1         | 1             | 1           | -1.75              | Medium     | 1                 | 1                  | 1.00            | -1.75       |
| Socio-economic impacts  | Alternative 1 | Construction      | 1              | 4      | 4        | 2         | 1             | 5           | 13.75             | 1      | 4      | 4        | 3         | 1             | 5           | 15                 | Medium     | 1                 | 1                  | 1.00            | 15          |
| Visual impact   | Alternative 1 | Construction      | -1             | 1      | 4        | 1         | 2             | 5           | -10               | -1     | 1      | 4        | 1         | 2             | 5           | -10                | Medium     | 1                 | 1                  | 1.00            | -10         |
| Erosion   | Alternative 1 | Construction      | -1             | 1      | 4        | 3         | 2             | 2           | -5                | -1     | 1      | 4        | 2         | 2             | 2           | -4.5               | Medium     | 1                 | 1                  | 1.00            | -4.5        |
| Habitat fragmentation, loss of natural vegetation and alien invasion in a CBA 2 | Alternative 1 | Operation         | -1             | 3      | 4        | 4         | 3             | 5           | -17.5             | -1     | 3      | 4        | 3         | 3             | 4           | -13                | High       | 2                 | 2                  | 1.25            | -16.25      |
| Anthropogenic disturbances, intentional and/or accidental killing of fauna      | Alternative 1 | Operation         | -1             | 1      | 3        | 2         | 2             | 3           | -6                | -1     | 1      | 3        | 1         | 2             | 2           | -3.5               | Medium     | 2                 | 1                  | 1.13            | -3.9375     |
| Noise nuisance  | Alternative 1 | Operation         | -1             | 1      | 4        | 3         | 2             | 2           | -5                | -1     | 1      | 4        | 1         | 2             | 1           | -2                 | Medium     | 1                 | 1                  | 1.00            | -2          |
| Fire damage   | Alternative 1 | Operation         | -1             | 3      | 2        | 4         | 4             | 4           | -13               | -1     | 2      | 2        | 2         | 2             | 2           | -4                 | Medium     | 1                 | 1                  | 1.00            | -4          |
| Dust nuisance   | Alternative 1 | Operation         | -1             | 3      | 4        | 2         | 2             | 3           | -8.25             | -1     | 2      | 4        | 1         | 2             | 2           | -4.5               | Medium     | 1                 | 1                  | 1.00            | -4.5        |
| Oil/ fuel spillages causing soil and groundwater contamination                  | Alternative 1 | Operation         | -1             | 1      | 2        | 3         | 3             | 2           | -4.5              | -1     | 1      | 2        | 2         | 2             | 2           | -3.5               | Medium     | 1                 | 1                  | 1.00            | -3.5        |
| Littering   | Alternative 1 | Operation         | -1             | 2      | 3        | 2         | 2             | 2           | -4.5              | -1     | 1      | 3        | 1         | 1             | 1           | -1.5               | Medium     | 1                 | 1                  | 1.00            | -1.5        |
| Socio-economic impacts  | Alternative 1 | Operation         | 1              | 4      | 4        | 2         | 1             | 5           | 13.75             | 1      | 4      | 4        | 3         | 1             | 5           | 15                 | Medium     | 1                 | 1                  | 1.00            | 15          |
| Visual impact   | Alternative 1 | Operation         | -1             | 1      | 4        | 1         | 2             | 5           | -10               | -1     | 1      | 4        | 1         | 2             | 5           | -10                | Medium     | 1                 | 1                  | 1.00            | -10         |
| Erosion   | Alternative 1 | Operation         | -1             | 1      | 4        | 3         | 2             | 2           | -5                | -1     | 1      | 4        | 2         | 2             | 2           | -4.5               | Medium     | 1                 | 1                  | 1.00            | -4.5        |
| Habitat fragmentation, loss of natural vegetation and alien invasion in a CBA 2 | Alternative 1 | Rehab and closure | -1             | 1      | 4        | 2         | 2             | 3           | -6.75             | -1     | 1      | 4        | 2         | 2             | 2           | -4.5               | High       | 1                 | 1                  | 1.00            | -4.5        |
| Habitat fragmentation, loss of natural vegetation and alien invasion in a CBA 2 | No-Go         |                   | 1              | 1      | 4        | 2         | 2             | 4           | 9                 | 1      | 1      | 4        | 2         | 2             | 4           | 9                  | Medium     | 1                 | 1                  | 1.00            | 9           |
| Loss of species of conservation concern   | No-Go         |                   | 1              | 2      | 4        | 2         | 2             | 4           | 10                | 1      | 2      | 4        | 2         | 2             | 4           | 10                 | Medium     | 1                 | 1                  | 1.00            | 10          |
| Anthropogenic disturbances, intentional and/or accidental killing of fauna      | No-Go         |                   | 1              | 1      | 3        | 1         | 2             | 3           | 5.25              | 1      | 1      | 3        | 1         | 2             | 3           | 5.25               | Medium     | 1                 | 1                  | 1.00            | 5.25        |
| Loss of fossil heritage   | No-Go         |                   | 1              | 1      | 5        | 2         | 3             | 5           | 13.75             | 1      | 1      | 5        | 2         | 3             | 5           | 13.75              | Medium     | 1                 | 1                  | 1.00            | 13.75       |
| Noise nuisance  | No-Go         |                   | 1              | 1      | 4        | 3         | 2             | 4           | 10                | 1      | 1      | 4        | 3         | 2             | 4           | 10                 | Medium     | 1                 | 1                  | 1.00            | 10          |
| Fire damage   | No-Go         |                   | -1             | 3      | 2        | 4         | 4             | 2           | -6.5              | -1     | 3      | 2        | 4         | 4             | 2           | -6.5               | Medium     | 1                 | 1                  | 1.00            | -6.5        |
| Dust nuisance   | No-Go         |                   | 1              | 3      | 4        | 2         | 2             | 4           | 11                | 1      | 3      | 4        | 2         | 2             | 4           | 11                 | Medium     | 1                 | 1                  | 1.00            | 11          |
| Oil/ fuel spillages causing soil and groundwater contamination                  | No-Go         |                   | 1              | 1      | 2        | 3         | 3             | 4           | 9                 | 1      | 1      | 2        | 3         | 3             | 4           | 9                  | Medium     | 1                 | 1                  | 1.00            | 9           |
| Littering   | No-Go         |                   | -1             | 2      | 4        | 2         | 2             | 1           | -2.5              | -1     | 2      | 4        | 2         | 2             | 1           | -2.5               | Medium     | 1                 | 1                  | 1.00            | -2.5        |
| Socio-economic impacts  | No-Go         |                   | -1             | 4      | 4        | 2         | 2             | 5           | -15               | -1     | 4      | 4        | 2         | 2             | 5           | -15                | Medium     | 1                 | 1                  | 1.00            | -15         |
| Visual impact   | No-Go         |                   | 1              | 1      | 4        | 1         | 2             | 4           | 8                 | 1      | 1      | 4        | 1         | 2             | 4           | 8                  | Medium     | 1                 | 1                  | 1.00            | 8           |
| Erosion   | No-Go         |                   | 1              | 1      | 4        | 3         | 2             | 4           | 10                | 1      | 1      | 4        | 3         | 2             | 4           | 10                 | Medium     | 1                 | 1                  | 1.00            | 10          |



## 10 PLAN OF STUDY FOR THE IMPACT ASSESSMENT

The section below outlines the proposed plan of study which will be conducted for the various environmental aspects during the EIA phase. It is also important to note that the plan of study will also be guided by comment obtained from I&APs and other stakeholders during the Scoping Report public review period.

### 10.1 DESCRIPTION OF ALTERNATIVES TO BE CONSIDERED

The only alternative considered and discussed in Section 6 of this Scoping Report is the no-go alternative which will be further assessed as it is the same as keeping the current *status quo* of the current environment. The no-go option will be assessed further in the EIA phase of this EIA process.

### 10.2 DESCRIPTION OF THE ASPECTS TO BE ASSESSED AS PART OF THE ENVIRONMENTAL IMPACT ASSESSMENT PHASE

The following aspects will be assessed further during the EIA phase investigations to be undertaken:

- It is the EAP and specialist's opinion that no additional specialist studies will have to be considered during the EIA phase. EIA level specialist studies were done during this scoping phase for biodiversity, heritage, and palaeontology.
- An overall sensitivity map of the proposed project will be created to rank the different site sensitivities.
- Incremental alternatives as mentioned in Section 11.1 above will be further assessed during the EIA phase.
- Any comments received from the competent authority, I&APs and other stakeholders will be taken into account and assessed during the EIA phase.

### 10.3 ASPECTS TO BE ASSESSED BY SPECIALISTS

EIA level biodiversity, heritage and palaeontological specialist studies have already been undertaken for the proposed project during this scoping phase assessment. The impacts and their ratings as identified by the specialists and the EAP have been included in this scoping phase assessment. It is unlikely that the identified impacts and their associated ratings are likely to change during the impact assessment phase however, comments as received by the competent authority, I&APs and other stakeholders will be considered during the EIA phase and the impact ratings adjusted if necessary.

### 10.4 PROPOSED METHOD FOR ASSESSING ENVIRONMENTAL ASPECTS

The same method of assessing impact significance as was used during the Scoping phase will be applied during the EIA phase. This methodology is described in detail in Section 9 of this Scoping Report.

### 10.5 PROPOSED METHOD FOR ASSESSING SIGNIFICANCE

The significance of environmental impacts will be rated before and after the implementation of mitigation measures. These mitigation measures may be existing measures or additional measures that may arise from the impact assessment and specialist input. The impact rating system considers the confidence level that can be placed on the successful implementation of the mitigation. The proposed method for the assessment of environmental issues is set out in the Section 9. This assessment methodology enables the assessment of environmental issues including: the severity of impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated.



The specialist studies will recommend practicable mitigation measures or management actions that effectively minimise or eliminate negative impacts, enhance beneficial impacts, and assist project design. If appropriate, the studies will differentiate between essential mitigation measures, which must be implemented and optional mitigation measures, which are recommended (“nice-to-haves”).

## 10.6 COMPETENT AUTHORITIES CONSULTATION

Competent authorities were notified of the proposed project during the initial notification period of the scoping phase and will further be included and notified of the project proceedings during the EIA phase. The Scoping report was also sent to the competent authorities for comment, as will the EIA report when it becomes available. If and/ or when an authority requires a meeting, one will be arranged. Should a meeting be required, the date, time, and venue of the meeting will be scheduled post dissemination of the project notification documents. The purpose of an authority meeting would be to explain the project in detail to authorities and clarify the process going forward if uncertainties exist.

## 10.7 PROPOSED METHOD OF PUBLIC PARTICIPATION

An overview of the proposed public participation process to be followed for the EIA phase is provided below. The commenting periods that will be provided to the I&APs (and the competent authorities) will be thirty (30) days long. Two commenting periods are provided for during this EIA process, these will be during the review period of the:

- Scoping Report; and
- EIA Report and associated EMP.

All comments received during the initial notification and call to register have been included in this Scoping Report, and comments received during the Scoping Report comment period will be included in the finalised Scoping Report for submission to the competent authority. The details pertaining to the review of the EIA Report and EMP, the venue where the report will be placed for review, as well as the duration of the comment period, will be determined at a later date and communicated to all registered I&APs.

### 10.7.1 STEPS TO BE TAKEN TO NOTIFY INTERESTED AND AFFECTED PARTIES

I&APs were notified of the proposed application via registered letters, emails and facsimiles. The Public Participation Process has been and will continue to be undertaken in accordance with the NEMA EIA Regulations (2014, as amended). A minimum of 30 days was provided to the public to register as I&APs and provide initial comments on the project and a further 30 days was provided for comment on the Scoping Report. The information submitted by I&APs will be utilised during the Impact Assessment and compilation of the EIA Report and associated EMP. Upon acceptance of the Scoping Report by the competent authority, the EIA phase will commence. An EIA Report will be compiled presenting the findings of the EIA phase, this report will be made available for public review and comment for a further 30 days.

Feedback from I&APs has been and will be solicited through one or more of the following means:

- Registered letters;
- Facsimile and e-mails; and
- Any other communication with EIMS, which includes SMS's.

### 10.7.2 DETAILS OF ENGAGEMENT PROCESS TO BE FOLLOWED

I&APs will be afforded the following opportunities to participate in the project:

- I&APs have been requested via written notifications distributed to provide their views, queries and / or comments on the project;
- The EIA Report and EMP will be available for comment for a period of 30 days at the same public places in the project area that the Scoping Report was made available. Furthermore, copies of the said report sent to stakeholders who request a copy and placed on the EIMS website: [www.eims.co.za](http://www.eims.co.za).



All comments and issues raised during the Scoping Report 30-day public comment period will be incorporated into the final Scoping Report, and the comments from the EIA Report and EMPr review period will be included in the finalised EIA Report and EMPr to be submitted to the competent authority for decision-making.

### 10.7.3 DESCRIPTION OF INFORMATION TO BE PROVIDED

The following information will be provided during the EIA phase PPP:

- The site layout plan;
- List of activities to be authorised;
- Scale and extent of activities to be authorised;
- Typical impacts of activities to be authorised (e.g., surface disturbance, dust, noise, drainage, etc.);
- The duration of the activity;
- Sufficient detail of the intended activities to enable communities to assess what impact the activities will have on them;
- The purpose of the proposed project;
- Details of the affected properties (including parent farm and portion);
- Details of the NEMA Regulations that must be adhered to;
- Date by which comment, concerns and objections must be forwarded through to both EIMS and/ or the competent authority respectively; and
- Contact details of the Environmental Assessment Practitioner (EAP).

## 10.8 DESCRIPTION OF TASKS THAT WILL BE UNDERTAKEN DURING THE EIA PROCESS

The plan of study in terms of certain aspects or specialist fields is detailed in the above sections and is summarised below. The following tasks will be undertaken as part of the EIA phase of the project:

- Detailed specialist studies;
- Public consultation:
  - Notification of the availability of the EIA Report for review and comment to all registered I&APs;
- Authority consultation:
  - Consultation with the competent authorities; and
  - Other relevant/ commenting authorities' consultation to provide authorities with project related information and obtain their feedback, where possible.
- Document compilation:
  - The EIA Report and associated EMPr will be compiled in line with the requirements of Appendix 3 and 4 of the NEMA EIA Regulations (2014, as amended); and
  - The EIA Report and EMPr will be made available for public comment for a period of 30 days.
- The EIA Report and EMPr will be finalised and submitted to the competent authority.

## 10.9 MEASURES TO AVOID, REVERSE, MITIGATE, OR MANAGE IMPACTS

All comments received by I&APs will be taken into consideration and will inform the high-level mitigation measures. Detailed mitigation measures will be further developed as part of the EIA phase. The potential impacts



identified during the Scoping phase will further be assessed in terms of the mitigation potential, taking into consideration the following:

- Reversibility of impact:
  - Reversible;
  - Partially reversible.; and
  - Irreversible.
- Irreplaceable loss of resources:
  - Replaceable;
  - Partially replaceable; and
  - Irreplaceable.
- Potential of impacts to be mitigated:
  - High;
  - Medium; and
  - Low.

The assessment findings for each identified impact taking the above into consideration will be provided in the EIA Report and associated EMPr.

## 11 ASSUMPTIONS, LIMITATIONS AND UNCERTAINTIES

Certain assumptions, limitations, and uncertainties are associated with the Scoping Phase. This report is based on information that is currently available and, as a result, the following limitations and assumptions are applicable:

- The scoping process and report is based on the technical information and pivot design layout provided by the client; and
- The description of the baseline environment has been obtained from specialist studies and a desktop analysis.





## 12 UNDERTAKINGS

### 12.1 UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I **Cheyenne Muthukarapan** herewith undertake that the information provided in the foregoing report is correct, and that the comments and inputs from stakeholders and Interested and Affected Parties has been correctly recorded in the report.

Signature of the EAP

Date: 24 February 2021

### 12.2 UNDERTAKING REGARDING LEVEL OF AGREEMENT

I **Cheyenne Muthukarapan** herewith undertake that the information provided in the foregoing report is correct, and that the level of agreement with Interested and Affected Parties and stakeholders has been correctly recorded and reported herein.

Signature of the EAP

Date: 24 February 2021



## 13 REFERENCES

- Baily, A.K., Middleton, B.J. 2005. Water Resources of South Africa, 2005 Study (WR2005). Shapefiles.
- BirdLife International. 2012. IUCN Red List of Threatened Species. Version 2013.1. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 2 September 2017.
- Branch W.R. (Ed). 1988. South African Red Data Book – Reptiles and Amphibians. NMB Printers, Port Elisabeth.
- Britannica. 2021. Cambisol FAO Soil Group. Available at: <https://www.britannica.com/science/Cambisol>
- Department of Environmental Affairs and Tourism (DEAT). 2004. Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11, Department of Environmental Affairs and Tourism (DEAT), Pretoria.
- Department of Environmental Affairs. 2010. Guideline on Need and Desirability, Integrated Environmental Management Guideline Series 9. ISBN: 978-0-9802694-4-4. Pretoria, South Africa.
- Department Statistics South Africa (STATSSA). 2011. 2011 Census. Available at: <http://www.statssa.gov.za/>.
- Department Statistics South Africa (STATSSA). 2016. 2016 Community Survey. Available at: <http://www.statssa.gov.za/>.
- EWT. 2004. Red Data Book of the Mammals of South Africa: A conservation Assessment. Endangered Wildlife Trust, Johannesburg.
- Department of Environmental Affairs and Tourism (DEAT). 2004. Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11, Department of Environmental Affairs and Tourism (DEAT), Pretoria.
- Department of Environmental Affairs. 2010. Guideline on Need and Desirability, Integrated Environmental Management Guideline Series 9. ISBN: 978-0-9802694-4-4. Pretoria, South Africa.
- Department of Environmental Affairs. 2019. South Africa Protected Areas Database- 2019\_Q4. Shapefile. Available at: <http://egis.environment.gov.za>.
- Dijkshoorn JA, van Engelen VWP and Huting JRM 2008. Soil and landform properties for LADA partner countries (Argentina, China, Cuba, Senegal and The Gambia, South Africa and Tunisia). ISRIC report 2008/06 and GLADA report 2008/03, ISRIC – World Soil Information and FAO, Wageningen (23 pp with data set) [http://www.isric.org/isric/Webdocs/Docs/ISRIC\\_Report\\_2008\\_06.pdf](http://www.isric.org/isric/Webdocs/Docs/ISRIC_Report_2008_06.pdf).
- Dingle, R.V., Siesser, W.G., Newton, A.R. 1983. Mesozoic and Tertiary geology of southern Africa. viii + 375 pp. Balkema, Rotterdam.
- GeoTerra Image (GTI). 2018. South African Nation Land-Cover 2018 (SA\_NLC\_2018\_GEO.img). Raster dataset.
- International Soil Reference and Information Centre (ISRIC). 2020. Acrisols (AC). Available at: [https://www.isric.org/sites/default/files/major\\_soils\\_of\\_the\\_world/set6/ac/acrisol.pdf](https://www.isric.org/sites/default/files/major_soils_of_the_world/set6/ac/acrisol.pdf).
- Minter L.R., Burger M., Harrison J.A., Braak H.H., Bishop P.J., and Kloepfer D. (Eds), 2004. Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland. SI/MBA Series #9. Smithsonian Institute, Washington DC.



- Mucina, L. Rutherford, M.C. 2006. The vegetation of South Africa, Lesotho and Swaziland. South African National Biodiversity Institute (SANBI). Pretoria
- National Planning Commission. 2019. National Development Plan 2030: Our Future Make it Work. ISBN: 978-0-621-41180-5.
- National Protected Areas Expansion Strategy (NPAES). 2011. National Protected Areas Expansion Strategy. Available at: [www.environment.gov.za](http://www.environment.gov.za).
- Nel, J. L., Driver, A., Strydom, W. F., Maherry, A. M., Petersen, C. P., Hill, L., Roux, D. J., Nienaber, S., van Deventer, H., Swartz, E. R. & Smith-Adao, L. B. 2011. Atlas of Freshwater Ecosystem Priority Areas in South Africa: Maps to support sustainable development of water resources, WRC Report No. TT 500/11. Water Research Commission (WRC). Pretoria.
- Partridge, T.C., Botha, G.A., Haddon, I.G. 2006. Cenozoic deposits of the interior. In: Johnson, M.R., Anhaeusser, C.R. & Thomas, R.J. (Eds.) The geology of South Africa, pp. 585-604. Geological Society of South Africa, Marshalltown.
- Pixley Ka Seme District Spatial Development Framework/ Land Development Plan 2013- 2018. Available at: <https://www.pksgdm.gov.za/sdf.html>.
- Pixley Ka Seme Integrated Development Plan 2017-2022. Available at: <https://www.pksgdm.gov.za/idp.html>.
- Republic of South Africa. 1998. National Environmental Management Act (NEMA), Act No. 107 of 1998. Pretoria. Government Printer.
- Republic of South Africa. 1998. National Water Act (NWA), Act No. 36 of 1998. Pretoria. Government Printer.
- Republic of South Africa. 2003. National Environmental Management: Protected Areas Act (NEMPAA) Act No. 57 of 2003. Pretoria. Government Printer.
- Republic of South Africa. 2004. National Environmental Management: Biodiversity Act (NEMBA), Act No. 10 of 2004. Pretoria. Government Printer.
- Republic of South Africa. 2013. Spatial Planning and Land Use Management Act (SPLUMA), Act 16 of 2013. Pretoria. Government Printer.
- Siyancuma Local Municipality (NC078). 2021. Available at: <https://municipalities.co.za/overview/1176/siyancuma-local-municipality>.
- Skinner J.D., and Chimimba C.T. 2005. Mammals of the Southern African Subregion. Cambridge University Press, Cape Town.
- South African Heritage Resources Information System (SAHRIS). 2020. PalaeoSensitivity Map. Available at: <https://sahris.sahra.org.za/map/palaeo>.
- South African National Biodiversity Institute (SANBI). 2010. National Protected Areas Expansion Strategy (NPAES): Focus areas for protected area expansion. Shapefiles.
- South African National Biodiversity Institute (SANBI). 2011. National Freshwater Ecosystem Priority Areas(NFEPA). Shapefiles.
- South African National Biodiversity Institute (SANBI). 2018. National Biodiversity Assessment 2018. Shapefiles.



- Siyancuma Integrated Development Plan Draft 2020/2021. Available at: [http://www.siyancuma.gov.za/index.php/tendersadverts/tenders/opening-of-tenders/cat\\_view/6-idp/322-2020--2021](http://www.siyancuma.gov.za/index.php/tendersadverts/tenders/opening-of-tenders/cat_view/6-idp/322-2020--2021).
- Weatherbase. 2020. Kimberly, South Africa. Available at: <https://www.weatherbase.com/weather/weather.php3?s=605059&cityname=Kimberly-South-Africa>.