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Landscape Architects, Environmental Consultants,  
Environmental Auditing, Water License Applications

**Gauteng Department of Agriculture  
and Rural Development  
SUE Admin  
Umnotho House  
56 Eloff Street  
Ground Floor  
Johannesburg  
2000**

**ATTENTION: Dan Motaung  
Tel: 011-240 2574**

**11 September 2017**

**RE: THE FINAL BASIC ASSESSMENT REPORT FOR THE PROPOSED  
ROOIHUISKRAAL NORTH X 29 DEVELOPMENT FOR A RESIDENTIAL 3 AND  
SECURITY COMPLEX THAT IS SITUATED ON A PART OF THE REMAINDER OF  
PORTION 9 AND A PART OF PORTION 145 OF THE FARM BRAKFONTein 399  
JR, CITY OF TSHWANE, GAUTENG.  
Gaut ref nr. 002/17-18/E0037**

The letter received from your Department dated 5 July 2017 regarding comments on the Draft Basic Assessment Report for the abovementioned project refers.

Please note that Bokamoso has decided to respond to your comments in this letter and this letter should be regarded as part of the Final Basic Assessment report. We do not want to create additional reading work for you and therefore decided to refer you to the relevant page of the report where the information can be obtained.

To follow now is Bokamoso's response to your comments in table format.

<b>GDARD COMMENTS</b>	<b>BOKAMOSO RESPONSE</b>
The Draft Basic Assessment Report (DBAR) regarding the	This information is correct.

<p>abovementioned activity received by the Department on 26 May 2017 has reference.</p> <p>This proposed development triggers Activities 12, 19 and 27 listed under Listing Notice 1 of GN.R983 and Activities 4, 12 and 14 listed under Listing Notice 3 of GN R985.</p>	
<p><b>1. Alignment of the activity with applicable legislations and policies considered</b></p> <ul style="list-style-type: none"> <li>• Constitution of the Republic of South Africa, 1996 (act No. 108 of 1996).</li> <li>• National Environmental Management Act, 1998 (Act, 1998 (act No. 107 of 1998 as amended.</li> <li>• National Environmental Management Waste Act, 2008 (Act No. 59 of 2008).</li> <li>• National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004).</li> <li>• National Environmental Management air Quality Act, 2004 (Act No 39 of 2004).</li> <li>• Gauteng Provincial</li> </ul>	<p>Bokamoso is in agreement with GDARD regarding the applicable legislation. Please refer to <b><u>pages 13 to 26</u></b> of the Final Basic Assessment Report for the section pertaining to the applicable legislation that was considered and that is applicable for this project.</p>

<p>Environmental Management Framework, 2015.</p> <ul style="list-style-type: none"> <li>• The Gauteng Red Data Policy.</li> </ul>	
<p><b>2. Guidelines GDARD requirements considered</b></p> <p>The proposed establishment of a Residential 3 and security Complex will be evaluated using GDARD's Provincial Conservation Plan (C-Plan Version 3.3)</p> <p>The Department's comments regarding the proposed activity are as follows:</p> <ul style="list-style-type: none"> <li>• The C-Plan Version 3.3 identifies the site as falling within the critical Biodiversity Area, Important area and as a habitat for mammals and having a Non-Perennial River, Wetland and Primary Vegetation.</li> </ul>	<p>Noted.</p> <ul style="list-style-type: none"> <li>• This information is correct. The site contains a wetland and is classified as a Critical Biodiversity and Important Area as per the GDARD C-Plan Version 3.3. Please refer to page <b><u>36 to 40</u></b> for <b><u>Section 7. Groundcover</u></b> and the discussion regarding the fauna, flora and wetlands present on the site. You can also refer to <b><u>Appendix G</u></b> for the following specialist studies that was conducted: <ul style="list-style-type: none"> <li>• Appendix G2 – Vegetation and Wetland Assessment;</li> <li>• Appendix G3 – Red Data Invertebrate and Wetland Mammal Investigation;</li> <li>• Appendix G4 - Flora Integrity Scan;</li> </ul> </li> </ul>


<ul style="list-style-type: none"> <li>• The proposed access bridge road will be built over the wetland and within the floodline. As a result, there will be direct effects which result from disturbances that occur within the wetland coming from filling, grading, removal of vegetation, changes in water levels as well as drainage patterns.</li> <li>• Since the site has a wetland, it may pose a risk of flooding to the residents of a new development and also result in the increased erosion due to artificial stormwater generation.</li> <li>• Although the specialists' studies mentioned below are attached in the DBAR</li> </ul>	<ul style="list-style-type: none"> <li>✚ Appendix G5 – Fauna Habitat Assessment;</li> <li>✚ Appendix G6 – Flora Survey;</li> <li>✚ Appendix G7 – Wetland delineation;</li> <li>✚ Appendix G8 – Wetland delineation;</li> <li>✚ Appendix G9 – Hydrology Wetland Impact Assessment;</li> <li>✚ Appendix G10 – Wetland Specialist's input on wetland buffer and stormwater design.</li> </ul> <ul style="list-style-type: none"> <li>• It is correct that a bridge is applied for, that will traverse the wetland in order to provide access to the development. Please refer to <b><u>page 30</u></b> for details regarding the proposed bridge as well as information regarding disturbances to the wetland and floodlines.</li> <li>• Please refer to <b><u>page 4 to 6</u></b> and <b><u>page 38 to 40</u></b> for information regarding the handling of stormwater. Kindly note that numerous meetings were held with GDARD (as well as with DWS and CoT) to discuss the implementation of stormwater measures on site.</li> <li>• This comment is valid however seeing that Eskom's powerlines</li> </ul>
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<p>and supported the proposed development to proceed, this Department is still of the view that there is little land that can be developable owing to the fact that majority of the land is sensitive.</p> <ul style="list-style-type: none"><li>• It is, however, advisable for the applicant to address</li></ul>	<p>traverses the northern side of the site it is not possible to develop this area and Eskom was not willing to negotiate moving the powerlines to a different location on the site. The site also contains a wetland area which requires a buffer zone (according to the wetland specialist a 15 meter buffer should be sufficient and adequate). The wetland area furthermore also takes up a large area of the site. Therefore the only available area for development on the site is the area currently applied for. It can be seen from the alternative layouts that the current layout is the best suitable option for the site. The largest portion of the site (approximately 78%) of the site will remain vacant and open space. It is also regarded that the proposed development will actually create an area that is protected and looked after as rehabilitation will be required for the wetland area as the current state is severely degraded and the site is currently used as a dumping and recreational area for four wheelers and motorbikes etc.</p> <ul style="list-style-type: none"><li>• Please refer to <b><u>page 35</u></b> for the geotechnical section as well as</li></ul>
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<p>the issues of sensitivity and geotechnical constraints in the FBAR.</p>	<p><b><u>Appendix G12</u></b> for the Engineering Geological and Geotechnical Report as well as <b><u>Appendix G9</u></b> for the Hydrogeology Wetland Impact Assessment.</p> <p>Kindly also refer to the fauna and flora section on <b><u>page 36 to 40</u></b> for discussions regarding the sensitivity of the site.</p>
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<p><b>A. Specialist Studies</b></p> <p>Specialist studies undertaken and attached to the DBAR are as follows:</p> <ul style="list-style-type: none"> <li>• Cultural Heritage Resource Impact Assessment dated May 2007.</li> <li>• Vegetation and wetland Assessment dated March 2008.</li> <li>• Faunal specialists incorporated by Dewald Kamffer (Ecocheck).</li> <li>• Determination of whether the grassland on the proposed Rooihuiskraal North Extension 29 Development Site is primary grassland dated 2010 by Scientific Aquatic Services.</li> <li>• Fauna Habitat Assessment dated March 2017 by Bokamoso Landscape</li> </ul>	<ul style="list-style-type: none"> <li>• This information is correct.</li> <li>• Correct.</li> <li>• Correct.</li> <li>• Correct.</li> <li>• Correct.</li> </ul>
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<p>Architects and Environmental Consultants.</p> <ul style="list-style-type: none"> <li>• Vegetation Survey dated March 2017 by Bokamoso.</li> <li>• Hydropedology Wetland Impact Assessment and Management Report dated September 2014 by Dr J.H. van der Waals.</li> <li>• Wetland Specialist's Input on Wetland buffer and stormwater dated June 2017 by Terrasoil Science.</li> <li>• Traffic Impact Assessment dated June 2014 by Dhubecon Consulting Engineers.</li> <li>• Engineering Geological and Geotechnical Report dated Jan 2017 by Dolomite Technology (PTY) Ltd.</li> </ul>	<ul style="list-style-type: none"> <li>• Correct.</li> <li>• Kindly note that a Wetland Delineation Report was conducted by SAS (Scientific Aquatic Services CC) during March 2009 and May 2010. Please refer to <b>Appendix G7 and Appendix G8.</b> The Hydropedology Wetland Impact Assessment referred to is correct and is under <b><u>Appendix G9.</u></b></li> <li>• Correct.</li> <li>• Correct.</li> <li>• Correct.</li> </ul> <p>Kindly note that the following Specialists reports are also included as part of the report and can be found under the following Appendices:</p> <ul style="list-style-type: none"> <li>• Appendix G13 – Civil Engineering Services Report;</li> <li>• Appendix G14 – Electrical Services;</li> <li>• Appendix G15 – Noise Study;</li> <li>• Appendix G16 – Integrated Water Quality and Quantity</li> </ul>
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<p>It is important that the comprehensive stormwater management plan as agreed in a series of meetings be submitted to show how stormwater will be managed on the site before flowing into the stream/wetland.</p>	<p>Management and Monitoring plan; and   Appendix G 17 – Rehabilitation Plan</p> <p>Kindly refer to the stormwater plan – <b><u>Appendix A</u></b> and <b><u>Appendix lii</u></b>. You can also refer to the <b><u>Civil Engineering Services report (Appendix G13)</u></b> as well as the <b><u>Wetland Specialist's input on the wetland buffer and stormwater design (Appendix G10)</u></b>. From these reports it can be noted that both the Engineer and Wetland/ Soil specialist is in agreement with the stormwater concept.</p>
<p><b>3. Alternatives</b></p> <p>An assessment of alternatives is not included in the DBAR. It required that a comparative assessment of alternative location of activity components on the site be included on the DBAR.</p> <p>It is mentioned that during the previous environmental processes three alternative layouts were considered and investigated and were similar in nature to the proposed alternative. The only differences were that it consisted of 6 even for</p>	<p>Kindly note that the alternatives as part of the previous processes are now also included and discussed in the report. Please refer to <b><u>page 28</u></b> for the alternative layouts as well as <b><u>Appendix A</u></b> – site plans.</p> <p>Please refer to <b><u>page 28</u></b> for the discussion regarding the alternative layouts.</p>



<p>Residential and the access road crossing over the bridge along one of the erven encroaching into the 30m buffer line.</p>	
<p><b>4. Public Participation Process</b></p> <p>There are objections from Interested and Affected Parties objecting to the project as there is a spruit and a wetland on site.</p>	<p>Kindly refer to <b><u>page 53 to 57</u></b> for <b><u>Section E – Public Participation</u></b> of the report. All issues raised by I&amp;APs have been addressed. Kindly also refer to <b><u>Appendix Eiv – Comments and Issues Register.</u></b></p>

Bokamoso would like to state that from an environmental point of view we are convinced and confident that all sensitive matters on the site was taken into consideration and mitigated. Currently the site is degraded and utilized for human activities which have a complete negative effect on the environment in total and degrade the state of the site even more. The site is used for recreational purposes as people have made four wheeler tracks, dump rubble and animal carcasses on the site. There is no controlled supervision on the site and vagrants are also residing in an uncontrolled manner on the property.

We are also of the opinion that should all the specialist reports be adhered to and the recommendations of these reports are followed there is no reason why this development cannot take place. It is also regarded that the proposed development will actually have a positive effect on the environment as it will be a secured development that will firstly be rehabilitated and thereafter maintained in such a manner to be aesthetically pleasing.

We trust you find the above in order. Please do not hesitate to contact our office should you have any questions in this regard.

Sincerely,

Anè Agenbacht  
**Bokamoso Landscape Architects and  
Environmental Consultants CC**

# Final Basic Assessment Report

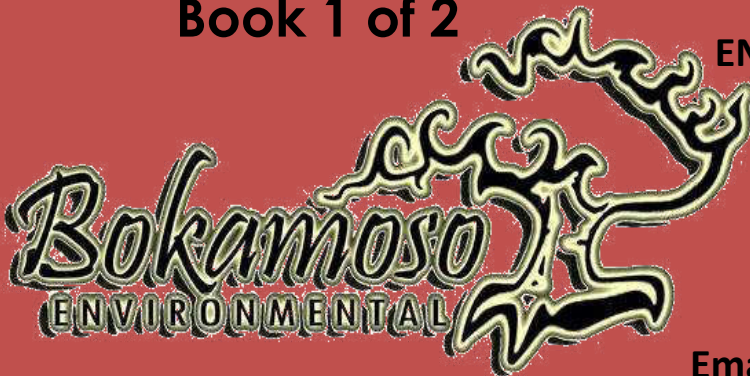
## Rooihuiskraal North X29

Part of the Remainder of Portion 9 and a Part of Portion 145  
of the Farm Brakfontein 399-JR, Tshwane

Ref No: GAUT 002/17-18/E0037



September 2017  
Book 1 of 2



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Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix G1: Cultural Heritage Resources Impact Assessment

Appendix G2: Vegetation and Wetland Assessment

Appendix G3: Red Data Invertebrate and Wetland Mammal Investigation

Appendix G4: Floral Integrity Scan

Appendix G5: Fauna Habitat Assessment

Appendix G6: Flora Survey

Appendix G7: Wetland delineation

Appendix G8: Wetland delineation

Appendix G9: Hydopedology Wetland Impact Assessment

Appendix G10: Wetland Specialist's input on wetland buffer and stormwater design

Appendix G11: Traffic Impact Study

Appendix G12: Engineering Geological and Geotechnical Report

Appendix G13: Civil Engineering Services Report

Appendix G14: Electrical Services

Appendix G15: Noise Study

Appendix G16: Integrated Water Quality and Quantity Management and Monitoring Plan

Appendix G17: Rehabilitation Plan

Appendix H: EMP

Appendix I: Other

Appendix li: Company Profile and CV

Appendix lii: Enlarged figures

Appendix liii: Application Form

Appendix liv: Departmental Correspondence

**Figures:**

Figure 1: Proposed masterplan layout

Figure 2: Locality map

Figure 3: Aerial map

Figure 4: Rivers and wetlands map

Figure 5: Protected Areas map

Figure 6: Conservation Areas

Figure 7: Irreplaceable Areas

Figure 8: Ridges map

Figure 9a: Agricultural Potential

Figure 9b: Agricultural Hubs

Figure 10: Gauteng Urban Edge

Figure 11: Gauteng EMF

Figure 12: Proposed layout map

Figure 13: Alternative layouts (3 different layouts)

Figure 14: The extension of Kraalnaboom Avenue

Figure 15: Drawing of the proposed bridge

Figure 16: The proposed wetland delineation

Figure 17: Land-Use map



**Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)**

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**Kindly note that:**

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**
4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**
5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
8. An incomplete report may lead to an application for environmental authorisation being refused.
9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**
10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

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**DEPARTMENTAL DETAILS**

Gauteng Department of Agriculture and Rural Development  
Attention: Administrative Unit of the of the Environmental Affairs Branch  
P.O. Box 8769  
Johannesburg  
2000

Administrative Unit of the of the Environmental Affairs Branch  
Ground floor Diamond Building  
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377  
Department central telephone number: (011) 240 2500

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(For official use only)

<b>NEAS Reference Number:</b>						
<b>File Reference Number:</b>						
<b>Application Number:</b>						
<b>Date Received:</b>						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

Not applicable

Is a closure plan applicable for this application and has it been included in this report?

**NO**

if not, state reasons for not including the closure plan.

Not applicable

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity?

**YES**

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person?

**YES**

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented?

**YES**

If no, why?

Only GDARD provided comments on the Draft Basic Assessment Report.  
  
A follow up email and phone call was made to both CoT and DWS. No comments were received.

## SECTION A: ACTIVITY INFORMATION

### 1. PROPOSAL OR DEVELOPMENT DESCRIPTION

**Project title (must be the same name as per application form):**

#### **Rooihuiskraal North x 29**

(Proposed Residential 3, Security Complex)

The proposed Rooihuiskraal North x 29 development which is situated on a Part of the Remainder of Portion 9 and A Part of Portion 145 of the farm Brakfontein 399 JR. The proposed development entails a Residential 3, security complex consisting of 100 units per hectare (maximum 350 units) with associated services and infrastructure. This is a high density development with 30% coverage and a FSR of 0.6. The height of the buildings are 3 storeys on the 18,0200 hectare site.

The Rietspruit River runs through the subject property in a westerly direction, however the wetland area on site is classified rather as a highly altered valley bottom wetland system with a potential hillslope seep (also altered) feeding the wetland from the east. It is noted that the functionality of the wetland system has been highly compromised through human activities, building and urban infrastructure development within the catchment, destruction of wetland and drainage systems feeding into the drainage feature. The functionality of the wetland is therefore limited to channelling of water with no water cleaning function. The soils also have a highly erosive nature and do not have a flood attenuation function. Due to the presence of the wetland on the site, an area of 14,0406 hectares is earmarked for Private Open Space which includes a 15 metre buffer, as suggested by two wetland specialists (**Please refer to Appendix G7 – 10) – Specialist Reports conducted by both Scientific Aquatic Services and TerraSoil Sciences**), around the wetland area.

The construction of a concrete bridge structure (20.3m x 7m and a 2m walkway) over the wetland area will be required in order to gain access to the proposed development as well as to connect the proposed development to other Rooihuiskraal extensions. This bridge will span over the floodlines and the base of the bridge will be supported by concrete piles. The flow of the stream will not be disturbed or changed by the bridge. During construction a temporary diversion of the stream will be done with sandbags.

The proposed site contains certain challenges that need to be taken into consideration. There is an Eskom Powerline running to the north of the site

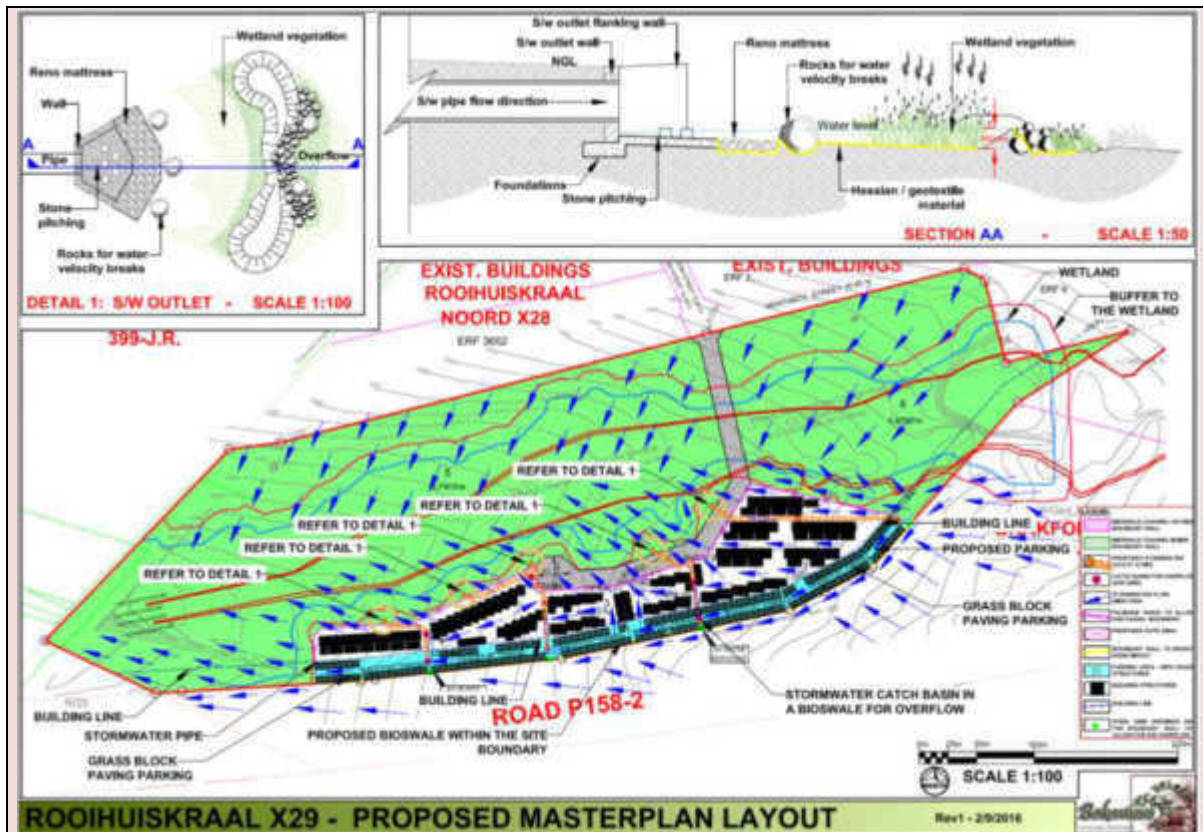


and therefore the top section of the site cannot be used for development. Furthermore the site contains a wetland area (as explained above as well as later in the report) that is mainly formed by manmade activities.

The study area is located to the north of the N14 highway and west of the M27 Rooihuiskraal Road. The site is surrounded by existing residential developments and is situated within the area of jurisdiction of the City of Tshwane Metropolitan Municipality.

**Please note:** An application for this project was previously submitted under the former 2006 NEMA (National Environmental Management Act) EIA (Environmental Impact Assessment) Regulations. The Final BAR (Basic Assessment Report) (Gaut ref nr. 002/06-07/N0311) was submitted to GDARD during March 2013 for consideration of the environmental authorization. After numerous discussions between Bokamoso and GDARD (Gauteng Department of Agriculture and Rural Development) it was finally decided that the file will be closed and a new application needs to be submitted according to the 2010 Amended NEMA EIA Regulations. (A new project reference number was assigned to the project, which was: Gaut ref nr. 002/14-15/0029). The environmental authorization was denied by GDARD on 7 April 2015 mainly due to the fact that the proposed activity was not the best available alternative on the selected site. Bokamoso then submitted an appeal on 4 May 2015 against the decision of the Department and the Honourable MEC (Member of Executive Council) dismissed the appeal and upholds the decision of the Head of Department dated 7 April 2015. Bokamoso and the developer then had several site visits and numerous meetings with the relevant officials of GDARD and requested advice regarding the proposed development and supposedly other uses that will be allowed on this site. It was established that should the challenges regarding the floodlines and the stormwater be considered and sufficiently mitigated and addressed, that a residential development could work on the study site.

The mitigation measures regarding the stormwater and floodlines for the proposed residential development can be summed up in the master plan layout below.



**Figure 1 – Proposed masterplan layout**

From the above layout it is clear that a lot of stormwater are directed to the site from the N14 highway (which is situated directly adjacent to the south of the study site). The mitigation measure proposed for efficient stormwater control on the proposed site can be explained as follows. Stormwater will be entered from the N14 highway, and will be captured in a catch basin for the overflow (stormwater grid). From the stormwater grid, it will go through a proposed stormwater pipe. From the pipe, the stormwater will spill on a stone pitching surface of the stormwater outlet which permits a sustainable surface that can withstand water flowing over the top. This stone pitched surface in conjunction with concrete blocks energy dissipaters will assist to dissipate the energy of the water. Stormwater will then flow through a reno mattress and associated rock features to assist in further dissipating the energy of the stormwater. Thereafter, stormwater will flow through indigenous wetland vegetation which will act as a biological filtering system prior to the stormwater entering the watercourse. In addition, a berm or mound will be implemented to assist in capturing silt and debris and preventing it from entering the watercourse (refer to the illustration on Figure 1 – Detail 1 Plan and Section AA) It should also be noted that the stormwater outlets points are strategically and evenly positioned.

The overall concept is to decrease the energy of the flow of stormwater prior to entering the watercourse, and to ensure that the water flows over a wider area, and that it is not concentrated in one area, in order to reduce the

scouring effect of erosion.

The stormwater concept and solutions were discussed with GDARD and at that stage they were pleased that the application can once again be submitted for consideration of approval.

The developer can once again submit an application for the proposed residential development for environmental authorization to the department within one year from the date of the appeal. Therefore this application is now submitted again for consideration of the environmental authorization.

In the application submitted to GDARD it is indicated that the developer is applying for the following listed activities in terms of **Listing Notice 1 and 3 (R983 and R985, 4 December 2014; and updated on 7 April 2017)**:

**Table 1: Listed Activities**

Indicate the number and date of the relevant Government Notice	Activity Number	Describe each listed activity as per the wording in the relevant listing notice
R,983 December 2014 (as amended on 7 April 2017)	Listing Notice 1 Activity 12	<p>The development of-</p> <ul style="list-style-type: none"> <li>(i) canals exceeding 100 square metres in size;</li> <li>(ii) channels exceeding 100 square metres in size;</li> <li>(iii) bridges exceeding 100 square metres in size;</li> <li>(iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size;</li> <li>(v) weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size;</li> <li><b>(vi) bulk stormwater outlet structures exceeding 100 square metres in size;</b></li> <li>(vii) marinas exceeding 100 square metres in size;</li> <li>(viii) jetties exceeding 100 square metres in size;</li> <li>(ix) slipways exceeding 100 square metres in size;</li> <li><b>(x) buildings exceeding 100 square metres in size;</b></li> <li>(xi) boardwalks exceeding 100 square metres in size; or</li> <li><b>(xii) infrastructure or structures with a physical footprint of 100 square metres or more;</b></li> </ul> <p>The development of-</p> <ul style="list-style-type: none"> <li>(i) dams or weirs, where the dam or weir,</li> </ul>

		<p>including infrastructure and water surface area, exceeds 100 square metres; or</p> <p><b>(ii)</b> infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs-</p> <p><b>(a) within a watercourse;</b>  (b) in front of a development setback; or  <b>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; -</b></p> <p>excluding-</p> <p>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such development occurs within an urban area; or</p> <p>(ee) where such development occurs within existing roads, or road reserves or railway line reserves; or</p> <p>(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.</p>
R,983 December 2014 (as amended on 7 April 2017)	Listing Notice 1 Activity 19	<p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from-</p> <p><b>(i) a watercourse;</b>  (ii) the seashore; or  (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater-</p> <p>but excluding where such infilling, depositing , dredging, excavation, removal or moving-</p> <p>(a) <b>will occur behind a development setback;</b></p>

		<ul style="list-style-type: none"> <li>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or</li> <li>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</li> <li>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</li> <li>(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</li> </ul>
R,983 December 2014 (as amended on 7 April 2017).	Listing Notice 1 Activity 27	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-</p> <ul style="list-style-type: none"> <li>(i) the undertaking of a linear activity; or</li> <li>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</li> </ul>
R,985 December 2014 (as amended on 7 April 2017).	Listing Notice 3 Activity 4	<p>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>(c) In Gauteng:</p> <ul style="list-style-type: none"> <li>i. A protected area identified in terms of NEMPAA, excluding conservancies;</li> <li>ii. National Protected Area Expansion Strategy Focus Areas;</li> <li>iii. Gauteng Protected Area Expansion Priority Areas;</li> <li>iv. <b>Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</b></li> <li>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</li> <li>vi. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority;</li> <li>vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas;</li> <li>viii. Important Bird and Biodiversity Area (IBA);</li> <li>ix. Sites or areas identified in terms of an International Convention;</li> </ul>

		<ul style="list-style-type: none"> <li>x. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;</li> <li>xi. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or</li> <li>xii. Sites zoned for a conservation use or public open space or equivalent zoning.</li> </ul>
R,985 December 2014 (as amended on 7 April 2017).	Listing Notice 3 Activity 12	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>(c) Gauteng:</p> <ul style="list-style-type: none"> <li>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</li> <li>ii. <b>Within critical biodiversity areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or</b></li> <li>iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</li> </ul>
R,985 December 2014 (as amended on 7 April 2017).	Listing Notice 3 Activity 14	<p>The development of-</p> <ul style="list-style-type: none"> <li>(i) canals exceeding 10 square metres in size ;</li> <li>(ii) channels exceeding 10 square metres in size;</li> <li><b>(iii) bridges exceeding 10 square metres in size;</b></li> <li>(iv) dams, where the dam, including infrastructure and water surface area exceeds 10 square metres in size;</li> <li>(v) weirs, where the weir, including infrastructure and water surface area exceeds 10 square metres in size;</li> <li><b>(vi) bulk stormwater outlet structures exceeding 10 square metres in size;</b></li> <li>(vii) marinas exceeding 10 square metres in size;</li> <li>(viii) jetties exceeding 10 square metres in size;</li> <li>(ix) slipways exceeding 10 square metres in size;</li> <li><b>(x) buildings exceeding 10 square metres in size;</b></li> </ul>

		<p>(xi) boardwalks exceeding 10 square metres in size; or</p> <p><b>(xii) infrastructure or structures with a physical footprint of 10 square metres or more;</b></p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or</p> <p>(ii) Infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs-</p> <p>(a) <b>within a watercourse;</b></p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>(c) In Gauteng:</p> <ol style="list-style-type: none"> <li>i. A protected area identified in terms of NEMPAA, excluding conservancies;</li> <li>ii. National Protected Area Expansion Strategy Focus Areas;</li> <li>iii. Gauteng Protected Area Expansion Priority Areas;</li> <li><b>iv. Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; -</b></li> <li>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</li> <li>vi. Sensitive areas identified in an environmental management framework adopted by relevant environmental authority;</li> <li>vii. Sites or areas identified in terms of an International Convention</li> <li>viii. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;</li> <li>ix. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or</li> </ol>
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		x. Sites zoned for conservation use or public open space or equivalent zoning.
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Select the appropriate box

The application is for an upgrade of an existing development  The application is for a new development  Other, specify

Does the activity also require any authorisation other than NEMA EIA authorisation?

YES <b>X</b>	NO
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If yes, describe the legislation and the Competent Authority administering such legislation

A Water Use License Application (WULA) was submitted to the Department of Water and Sanitation (DWS) as a wetland/watercourse traverses the site. The WULA is under review by DWS.

If yes, have you applied for the authorisation(s)?

<b>YES</b> <b>X</b>	NO
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If yes, have you received approval(s)? (attach in appropriate appendix)

YES	<b>NO</b> The WULA is still under review
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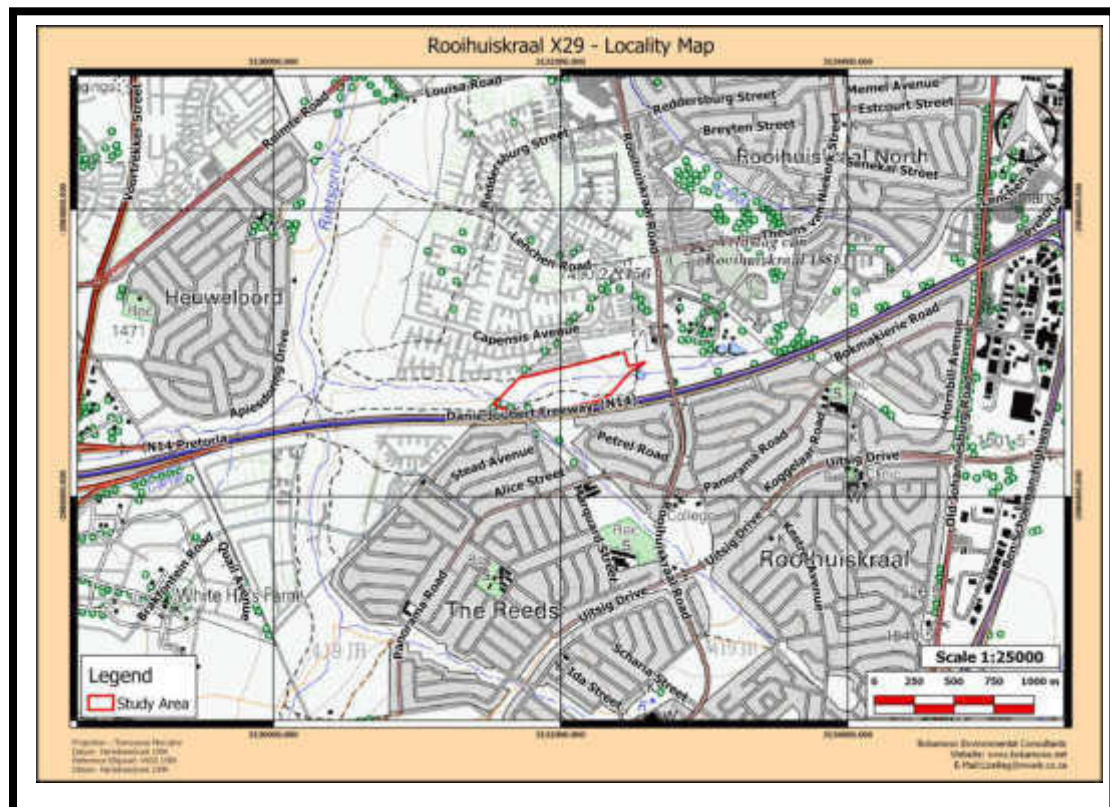


Figure 2: Locality map





**Figure 3: Aerial map**

**2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES**

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
<b>National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).</b>	<b>National &amp; Provincial</b>	<b>27 November 1998</b>
<p>The NEMA is primarily an enabling Act in that it provides for the development of environmental implementation plans and environmental management plans. The principles listed in the act serve as a general framework within which environmental management and implementation plans must be formulated. The Act includes <i>inter alia</i> duty of care provisions and incident reporting requirements. Most importantly, for this application, Chapter 5 of NEMA provides for Integrated Environmental Management and enables the listing of activities for which environmental authorisation is required.</p>		
<p>The Minister of Environmental Affairs and Tourism passed (in April 2006) Environmental Impact Assessment Regulations<sup>1</sup> (the Regulations) in terms of Chapter 5 of the National Environmental Management Act, 1998<sup>2</sup> (NEMA). The new Regulations came into effect on 3 July 2006.</p>		
<p>The Minister of Environmental Affairs passed (in June 2010) the Amended Environmental Impact Assessment Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA).</p>		

The Regulations were amended once again in 2014. The Amended Regulations came into effect on 8 December 2014, and therefore all new applications must be made in terms of the Amended NEMA regulations and not in terms of the 2010 NEMA Regulations. The purpose of this process is to determine the possible negative and positive impacts of the proposed development on the surrounding environment and to provide measures for the mitigation of negative impacts and to maximize positive impacts.

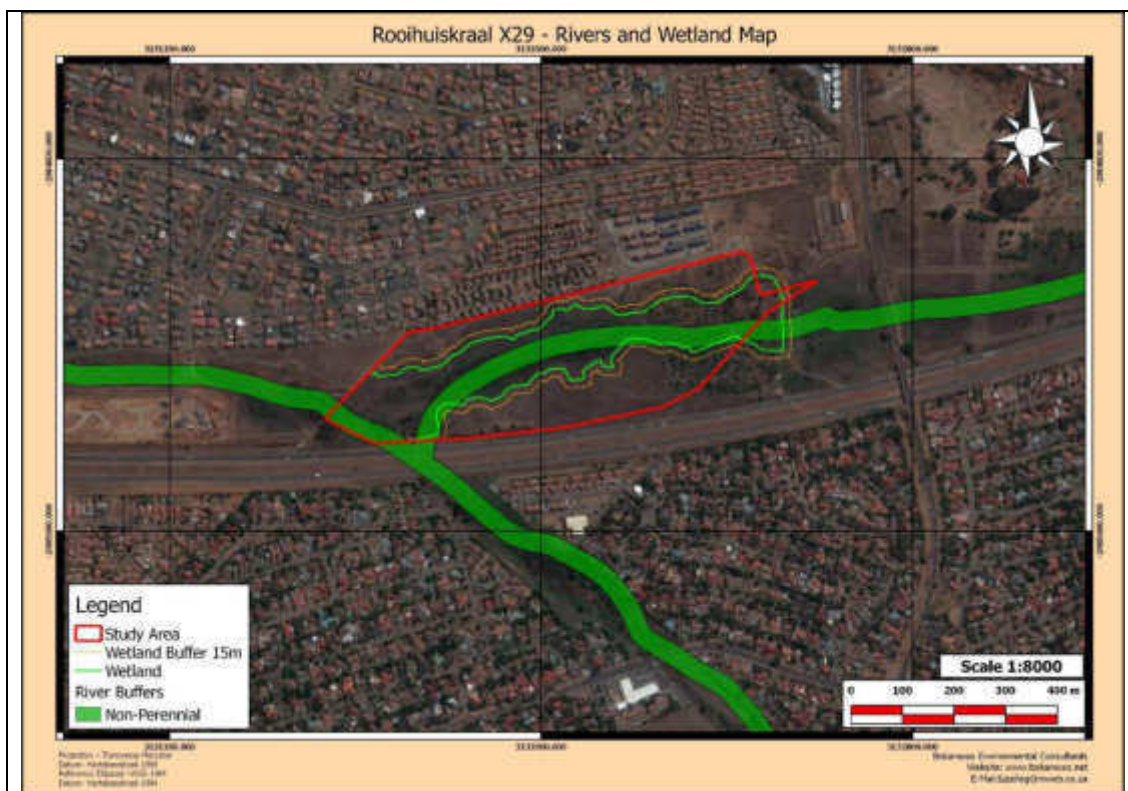
Notice **No. R 983, R 984 and R 985** of the Amended Regulations list the activities that indicate the process to be followed. The activities listed in Notice No. R 983 requires that a Basic Assessment process be followed and the Activities listed in terms of Notice No. R 984 requires that the Scoping and EIA process be followed. Notice No. 985 has been introduced to make provision for Activities in certain geographical and sensitive areas.

However, please take note that these Regulations have been amended on 7 April 2017 as published in Notice nos. 324 to 327. These are only slight changes and the activities triggered did not change from the original 2014 Regulations.

<b>National Water Act (Act No. 36 of 1998)</b>	<b>National &amp; Provincial</b>	<b>20 August &amp; 1998</b>
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The purpose of this Act is to ensure that the Nation's water resources are protected, used, developed, conserved, managed and controlled in ways that take into account, amongst other factors, the following:

- ❑ Meeting the basic human needs of present and future generations;
- ❑ Promoting equitable access to water;
- ❑ Promoting the efficient, sustainable and beneficial use of water in the public interest;
- ❑ Reducing and preventing pollution and degradation of water resources;
- ❑ Facilitating social and economic development; and
- ❑ Providing for the growing demand for water use.



**Figure 4: Rivers and Wetlands**


In terms of the section 21 of the National Water Act, the developer must obtain water use licences if the following activities are taking place:

- a) Taking water from a water resource;
- b) Storing water;
- c) Impeding or diverting the flow of water in a water course;
- d) Engaging in a stream flow reduction activity contemplated in section 36;
- e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);
- f) Discharging waste or water containing waste into a water resource through a pipeline, canal, sewer, sea outfall or other conduit;
- g) Disposing of waste in a manner which may detrimentally impact on a water resource;
- h) Disposing in any manner which contains waste from or which has been heated in any industrial or power generation process;
- i) Altering the bed, banks, course or disposing of water found underground if it is necessary for the safety of people;
- j) 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
- k) Using water for recreational purposes.

The National Water Act also requires that (where applicable) the 1:50 and 1:100 year flood line be indicated on all the development drawings (even the drawings for the external services) that are submitted for approval.

If a Water Use Licence (WUL) is required then the Regulations regarding the

Procedural Requirements for Water Use Licence Applications and Appeals, 2017 would be applicable.		
<b>Conservation of Agricultural Resources Act (Act No. 43 of 1983)</b>	<b>National</b>	<b>1 June 1983</b>
This act provides for control over the utilization of natural agricultural resources of South Africa in order to promote the conservation of soil, water sources and the vegetation as well as the combating of weeds and invader plants; and for matters connecting therewith.		
<b>National Heritage Resources Act (Act No. 25 of 1999)</b>	<b>National &amp; Provincial</b>	<b>1999</b>
The National Heritage Resources Act legislates the necessity and heritage impact assessment in areas earmarked for development, which exceed 0.5ha and linear development exceeding 300m in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).		
<b>National Environmental Management: Waste Act (Act No. 59 of 2009)(as amended)</b>	<b>National</b>	<b>11 June 2010</b>
<p>This Act came into effect on 11 June 2009. It aims to consolidate waste management in South Africa, and contains a number of commendable provisions, including:</p> <ul style="list-style-type: none"> <li>• The establishment of a national waste management strategy, and national and provincial norms and standards, for amongst other, the classification of waste, waste service delivery, and tariffs for such waste services;</li> <li>• Addressing reduction, reuse, recycling and recovery of waste;</li> <li>• The requirements for industry and local government to prepare integrated waste management plans;</li> <li>• The establishment of control over contaminated land;</li> <li>• Identifying waste management activities that requires a license, which currently include facilities for the storage, transfer, recycling, recovery, treatment and disposal of waste on land;</li> <li>• Co-operative governance in issuing licenses for waste management facilities, by means of which a licensing authority can issue an integrated or consolidated license jointly with other organs of state that has legislative control over the activity; and</li> <li>• The establishment of a national waste information system.</li> </ul> <p>On the 29<sup>th</sup> of November 2013 the Minister of Environmental Affairs and Tourism amended the list of waste management activities that might have a detrimental effect on the environment.</p> <p>Please take note of the other amendments/publications since 29 November 2013:</p> <ul style="list-style-type: none"> <li>• 2 June 2014 – NEM: Waste Amendment Act (26 of 2014)</li> <li>• 2 May 2014 – Remediation of contaminated land and soil</li> <li>• 2 May 2014 – Amendment List of Waste Management Activities that have or are likely to have detrimental effect on the environment</li> </ul>		

<b>National Environmental Management Protected Areas Act (Act No. 57 of 2003)</b>	<b>National</b>	<b>2003</b>
<p>The purpose of this Act is to provide for the protection, conservation, and management of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes.</p>		
<p>Please take note that this Act has been amended in 2004 and 2014.</p>		
		
<p><b>Figure 5: Protected Areas</b></p>		
<b>National Environmental Management: Biodiversity Act (Act 10 of 2004)</b>	<b>National</b>	<b>2004</b>
<p>The Biodiversity Act provides for the management and protection of the country's biodiversity within the framework established by NEMA. It provides for the protection of species and ecosystems in need of protection, sustainable use of indigenous biological resources, equity, and bio prospecting, and the establishment of a regulatory body on biodiversity- <b>South African National Biodiversity Institute.</b></p>		
<p><b>Objectives of the Act:</b></p>		
<p><b>(a) With the framework of the National Environmental Management Act, to provide for:</b></p>		
<ul style="list-style-type: none"> <li>(i) The management and conservation of biological diversity within the Republic and of the components of such biological diversity;</li> <li>(ii) The use of indigenous biological resources in a sustainable manner; and</li> <li>(iii) The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;</li> </ul>		
<p><b>(b) To give effect to ratified international agreements relating to biodiversity</b></p>		

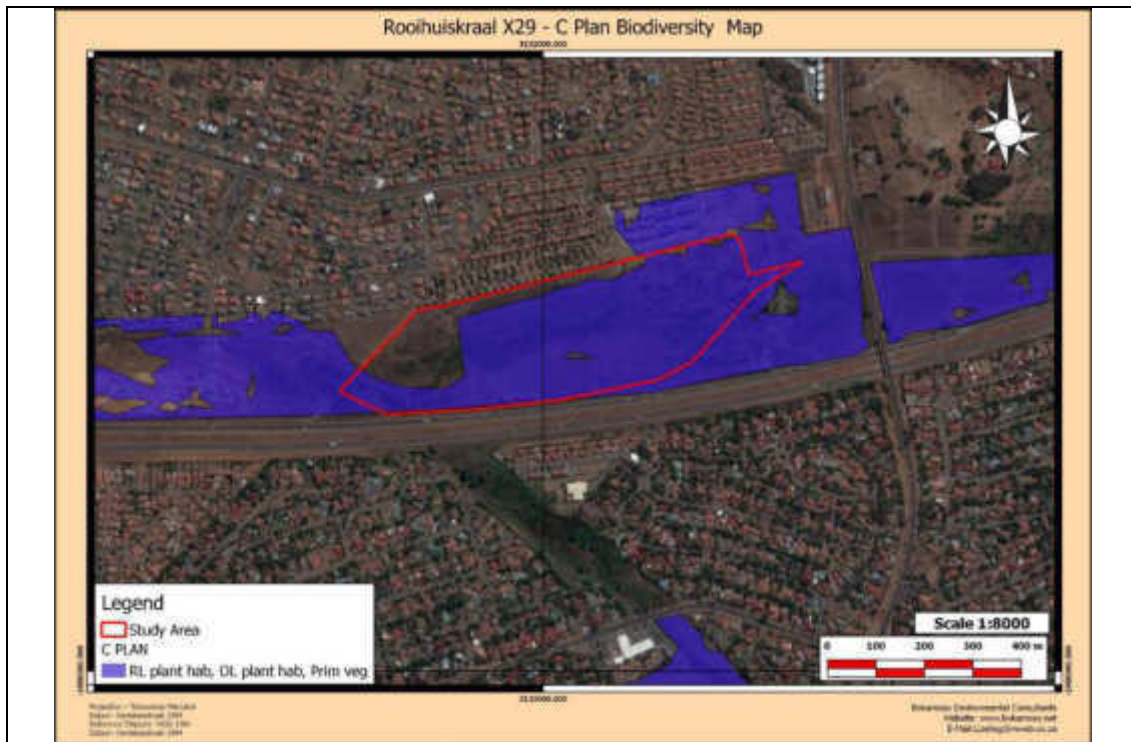
which are binding on the republic;

- (c) To provide for co-operative governance in biodiversity management and conservation; and
- (d) To provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

Under this Act notices are published in terms of alien and invasive species or threatened ecosystems in order to promote the biodiversity of natural resources and protect species endemic to South Africa.



Figure 6: Conservation Areas



**Figure 7: Irreplaceable Areas**

<b>National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)</b>	<b>National &amp; Provincial</b>	<b>2004</b>
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The NEMA: AQA serves to repeal the Atmospheric Pollution Prevention Act (45 of 1965) and various other laws dealing with air pollution and it provides a more comprehensive framework within which the critical question of air quality can be addressed.

The purpose of the Act is to set norms and standards that relate to:

- Institutional frameworks, roles and responsibilities
- Air quality management planning
- Air quality monitoring and information management
- Air quality management measures
- General compliance and enforcement.

Amongst other things, it is intended that the setting of norms and standards will achieve the following:

- The protection, restoration and enhancement of air quality in South Africa
- Increased public participation in the protection of air quality and improved public access to relevant and meaningful information about air quality.
- The reduction of risks to human health and the prevention of the degradation of air quality.

The Act describes various regulatory tools that should be developed to

ensure the implementation and enforcement of air quality management plans. These include:

- Priority Areas, which are air pollution 'hot spots'.
- Listed Activities, which are 'problem' processes that require an Atmospheric Emission Licence.
- Controlled Emitters, which includes the setting of emission standards for 'classes' of emitters, such as motor vehicles, incinerators, etc.
- Control of Noise.
- Control of Odours.

The following regulations and standards have been published in terms of this act:

- 3 April 2017 – National Greenhouse Gas Emissions Reporting Regulations
- 2 April 2015 – National Atmospheric Emission Reporting Regulations
- 14 March 2014 – National Pollution Prevention Plans Regulations
- 1 November 2013 – NEM:AQA National Dust Control Regulations
- 28 November 2013 - Declaration of Small Boilers as Controlled Emitters and Emission Standards

<b>The Deeds Registries Act (Act No. 47 of 1937)</b>	<b>National &amp; Provincial</b>	<b>1 September 1937</b>
The act was created to consolidate and amend the laws in force in the Republic relating to the registration of deeds. The act caters for the registration of servitudes.		
<b>Occupational Health &amp; Safety Act (Act No. 85 of 1993) and Occupational Health &amp; Safety Amendment Act (Act No. 181 of 1993)</b>	<b>National &amp; Provincial</b>	<b>1993</b>
The act was created to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.		
<b>Gauteng Transport Infrastructure Act 8 of 2001, as amended</b>	<b>Provincial</b>	<b>2001</b>
The aim of this Amendment Act is to amend the Gauteng Transport Infrastructure Act, 2001 so as to amend and insert certain definitions; to provide for the necessary land use rights with respect to stations and for the necessary powers of the MEC to enter into contracts for road and rail projects; to amend the procedure in relation to route determination; to make a second environmental investigation at the stage of preliminary design of a road or railway line unnecessary where the competent environmental authority decides that the environmental investigation at the stage of route determination is adequate; and to provide for incidental matters.		
<b>Occupational Health &amp; Safety Act, 85 of 1993</b>	<b>National &amp;</b>	<b>1993</b>



		<b>Provincial</b>
<p>The Act was created to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.</p>		
<b>GDARD Draft Ridges Policy</b>	<b>Provincial</b>	<b>2001 AS REVIEWED AND UPDATED IN JANUARY 2004 AND APRIL 2006</b>

This policy is provided for the protection, conservation, and maintenance of ridges within the Gauteng Province.



**Figure 8: Ridges**

<b>Gauteng Conservation Plan (C-Plan) Version 3.3</b>	<b>Provincial</b>	<b>March 2014</b>
<p>Gauteng Nature Conservation (hereafter Conservation), a component of the Gauteng Department of Agriculture and Rural Development (GDARD) produced the Gauteng Conservation Plan Version 3 (C-Plan 3) in December 2010. The conservation plan was edited on three occasions since then: C-Plan 3.1 was released in July 2011 after it became apparent that some areas were not desirable in Critical Biodiversity Areas (CBAs hereafter). Not all areas</p>		

were addressed in the first round of editing, so this was done during September 2011 resulting in C-Plan Version 3.2. It was soon released however, that some CBAs became separated by the removal of undesirable areas causing some attributes not to be completely reflective of that CBAs any longer. C-Plan 3.3 technical report is dated March 2014.

The main purposes of C-Plan 3.3 are:

- to serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process;
- to inform protected area expansion and biodiversity stewardship programs in the province;
- To serve as a basis for development of Bioregional Plans in municipalities within the province.

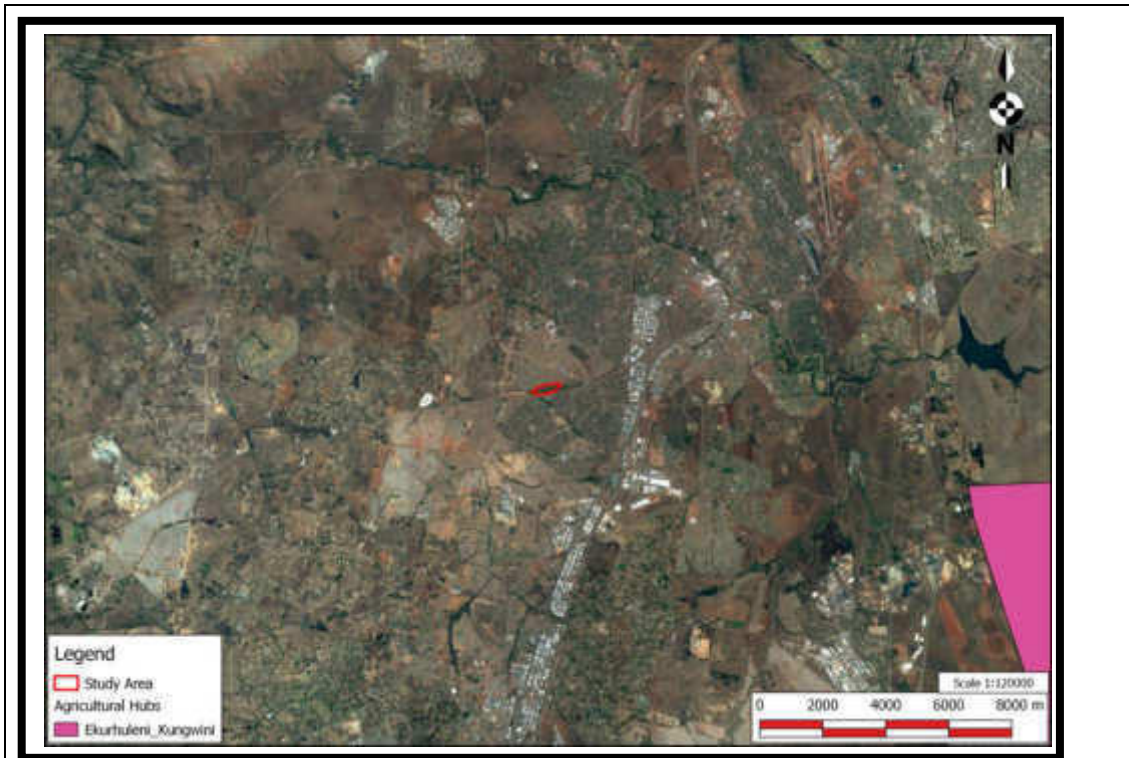
Please refer to Figure 5 and 6.

<b>Conservation of Agricultural Resources Act (Act No. 43 of 1983)</b>	<b>National</b>	<b>1 June 1983</b>
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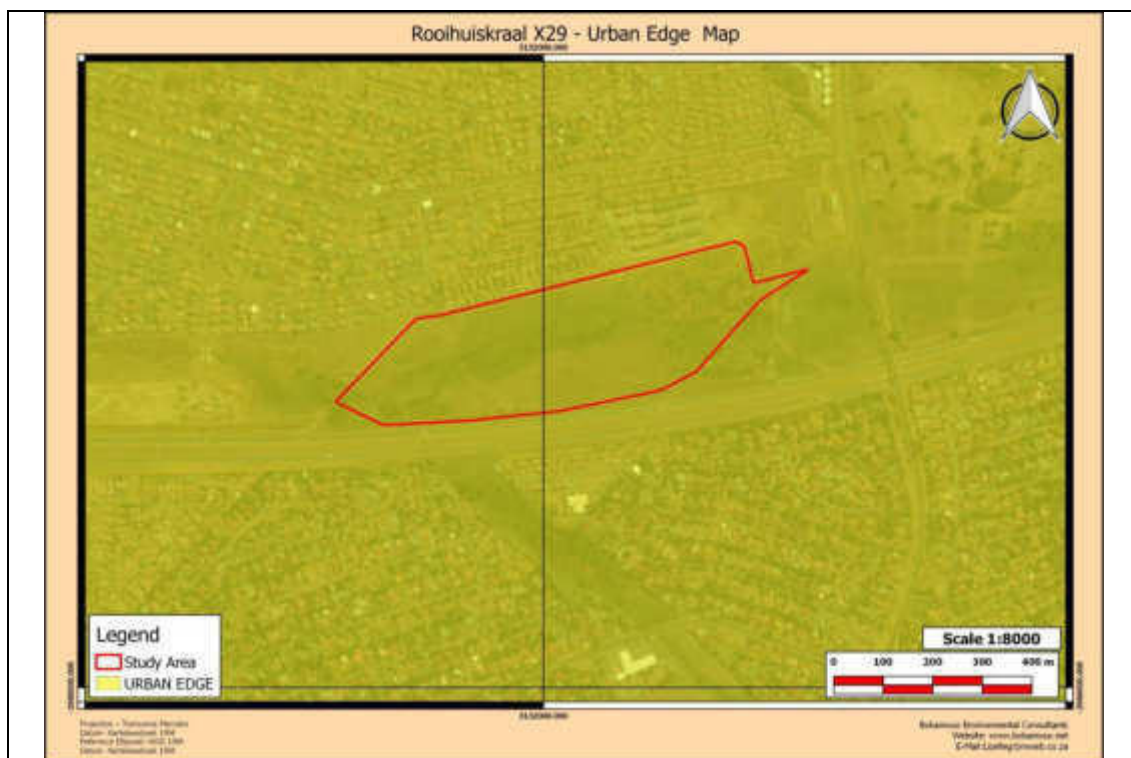
**Figure 9a: Agricultural Potential**

This act provides for control over the utilization of natural agricultural resources of South Africa in order to promote the conservation of soil, water sources and the vegetation as well as the combating of weeds and invader plants; and for matters connecting therewith.



**Figure 9b: Agricultural Hubs**

<b>GDARD Agricultural Hub Policy</b>	<b>Provincial</b>	<b>2006</b>
GDARD identified 7 Agricultural Hubs in Gauteng province. These hubs are earmarked for agricultural activities and there are policies and guidelines that should be taken into consideration when one plans to develop in these hub areas. Urban development is usually not supported in these hubs.		
<b>Guidelines on Red List Plant Species</b>	<b>Provincial</b>	<b>2006</b>
The main purpose of the draft Red Data Policy is to protect red data fauna and flora species in Gauteng Province. This policy requires that red data species are conserved.		
<b>Gauteng Noise Control Regulations</b>	<b>Provincial</b>	<b>1999</b>
The regulation controls noise pollution. According to the acceptable noise levels in a residential area situated within an urban area is 55dBA and the maximum acceptable noise levels in a rural area is 45dBA. The Gauteng Provincial Noise Control Regulations, 1999 was published under Section 25 of the Environment Conservation Act 1989 (Act No 73 of 1989).		
<b>Gauteng Urban Edge</b>	<b>Provincial</b>	<b>2010</b>
The Urban Edge as indicated on Figure 11 below is the Urban Edge as delineated by GDARD. Take note that the proposed electrical line is aligned to run through an urban area and this promotes the optimum utilisation of services and it also prevents urban sprawl.		



**Figure 10: Gauteng Urban Edge**

#### **Gauteng Provincial Environmental Management Framework**

**Provincial 2014**

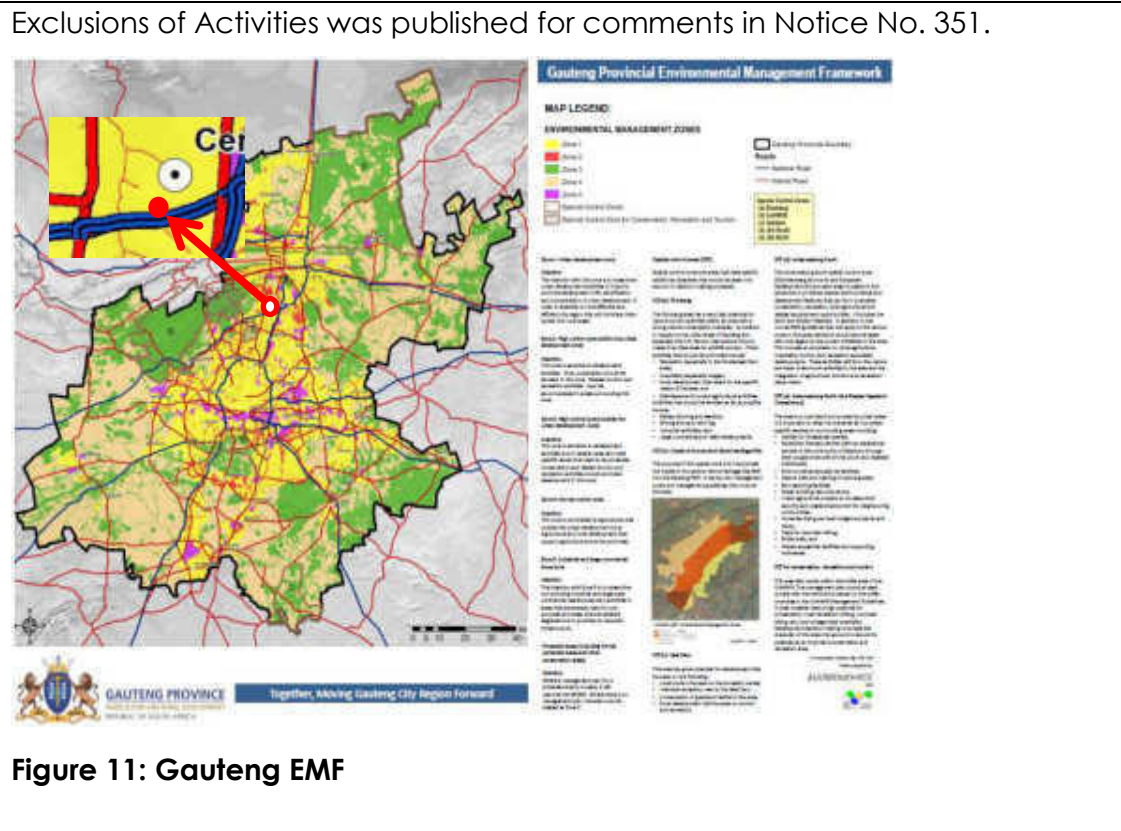
The Gauteng Department of Agriculture and Rural Development (GDARD) decided to produce an Environmental Management Framework for the whole of Gauteng (GPEMF). The GPEMF replaces all other EMFs in Gauteng with the exception of the Cradle of Humankind World Heritage Site which is incorporated within the GPEMF.

The objective of the GPEMF to guide sustainable land use management within the Gauteng Province. The GPEMF, inter alia, serve the following purposes:

- To provide a strategic and overall framework for environmental management in Gauteng;
- Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng;
- Determine geographical areas where certain activities can be excluded from an EIA process; and
- Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making.

The Province has been divided into 5 management zones of which Zone 1: Urban Development Zone and Zone 5: Industrial and Large Commercial focus zone, proposes the exclusion of certain NEMA listed activities in order to streamline development.

Please note that on 13 April 2017, a Notice of Intention to Adopt Gauteng Provincial Environmental Management Framework (GPEMF) Standards and



Description of compliance with the relevant legislation, policy or guideline:

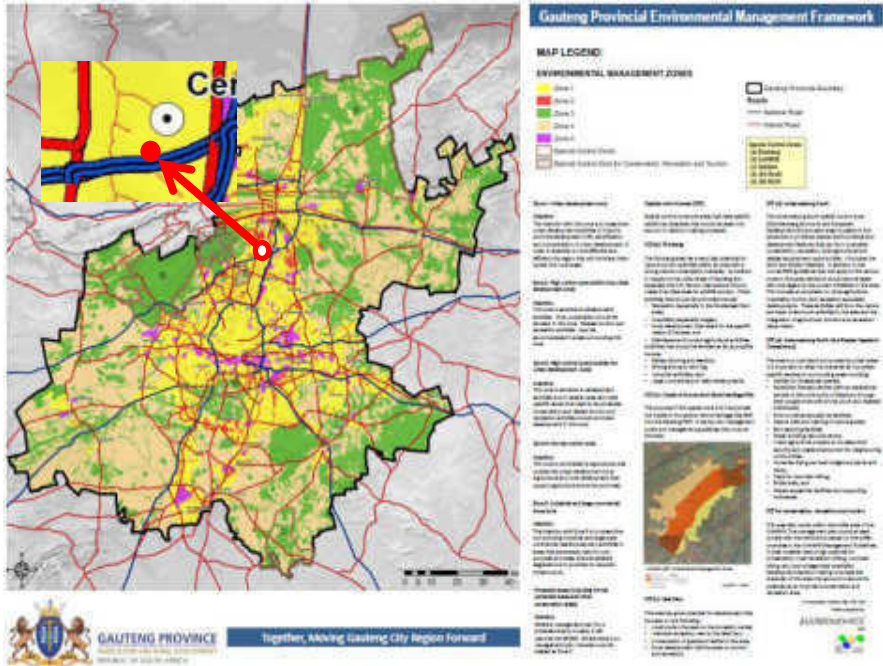
Legislation, policy of guideline	Description of compliance
<p><b>National Environmental Management Act No. 107 of 1998 (as amended)</b></p>	<p>The application for the proposed development consists of activities listed under Listing No. 1 and 3 (2014 Amended NEMA Regulations, 4 December 2014 and updated on 7 April 2017) of the National Environmental Management Act (Act No. 107 of 1998) and therefore a Basic Assessment Report will be submitted to GDARD for consideration of environmental authorization.</p>
<p><b>National Water Act (Act No. 36 of 1998)</b></p>	<p>The proposed development site has been assessed by a specialist and a wetland has been delineated on the site. The wetland traverses the site. Refer to Figure 4. The Water Use License Application is currently under review by DWS.</p> <p>According to TerraSoil Sciences the wetland area on the site is classified as a highly altered valley bottom wetland system with a potential hillslope seep (also altered) feeding the wetland from the east. The functionality of the wetland system has been highly compromised through human activities, building and urban infrastructure development within the catchment, destruction of wetland and drainage systems feeding into the drainage feature. The functionality of the wetland is therefore limited to channelling of water. The soils have a highly erosive nature and do not have a flood attenuation function. It was stated that good stormwater mitigation measures and erosion prevention should be taken. Stormwater was addressed on page 5 of the report and will be</p>

	addressed again later in the report. <b>(Please also refer to Appendix G13 – specialist report for the Services report that also addresses the stormwater on the site. Figure 1 – facility illustration (Master plan layout) also clearly explains the stormwater mitigation on the site).</b>
<b>Conservation of Agricultural Resources Act (Act No. 43 of 1983)</b>	The proposed development site does not fall in an Agricultural Hub of Gauteng and the study area is underlain by very low agricultural potential soils. No Agricultural Potential Study was conducted as the site is very small and within the Gauteng Urban Edge and therefore it is not expected that the site will have high agricultural potential. Due to the aforementioned the site is not considered suitable for agricultural activities.
<b>National Heritage Resources Act (Act No. 25 of 1999)</b>	<p>A heritage specialist has been on the site and nothing of cultural or historical importance has been identified on the site. The site is also located within a residential area and is adjacent to the highway and therefore it is not suspected to find anything of cultural importance. The site is also very small and disturbed. If any remains/cultural resources are exposed or uncovered during the construction phase, it should immediately be reported to the South African Heritage Resources Agency (SAHRA). Burial remains should not be disturbed or removed until inspected by an archaeologist. Please refer to <b>Appendix G</b> for the <b>Cultural Heritage Resources Impact Assessment Report</b>.</p> <p>It should also be noted that the Rooihuiskraal Historical Terrain is situated to the east of the site and is literally divided by the M37/ Rooihuiskraal Road.</p> <p>The Rooihuiskraal Historical Terrain was declared a national monument in 1981, the original farmstead dates back to the 1880's. It was the location of two battles during the Anglo-Boer war.</p>
<b>National Environmental Management : Waste Act (Act 59 of 2009)</b>	No listed waste activities will take place on site and therefore a waste license will not be required. Construction and operational general waste will have to be removed to a registered landfill site.
<b>National Environmental Management Protected Areas Act (Act No. 57 of 2003)</b>	<p>The proposed development site does not form part of a protected area or occur near a protected area. Refer to Figure 5.</p> <p>It should be noted that the Rooihuiskraal Historical Terrain is situated to the east of the site and is literally divided by the M37/ Rooihuiskraal Road.</p>
<b>National Environmental Management : Biodiversity</b>	The site is regarded as disturbed due to illegal dumping and severe degradation. Animal carcasses were also found on the site.

<b>Act (Act 10 of 2004)</b>	Three ecological studies were conducted between 2008 and 2017. The first study was done in March 2008 by EcoInfo CC., the second study in November 2010 by Scientific Aquatic Services and the third study in 2017 by Bokamoso Environmental: Specialist Unit. The study area is located in the Egoli Granite Grassland, which is regarded as Vulnerable (Mucina and Rutherford, 2006). The findings of the 2017 survey indicated that the study site has suitable habitat for one Red List species and four Orange List species, of which two of the Orange List species: <i>Hypoxis hemerocallidea</i> and <i>Eucomis autumnalis</i> , were recorded on site. Both these Orange Listed species were recorded during the 2008 and 2010 surveys. The orchid, <i>Habenaria nyikana</i> subsp. <i>nyikana</i> , was also recorded during the 2017 survey but not in the 2008 and 2010 survey. These species are, however, not categorised as Red Listed and should be relocated prior to the commencement of construction to either the north of the study site, where similar environmental conditions occur, or in the watercourse buffer area where two of these species already occur. GDARD should be consulted and a professional botanist should be contacted for the relocation of such species.
<b>National Environmental Management : Air Quality Act, 2004 (Act 39 of 2004)</b>	During the construction phase of the proposed development, generation of dust could become a factor to surrounding residents. However if the development is well planned and the mitigating measures are successfully implemented the proposed development's contribution to air and noise pollution can become less significant.
<b>Gauteng Transport Infrastructure Amendment Act</b>	The proposed development site runs in close proximity to the N14 highway and Rooihuiskraal Road/ M37. The proposed site is within an established and built-up area. The site and surroundings is not affected by any planned future K-routes.
<b>Occupational Health &amp; Safety Act, 85 of 1993</b>	Considering the proposed development will occur within an urban environment next to other residential developments, the Act not only applies to the persons who will be responsible for construction, but also to the safety of members of the public.
<b>GDARD Draft Ridges Policy</b>	No ridges occur on, or in the direct vicinity of the study site. The development site has an undulating plain topography on a relatively flat geographical section.
<b>Gauteng Conservation Plan (C-Plan) Version 3.3</b>	The proposed development comprises of Ecological Support and Important areas in terms of the Gauteng Conservation Plan. No Irreplaceable areas are situated on the study area.
<b>GDARD Agricultural Hub Policy</b>	As mentioned earlier, the proposed development site does not fall in an Agricultural Hub of Gauteng. No Agricultural Potential Study was conducted as the site is very small and within the Gauteng Urban Edge and therefore it is not expected that the site will have high agricultural potential. Due to the aforementioned the site is not considered suitable for agricultural activities.
<b>Gauteng</b>	Three ecological studies were conducted between 2008 and

<p><b>Guidelines on Red List Plant Species</b></p>	<p>2017. The first study was done in March 2008 by EcolInfo CC., the second study in November 2010 by Scientific Aquatic Services and the third study in 2017 by Bokamoso Environmental: Specialist Unit. The study area is located in the Egoli Granite Grassland, which is regarded as Vulnerable (Mucina and Rutherford, 2006). The findings of the 2017 survey indicated that the study site has suitable habitat for one Red List species and four Orange List species, of which two of the Orange List species: <i>Hypoxis hemerocallidea</i> and <i>Eucomis autumnalis</i>, were recorded on site. Both these Orange Listed species were recorded during the 2008 and 2010 surveys. The orchid, <i>Habenaria nyikana</i> subsp. <i>nyikana</i>, was also recorded during the 2017 survey but not in the 2008 and 2010 survey. These species are, however, not categorised as Red listed and should be relocated prior to the commencement of construction to either the north of the study site, where similar environmental conditions occur, or in the watercourse buffer area where two of these species already occur. GDARD should be consulted and a professional botanist should be contacted for the relocation of such species.</p>
<p><b>Gauteng Noise Control Regulations</b></p>	<p>If well planned and if mitigation measures are successfully implemented, the proposed development will not contribute to significant noise generation during the construction phase which will be a short term impact.</p> <p>The noise generated during the operational phase will not be significantly different to that of the area as the land uses around the proposed development is mainly residential with the N14 and M37/ Rooihuiskraal Road bordering the eastern and southern boundary of the site. Therefore it is not expected to have a major impact on the surrounding properties. It should also be noted that the proposed development is planned on the southernmost boundary of the site with the Eskom power lines and the wetland/ watercourse area acting as a buffer between the proposed development and the adjacent residential areas.</p> <p>The proposed development, once operational, will with the necessary mitigation measures implemented have reasonable levels of noise and will be in line with the relevant legislation pertaining to noise (as mentioned below). The Noise Impact Assessment conducted by Enviro-Acoustic Research (EAR) is done in terms of the National/ International guidelines and regulations of SANS 10103:2008; SANS 10210:2004, SANS 10328; SANS 10357; GN R154 and IFC: General EHS Guidelines (Equator Principal).</p> <p>According to the noise impact study the potential noise impact of the site has a moderate significance during the night-time periods. The development will be designed in such a way that the façade of the complex dwellings with bedrooms be faced in the opposite direction as the N14 Road. This does not mean that the sound from the N14 Road will be inaudible, but rather that the sound due to the road traffic should be at a reasonable level as per the said</p>



	<p>Noise regulations. Other mitigation measures are elaborated upon in the noise impact assessment. <b>(Please refer to Appendix G15 for the Noise Impact Assessment)</b></p>
<p><b>Gauteng Urban Edge</b></p>	<p>The proposed development site falls within the Gauteng Urban Edge. The proposed development is regarded as being in line with the Urban Edge Policy. Refer to Figure 9.</p>
<p><b>Gauteng Provincial Environmental Management Framework</b></p>	<p>The proposed residential development occurs within Zone 1 of the GPEMF i.e. identified as urban development zone i.e. ideal for the development that has been authorised on the study area. The proposed residential development will therefore be in line. Some areas of Zone 2 also occur on the site.</p>  <p><b>Figure 11: Gauteng EMF</b></p>

**3. ALTERNATIVES**

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not** include the no go option into the alternative table below.

**Note:** After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

As explained this project has a history and it was previously subject to a Basic Assessment Process (with various alternative layouts) as well as an appeal process. After the appeal was dismissed, numerous meetings took place between GDARD, Bokamoso, the developer and specialists in order to establish if it will be possible by any means to develop this portion of land and

if it would be better to choose an alternative use for the site rather than a residential development. The alternative uses considered were storage facilities, Industrial or a filling station. It was established that a residential development is the best use, however we had to supply GDARD with some solutions and workable mitigation measures regarding the handling of the stormwater on the site. Stormwater management measures was proposed and discussed with the department and it was amended up to the stage where the department was satisfied with the suggestions. Therefore no other alternatives were investigated for this application.

Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
1	Proposal	The development of a Residential 3, Security complex consisting of 100 units per hectare (maximum 350 units) with associated services and infrastructure (Refer to figure 11)
2	Alternative 1 (Layout alternative)	Three other alternatives were investigated. Two of the three alternatives are considered to be similar and will be discussed together as alternative 2. This alternative consists of 6 erven earmarked for Residential. However the access road crossing over the bridge along with one of the erven encroaches into the 15 metre buffer line. Similar to the proposal an open space is considered to the north of the development.
3	Alternative 2 (Alternative use)	Storage facilities or Industrial uses.
	Etc.	

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

Initially during the Draft Basic Assessment process no alternative was provided for this project as it was explained that previously four other layouts were investigated and considered for the site (in previous applications submitted to the department). During the last applications submitted to GDARD the environmental authorization was denied as well as the appeal submitted against the decision of the Department. After the 1 year period since the decision on the appeal, lapsed, Bokamoso and the applicant arranged a meeting with GDARD in order to discuss possible alternatives and viable uses for this piece of land. The department then confirmed during the site visit, in principle, that the proposed Residential 3 development will be considered on the basis that good stormwater mitigation and management measures are applied.

However, GDARD's comments regarding the Draft Basic Assessment

Report confirmed that alternatives should form part of this application. Therefore we decided to discuss the previous alternatives below.

Three other alternatives were investigated which was similar in nature to the proposed alternative. The only differences were that it consisted of 6 erven earmarked for Residential and the access road crossing over the bridge along with one of the erven which encroaches into the 15 metre buffer line. Similar to the proposal an open space is considered to the north of the development.

It was also considered to move the power lines to the southern side of the site and to have the residential development to the northern side next to the other residential developments but after discussions with Eskom it was confirmed that it would not be possible or viable to do this.

Other uses i.e. storage facilities or industrial uses were proposed to GDARD during a site visit prior to this application. As explained earlier GDARD requested mitigation measures for the stormwater in order to make the preferred alternative of a residential development the proposed alternative.

In terms of the abovementioned history only the preferred alternative is examined in this application. Two of the layouts that were considered as part of the previous applications are attached below for ease of reference. **Kindly refer to figure 13: Alternative layout.**

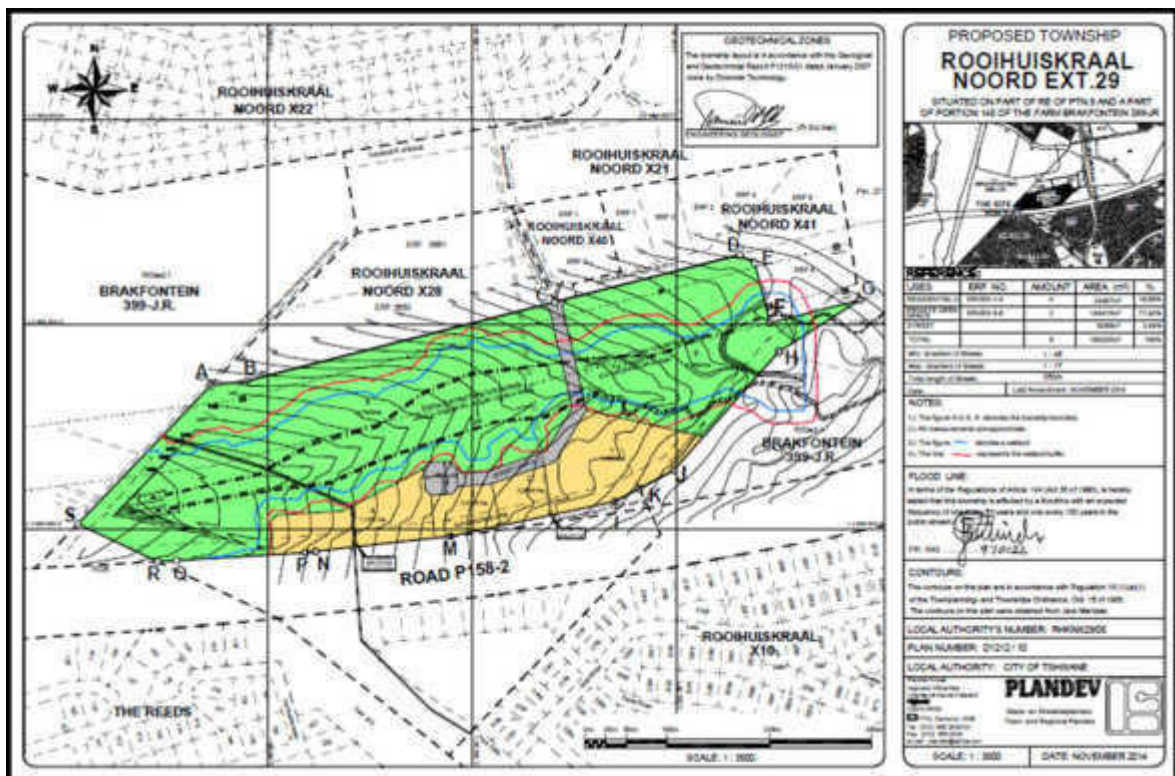
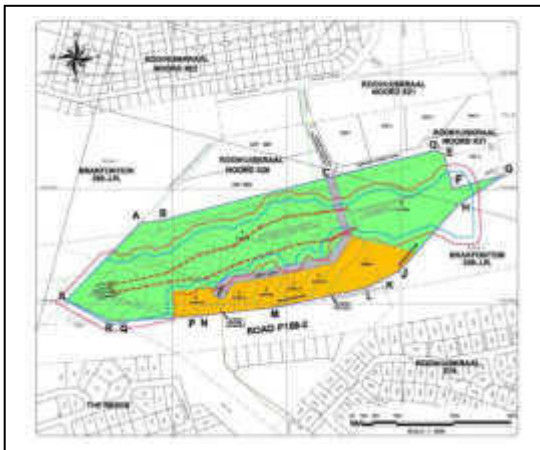


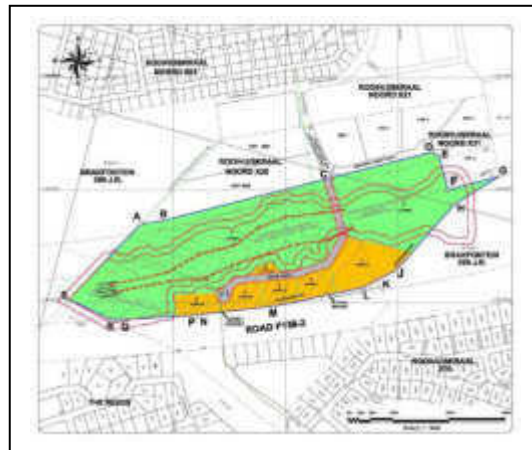
Figure 12: Proposed layout

USE ZONE	Erf Number	Total Number of Erven	Area (m²)	%
Residential 3	1-4	4	33747	18,73
Private Open Space	5-6	2	140415	77,92
Streets			6038	3,35
<b>TOTAL</b>		<b>6</b>	<b>180200</b>	<b>100%</b>

**ALTERNATIVE 2:**



**Figure 13a: Alternative layout (Six erven)**



**Figure 13b: Alternative layout (encroaching into the watercourse area)**



**Figure 13c: Alternative layout (Having the proposed development situated on the current Eskom servitude and relocating the Eskom servitude to the south of the site)**

**4. PHYSICAL SIZE OF THE ACTIVITY**

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces, and landscaped areas:

Proposed activity (*Total environmental (landscaping, parking, etc.) and the building footprint*)

**Size of the activity:**  
18,0200 ha

**Alternatives:**

Alternative 1 (if any)

Alternative 2 (if any)


Ha/ m<sup>2</sup>

or, for linear activities:

Proposed activity

**Length of the activity:**

**Alternatives:**

Alternative 1 (if any)

Alternative 2 (if any)

m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

Proposed activity

**Size of the site/servitude:**

**Alternatives:**

Alternative 1 (if any)

Alternative 2 (if any)

Ha/m<sup>2</sup>

**5. SITE ACCESS**

**Proposal**

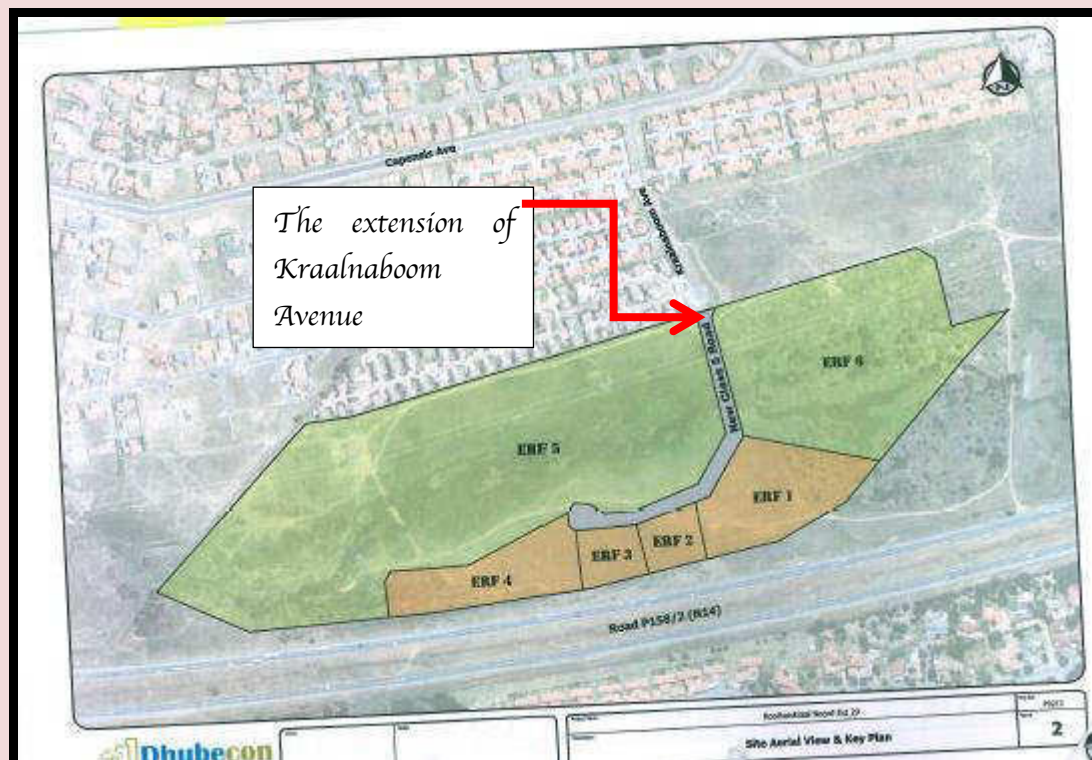
Does ready access to the site exist, or is access directly from an existing road?

<b>YES</b>	NO
<b>X</b>	
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

The only access to the site is via Kraalnaboom Avenue, which is a short collector road originating at its intersection with Capensis Avenue and terminating approximate 200 m to the north of the proposed township's boundary. The extension of Kraalnaboom Avenue will be required which implies that the road will have to cross the wetland by means of a bridge structure (Dhubecon; June 2014).

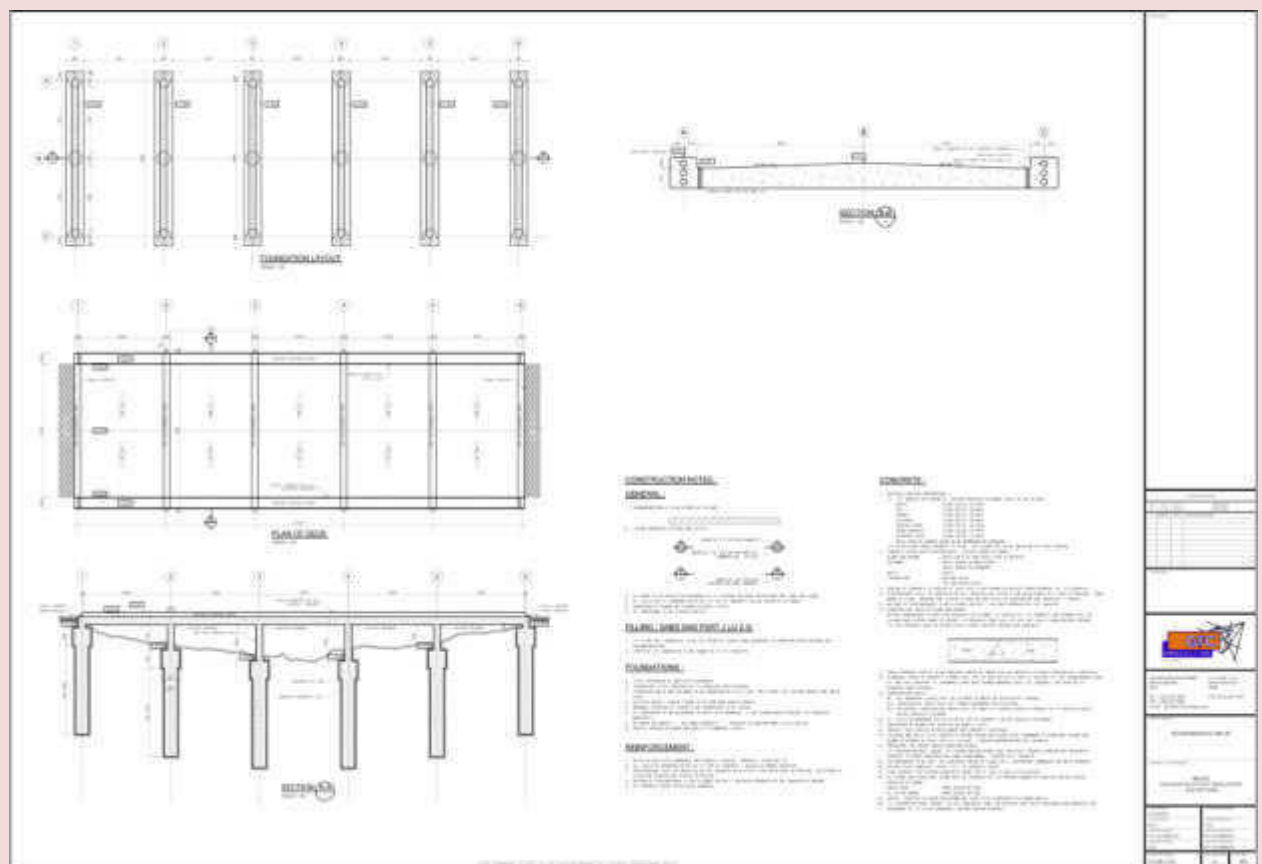


**Figure 14: The extension of Kraalnaboom Avenue**

According to Dhubecon some road upgrades in the area are required. The

roads to be upgraded are the intersection of Capensis Avenue and Kraalnaboom Avenue, the intersection of Capensis Avenue and Lenchen Avenue and then also the intersection of Lenchen Avenue and Rooihuiskraal Road. Please refer to Appendix G11 for the Traffic Impact Study conducted by Dhubecon.

Telawize (Pty) Ltd Engineers and Project Managers proposed that a concrete bridge structure of 20.3m x 7m and a 2m walkway will be constructed crossing the stream to give access to the development. The bridge will span over the floodlines. The base of the bridge will be supported by concrete piles. The flow of the stream will not be disturbed or changed by the bridge. During construction a temporary diversion of the stream will be done with sandbags.



**Figure 15: Drawing of the proposed bridge (Refer to Appendix G13 for the Services Report).**

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

**Alternative 1**

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

**Alternative 2**

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
-----	----

If NO, what is the distance over which a new access road will be built

m

Describe the type of access road planned:

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

## PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated

0

Number of times

(only complete when applicable)

### 6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, stormwater infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
  - Rivers and wetlands;
  - the 1:100 and 1:50 year flood line;
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

#### FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

Refer to Appendix A

**7. SITE PHOTOGRAPHS**

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix. It should be supplemented with additional photographs of relevant features on the site, where applicable.

Refer to Appendix B

**8. FACILITY ILLUSTRATION**

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

Refer to Appendix C

## SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

**Note:** Complete Section B for the proposal and alternative(s) (if necessary)

**Instructions for completion of Section B for linear activities**

- 1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
- 2) Indicate on a plan(s) the different environments identified
- 3) Complete Section B for each of the above areas identified
- 4) Attach to this form in a chronological order
- 5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route  times

**Instructions for completion of Section B for location/route alternatives**

- 1) For each location/route alternative identified the entire Section B needs to be completed
- 2) Each alternative location/route needs to be clearly indicated at the top of the next page
- 3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives  times (complete only when appropriate)

**Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application**

Section B is to be completed and attachments order in the following way

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route  (complete only when appropriate for above)

Section B – Location/route Alternative No.  (complete only when appropriate for above)



**1. PROPERTY DESCRIPTION**

**Property description:**  
(Including Physical Address and Farm name, portion etc.)

The proposed development is situated on Part of the Remainder of Portion 9 and a Part of Portion 145 of the Farm Brakfontein 399 JR, City of Tshwane, to be known as Rooihuiskraal North x 29. (This land portion was previously known as Portion 9 of the Farm Brakfontein 399 JR)

**2. ACTIVITY POSITION**

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

**Alternative:**

<b>Latitude (S):</b>	<b>Longitude (E):</b>
25°53'16.45"S	28°08'13.76"E

**In the case of linear activities:**

**Alternative:**

- Starting point of the activity
- Middle point of the activity
- End point of the activity

<b>Latitude (S):</b>	<b>Longitude (E):</b>
°	°
°	°
°	°

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached

The 21 digit Surveyor General code of each cadastral land parcel

<b>PROPOSAL</b>	<b>T</b>	<b>0</b>	<b>J</b>	<b>R</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	
	<b>T</b>	<b>0</b>	<b>J</b>	<b>R</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>5</b>	
<b>ALT. 1</b>																						
<b>ALT. 2</b>																						
<b>etc.</b>																						

**3. GRADIENT OF THE SITE**

Indicate the general gradient of the site.

Flat	<b>1:50 – 1:20 X</b>	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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**4. LOCATION IN LANDSCAPE**

Indicate the landform(s) that best describes the site.

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	<b>Undulating plain/low hills X</b>	<b>River front X</b>
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**5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE**

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)

Dolomite, sinkhole or doline areas

Seasonally wet soils (often close to water bodies)

Unstable rocky slopes or steep slopes with loose soil

Dispersive soils (soils that dissolve in water)

Soils with high clay content (clay fraction more than 40%)

Any other unstable soil or geological feature

An area sensitive to erosion

<b>YES X</b> Only in some areas near the wetland	NO
YES	<b>NO X</b>
<b>YES X</b>	NO
YES	<b>NO X</b>
YES	<b>NO X</b>
YES	<b>NO X</b>
YES	<b>NO X</b>
<b>YES X</b>	NO

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

A Geotechnical Investigation was done during 2010 by Geo Buro. While conducting the Wetland Report, TerraSoil also had a look at the soils on the site. **(Refer to Annexure G12 for the Geotechnical Report & Wetland delineation)**

The site falls into the Halfway House Granite Dome land type with a typical bleached sandy soil but borders on an area that is dominated by dolomite and chert land types. No dolomite was found on the study site. The site is underlain at depth by Archaean Granite of the Halfway House Granite Suite (now the Johannesburg granite Dome). The majority of the site is underlain by loose or potentially collapsible sands to depths of up to 0,6 m, and locally to 1,4 m.

If all the recommendations in the geotechnical study are followed and are adhered to the proposed development can go-ahead.

b) are any caves located on the site(s)

YES	<b>NO X</b>
-----	-----------------

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

**Latitude (S):** \_\_\_\_\_ **Longitude (E):** \_\_\_\_\_

c) are any caves located within a 300m radius of the site(s)

YES	<b>NO X</b>
-----	-----------------

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

**Latitude (S):**  **Longitude (E):**

d) are any sinkholes located within a 300m radius of the site(s)

YES	<b>NO</b>
	<b>X</b>

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

**Latitude (S):**  **Longitude (E):**

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

## 6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?

YES	<b>NO</b>
	<b>X</b>

**Please note:** The Department may request specialist input/studies in respect of the above.

## 7. GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % =	Natural veld with scattered aliens % = <b>24</b>	Natural veld with heavy alien infestation % = <b>72</b>	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % = <b>4</b>

**Please note:** The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site

YES	<b>NO</b>
	<b>X</b>

If YES, specify and explain:

### FLORA:

In the Vegetation and Wetland Assessment conducted by EkoInfo CC in 2008 (**Appendix G**), and supported in the observations by Scientific Aquatic Services in the wetland delineation study done in 2010, the presence of ecologically important species *Hypoxis hemerocallidae* and *Eucomis autumnalis* were noted. These species are however not Red listed and it is suggested that they are relocated prior to the commencement of construction to the north of the study site, where similar environmental conditions occur.

The Bokamoso Environmental: Specialist Unit conducted a follow up study during March 2017 to confirm the findings of the previous specialist studies as well as the current status on the site. It was confirmed that the study area is located in the Egoli Granite Grassland, which is regarded as Vulnerable (Mucina and Rutherford, 2006). It was also confirmed that the study site has suitable habitat for one Red List species and four Orange List species, of which two of the Orange List species: *Hypoxis hemerocallidea* and *Eucomis autumnalis*, were recorded on site. Both

these Orange Listed species were recorded during the 2008 and 2010 surveys (as mentioned above). The orchid, *Habenaria nyikana* subsp. *nyikana*, was also recorded during the 2017 survey but not in the 2008 and 2010 survey. These species are, however, not categorised as Red listed and should be relocated prior to the commencement of construction to either the north of the study site, where similar environmental conditions occur, or in the watercourse buffer area where two of these species already occur. It should be noted when species are relocated to the north of the site, the location should be carefully identified to ensure that no plants are relocated to the powerline servitude area. GDARD should be consulted and a professional botanist should be contacted for the relocation of such species.

#### **FAUNA:**

In the Red Data Invertebrate and Wetland Mammal Investigation conducted by Faunal Specialists Incorporated (F.S.I.) (**Appendix G**) it was confirmed that no species of concern or any indication of such species were encountered during the field investigation.

The Bokamoso Environmental: Specialist Unit conducted a follow up study during March 2017 and the findings were as follows.

##### a. Mammals:

Parts of the terrestrial habitats present on the study area have been transformed and degraded to such an extent that it can no longer be regarded as typical of the Egoli Granite Grassland. There is limited connectivity with similar habitats as the study area is surrounded by roads and residential developments. There is, however still suitable habitat on the study area for Red Listed species. The Wetland is still in a good ecological condition and could potentially support Red Listed and sensitive species such as *Leptailurus serval* and *Otomys auratus*. The Wetland should be excluded from development. The Grassland has limited connectivity with similar habitats, increased edge effects from the surrounding land uses and increased habitat destruction and fragmentation. It is therefore considered to have a moderate to high sensitivity. Increased disturbances from the surrounding land uses and increased alien species will ultimately cause degradation of the Grassland in the long term. In the absence of ecological management and intervention, the status of this grassland will deteriorate over time and make it less suitable for Red Listed species.

##### b. Herpetofauna:

The majority of the terrestrial habitat present on the study area is still in a natural state, with limited disturbances. There is connectivity with similar habitats in the surrounding area, which increases the probability of genetic exchange and allowing migration of species. There is potentially suitable habitat for the Striped Harlequin Snake (*Homoroselaps dorsalis*) and the Giant bullfrog (*Pyxicephalus adspersus*). It is suggested that a specialist in the field of zoology should assess the possibility of finding these Near Threatened species before construction activities commence.

c. Invertebrate:

No Red Listed invertebrate species are expected to occur in this particular study area, except for the Marsh sylph. It is recommended that an entomologist should confirm whether the *Marsh sylph* occurs on site by means of either a desktop habitat assessment or a field survey.

**WETLAND:**

The findings on the wetland study (by EKOInfo CC) needed to be confirmed and TerraSoil Science then conducted a wetland delineation in September 2014 on the site for the proposed development. The site comprises of the Bb1 land type and also borders the Ab1 and Ab2 land types. The site's soil characteristics can be described as coarse sandy in texture that is shallow to moderately deep. The deep soils only occur in the drainage features. The soils are highly erodible. The historical aerial photographs of 1958, 1964, 1968 and 1976 indicate that a drainage depression is fed from land, in 1958 and 1964, which was used for crop production. The 1976 photograph illustrated construction activities associated with the N14 highway alignment. The land uses changed severely around the site from 2005 to 2013.

Residential developments intensified around the proposed site and most of the road infrastructure has been established around the site. A large area of the site is also subject to rubble dumping. Rubble dumping on the site is not a recent activity but is evident on the 2005 photographs already. Majority of the modifications has to do with altered hydrology and runoff from the urban structures. The highly modified wetland of today is evident when comparing it to the historical wetland photographs of the 50's and 60's. Animal carcasses were also found being dumped on the site near the drainage feature. Foot and vehicle traffic also negatively impacted the wetland area.

The wetland specialist stated that a wetland delineation would mean very little and would merely be an indication of the current extent of the wetland. Please refer to **Figure 12** for the proposed wetland delineation. The wetland area can be described as a highly altered valley bottom wetland with a potential hillslope seep (altered) which feeds the wetland from the east. A buffer of 15m is not recommended by the specialist due to all the human impacts currently on the site. A dam formed on the site due to the human impacts such as the dumping of building rubble in the downslope of the drainage feature. This dam is not natural but man-made. It is rather recommended that the wetland area be managed and rehabilitated (**Please refer to Appendix G for the monitoring and rehabilitation plans**). It should be properly managed for future human impacts such as stormwater and erosion control. All rubble/litter need to be removed from the site. The only function of this wetland is channelling. The man-made dam can be used as a stormwater attenuation dam as stormwater is released on the site from surrounding developments and roads. It is imperative that proper stormwater

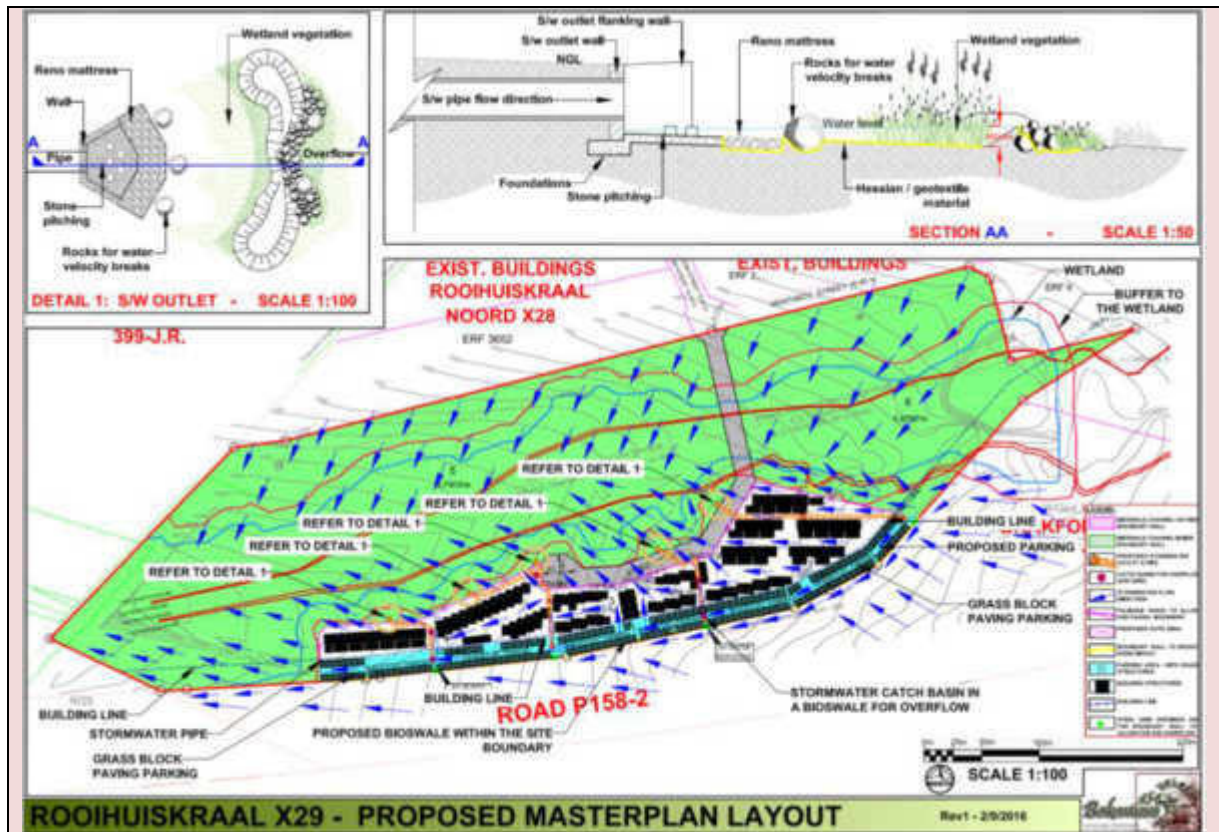
management be incorporated and implemented on the site. **Please refer to the wetland delineation in Appendix G.**



**Figure 16 – The proposed wetland delineation**

Careful consideration and mitigation measures were proposed regarding the treatment of stormwater on the proposed site. As previously explained in the report a conceptual stormwater management and master plan layout was discussed with the department (GDARD) as well as with the DWS (Department of Water and Sanitation) and they were quite pleased with the concept. The stormwater plan was closely discussed with the Engineer which in turn also discussed this plan with the CoT (City of Tshwane). These mitigation measures were accepted in concept by all mentioned parties however comments still needs to be obtained during the Basic Assessment process.

The handling of stormwater on the site seemed to be the greatest factor of the proposed site in relation to the wetland/ watercourse area on the site. It was said from the wetland specialists and Engineering perspective, that should the stormwater be well mitigated that there should not be any objection to the proposed development. The concept can be explained as follows.



**Figure 1 - Proposed masterplan layout**

From the above layout it is clear that a lot of stormwater are directed to the site from the N14 Highway (which is situated directly adjacent to the south of the study site). The mitigation measure proposed for efficient stormwater control on the proposed site can be explained as follows. Stormwater will be entered from the N14 Highway, and will be captured in catch basins for the overflow (storm water grid). From the stormwater grid, it will go through a proposed stormwater pipe. From the pipe, the stormwater will spill on a stone pitching surface of the Stormwater outlet which permits a sustainable surface that can withstand water flowing over the top. This stone pitched surface in conjunction with concrete blocks energy dissipaters will assist to dissipate the energy of the water. Stormwater will then flow through a reno mattress and associated rock features to assist in further dissipating the energy of the stormwater. Thereafter, stormwater will flow though indigenous wetland vegetation like *Typha capensis* which will act as a biological filtering system prior the stormwater entering the watercourse. In addition, a vegetated berm or mound will be implemented to assist in capturing silt and preventing it from entering the watercourse (refer to the illustration on Figure 1 – Detail 1 Plan and Section). It should also be noted that the stormwater outlet points are strategically and evenly positioned.

The overall concept is to decrease the energy of the flow of stormwater prior entering the watercourse, and to ensure that the water flows over a wider area, and that it is not concentrated in one area, in order to reduce the scouring effect of erosion.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.

YES	NO <b>X</b>
-----	----------------

If YES, specify and explain:

--

Are there any special or sensitive habitats or other natural features present on the site?

<b>YES X</b>	NO
------------------	----

If YES, specify and explain:

A wetland is present on the site. The wetland was discussed on page 50 – 53.
--

Was a specialist consulted to assist with completing this section

<b>YES X</b>	NO
------------------	----

**Please note;** If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

If yes complete specialist details

Name of the specialist:

Johan van der Waals
---------------------

Qualification(s) of the specialist:

PhD Soil Science; <i>Pr.Sci.Nat.</i>
--------------------------------------

Postal address:

P.O Box 40568, Garsfontein, Pretoria
--------------------------------------

Postal code:

0060
------

Telephone:

012 993 0969
--------------

Cell:

082 570 1297
--------------

E-mail:

johan@terrasoil.co.za
-----------------------

Fax:

086 274 6653
--------------

Are any further specialist studies recommended by the specialist?

YES	<b>NO X</b>
-----	-----------------

If YES, specify:

--

If YES, is such a report(s) attached?

YES	NO
-----	----

If YES list the specialist reports attached below

--

Signature of specialist:

\_\_\_\_\_

Date:

28 September 2014 and 1 June 2017
---

**Please note;** If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

If yes complete specialist details

Name of the specialist:

Corné Niemandt & Llwelyn Coertzen
-----------------------------------

Qualification(s) of the specialist:

<i>Cand. Sci.Nat.</i> & <i>Pri.Sci.Nat.</i>
---

Postal address:

P.O. Box 11375, Maroelana
---------------------------

Postal code:

0161
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Telephone:

012-346 3810
--------------

Cell:

-
---

E-mail:

<a href="mailto:corne@bokamoso.net">corne@bokamoso.net</a>
--

Fax:

-
---

Are any further specialist studies recommended by the specialist?

YES	<b>NO X</b>
-----	-----------------

If YES, specify:

--

If YES, is such a report(s) attached?

YES	NO
-----	----

If YES list the specialist reports attached below

--



Signature of specialist: \_\_\_\_\_

Date:

28 September 2014 and 1 June 2017
---

**Please note;** If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

If yes complete specialist details

Name of the specialist:

Stephen van Staden

Qualification(s) of the specialist:

Pr.Sci.Nat

Postal address:

91 Geldenhuys Road, Malvern East Extension 1

Postal code:

2007

Telephone:

011-616 7893

Cell:

083 415 2356

E-mail:

\_\_\_\_\_

Fax:

011-615 4106

Are any further specialist studies recommended by the specialist?

YES

**NO**  
**X**

If YES, specify:

\_\_\_\_\_

If YES, is such a report(s) attached?

YES

NO

If YES list the specialist reports attached below

\_\_\_\_\_

Signature of specialist: \_\_\_\_\_

Date:

March 2009, May 2010, and 25 November 2010
---

**Please note;** If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

If yes complete specialist details

Name of the specialist:

Dewald Kamffer

Qualification(s) of the specialist:

MSc Conservation Biology

Postal address:

\_\_\_\_\_

Postal code:

\_\_\_\_\_

Telephone:

\_\_\_\_\_

Cell:

\_\_\_\_\_

E-mail:

\_\_\_\_\_

Fax:

\_\_\_\_\_

Are any further specialist studies recommended by the specialist?

YES

**NO**  
**X**

If YES, specify:

\_\_\_\_\_

If YES, is such a report(s) attached?

YES

NO

If YES list the specialist reports attached below

\_\_\_\_\_

Signature of specialist: \_\_\_\_\_

Date:

_____
-------

**Please note;** If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

If yes complete specialist details

Name of the specialist:

W.H. de Frey

Qualification(s) of the specialist:

MSc (Cum Laude) Wildlife Management

Postal address:

P.O. Box 1277, Garsfontein

Postal code:

0042

Telephone:

012-993 2962

Cell:

-

E-mail:

wdefrey@ekoinfo.co.za

Fax:

-

Are any further specialist studies recommended by the specialist?

YES

NO

X

If YES, specify:

[Empty box for specifying further studies]

If YES, is such a report(s) attached?

YES

NO

If YES list the specialist reports attached below

[Empty box for listing reports]

Signature of specialist: \_\_\_\_\_

Date:

March 2008

### 8. LAND USE CHARACTER OF SURROUNDING AREA



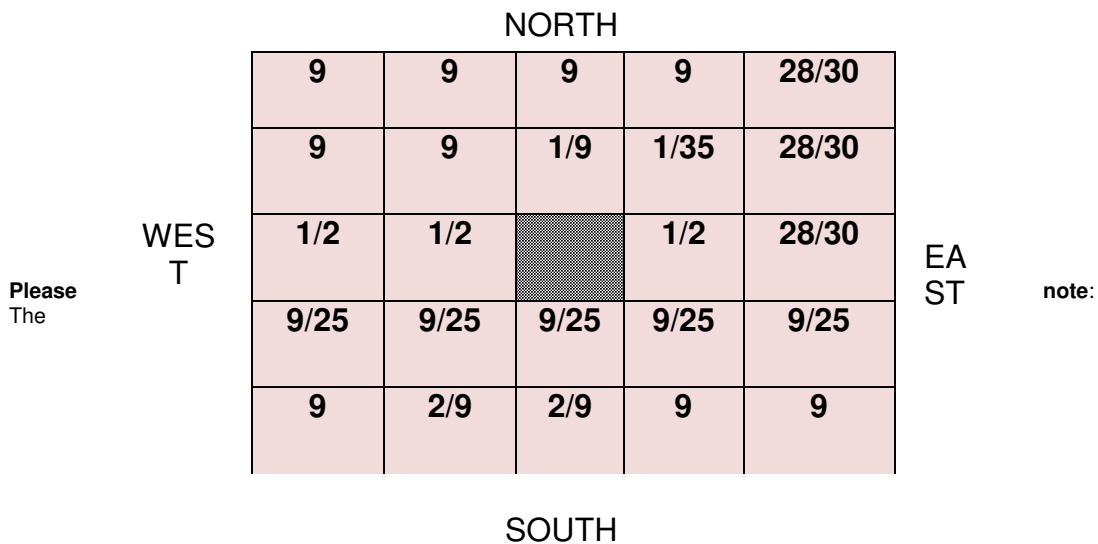
Figure 17 – Land-use map

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

<p><b>1. Vacant land</b> x</p>	<p><b>2. River, stream, wetland</b> x</p>	<p>3. Nature conservation area</p>	<p>4. Public open space</p>	<p>5. Koppie or ridge</p>
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6. Dam or reservoir	7. Agriculture	8. Low density residential	<b>9. Medium to high density residential</b> <b>x</b>	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial <sup>AN</sup>	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport <sup>N</sup>	23. Train station or shunting yard <sup>N</sup>	24. Railway line <sup>N</sup>	<b>25. Major road (4 lanes or more)<sup>N</sup></b> <b>x</b>
26. Sewage treatment plant <sup>A</sup>	27. Landfill or waste treatment site <sup>A</sup>	<b>28. Historical building</b> <b>x</b>	29. Graveyard	<b>30. Archaeological site</b> <b>x</b>
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam <sup>A</sup>	34. Small Holdings	
Other land uses (describe):	<b>35. Eskom Substation</b> <b>X</b>			

**NOTE: Each block represents an area of 250m X250m**



Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an "A" and with an "N" respectively.

Have specialist reports been attached

YES	<b>NO</b> <b>x</b>
-----	-----------------------

If yes indicate the type of reports below

--

**9. SOCIO-ECONOMIC CONTEXT**

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

<u>NEED FOR RESIDENTIAL DEVELOPMENT</u>
According to the City of Tshwane's Integrated Development Plan, African

cities have doubled both in size and population every 10 years between 1960 and 1980 as a result of a 5% average annual growth rate. In 2001, 34% of the population in sub-Saharan Africa lived in urban areas and by 2020 this figure is expected to grow to 46%.

Housing is therefore a primary need on all levels of society and the proposed Rooihuiskraal North x 29 development will satisfy a portion of the market, as demand for housing units are in the current economic market, being pressurised by supply. The proposed township further represents the growing need for ownership of property and investment opportunities.

Due to high property prices in South Africa, a definite need exist to provide affordable housing, while taking into account the high cost of available land. A high density, 3-storey residential development is therefore proposed.

#### SUITABILITY FOR DEVELOPMENT

The Centurion area is presently favourable for development. The study area in particular is favourable due to its accessibility and nearby social amenities such as schools and hospitals. The demand for residential developments in the market and the demand for infill development as opposed to urban sprawl. The proposed development will make use of underutilised land within an urban environment and therefore optimise land as a limited resource in close proximity to established service networks.

The study area is bordered to the south of the development by the N14 highway and medium density residential developments to the north of the study area. To the north, east and west, the study area is surrounded by mainly high density residential developments. The proposed development site is thus favourably located in terms of compatibility and similarity with surrounding land use, available engineering services (the development will contribute to the optimum usage thereof) and the proposed use will functionally reflect the economic potential of the property. The application site is very well located with regards to major traffic routes in the area.

The study area is furthermore favourably located within an area of similar land uses. The proposed/ recently approved Rooihuiskraal North Extensions 21, 22, 24, 28, 40 and 41 are situated nearby and the proposed development will be able to be integrated with these developments.

The study area is located within an area of Centurion that is not underlain by dolomite and can therefore be developed at high residential densities, as that which is suggested.

### PROVINCIAL STRATEGIES

The Rooihuiskraal North x 29 application is in line with the Council's Densification Strategy within the Tshwane area. The principle thereof is to obtain optimal concentrations of residential developments in order to enable the provision of economic and social opportunities in an integrated, vibrant, high-intensity, mixed use, as well as to make optimal use of infrastructure. The vast number of residential developments in the area clearly indicates the need for the further planning of housing and related amenities.

The proposed development will contribute to sustainable development through the provision of quality living conditions and through minimising the footprint of the city and not contributing to "Urban Sprawl" by constituting infill development. The proposed development further contributes by means of job opportunities during the construction phase for construction related workers (skilled, semi-skilled and un-skilled individuals). The development can therefore be of economic importance to the surrounding community and the area as a whole.

### SOCIAL AMENITIES

The proposed Rooihuiskraal North x 29 development will add to social amenities in the area, by providing a vast wetland area, which is to be accessible to the public as an open space with a recreational function. The developers will clean the entire study site up by removing rubble and alien plant species in order to allow natural vegetation and faunal species such as birds and wetland mammals to return to the study site. The wetland will also, in so doing, be allowed to function more optimally and water courses downstream from the development will be positively impacted. Through the construction of residential units on the southern boundary of the property, the wetland area will become buffered by development which will significantly aid in increasing the wetland area. Safety will further be improved by designing the northernmost residential units to look out onto the wetland, which will also aid in increasing safety of the area. Through providing residential units on this property, a form of ownership over the wetland/ open space and community involvement will also be established and encouraged. In this manner, illegal squatting and dumping will also be kerbed.

Adequate open space will also be allowed within the developed portion of the property (Erven 1-4) in accordance with approved Site Development Plans and Landscape Development Plans.

### ECONOMIC ADVANTAGES

The proposed development can be of economic importance to the surrounding community and the area as a whole. The development of the

application site will effectively contribute to more effective utilisation of the available infrastructure and services within the area and will also contribute to the development of new infrastructure. Additional taxes and revenues will be payable by the local community. The development will furthermore contribute to the ecological health of the larger region, particularly downstream of the proposed development.

**10. CULTURAL/HISTORICAL FEATURES**

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
  - (b) the construction of a bridge or similar structure exceeding 50m in length;
  - (c) any development or other activity which will change the character of a site-
    - (i) exceeding 5 000 m2 in extent; or
    - (ii) involving three or more existing erven or subdivisions thereof; or
    - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years;
 or
    - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
  - (d) the re-zoning of a site exceeding 10 000 m2 in extent; or
  - (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or paleontological sites, on or close (within 20m) to the site?  
If YES, explain:

YES	<b>NO</b> <b>X</b>
-----	-----------------------

Not applicable

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

A Cultural Heritage Resources Impact Assessment was conducted by African Heritage Consultants CC. It was concluded that no archaeological artefacts or sites are present on the study area. The only structures present are two soil dam walls of which one has been partially washed away. These dam walls are relatively modern and fall outside of the jurisdiction of Act 25 of 1999. There are furthermore no graves present of the proposed development area.

The Rooihuiskraal Historical Terrain is situated approximately 270 meters to the east of the site. The M37/ Rooihuiskraal Road and a vacant piece of land (approximately 160 meters from the proposed site and the M37/ Rooihuiskraal Road) divide the Rooihuiskraal Historical Terrain from the site.

The Rooihuiskraal Historical Terrain was declared a national monument in 1981, the original farmstead dates back to the 1880's. It was the location of two battles during the Anglo-Boer war.

Will any building or structure older than 60 years be affected in any way?

YES	<b>NO</b> <b>X</b>
YES	<b>NO</b> <b>X</b>

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

If yes, please attached the comments from SAHRA in the appropriate Appendix

## SECTION C: PUBLIC PARTICIPATION (SECTION 41)

### 1. ADVERTISEMENT

The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

### 2. LOCAL AUTHORITY PARTICIPATION

**Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.**

Was the draft report submitted to the local authority for comment?

<b>YES</b> <b>X</b>	NO
------------------------	----

If yes, has any comments been received from the local authority?

YES	<b>NO</b> <b>X</b>
-----	-----------------------

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

The Basic Assessment Report was distributed to the CoT for comments. No comments were received even though follow ups were made.

### 3. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

<b>YES</b> <b>x</b>	NO
------------------------	----

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Comments were received from SAHRA –

- SAHRA requested a Phase 1 Archaeological Impact Assessment Report.
- A Cultural Heritage Resources Impact Assessment is attached as Appendix G. It was confirmed that no visible cultural heritage resources were present on the proposed development area.

If "NO" briefly explain why no comments have been received

#### 4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

#### 5. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice

Appendix 2 – Written notices issued as required in terms of the regulations

Appendix 3 – Proof of newspaper advertisements

Appendix 4 – Communications to and from interested and affected parties

Appendix 5 – Minutes of any public and/or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix 8 –Comments from I&APs on amendments to the BA Report

Appendix 9 – Copy of the register of I&APs

Appendix 10 – Comments from I&APs on the application

Appendix 11 - Other

Refer to **Appendix E**



# SECTION D: RESOURCE USE AND PROCESS DETAILS

**Note:** Section D is to be completed for the proposal and alternative(s) (if necessary)

**Instructions for completion of Section D for alternatives**

- 1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
- 4) Each alternative needs to be clearly indicated in the box below
- 5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives  times  
(complete only when appropriate)

**Kindly note that only the preferred alternative (Residential 3) is discussed for this section as explained on page 42 – 43.**

Section D Alternative No.  (complete only when appropriate for above)

## 1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

**Solid waste management**

Will the activity produce solid construction waste during the construction/initiation phase?

<b>YES</b> <b>X</b>	NO
250m <sup>3</sup>	

If yes, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

During construction, the disposal of solid waste will be the responsibility of the main contractor appointed by the developer. An area on the application site will be earmarked for temporary dumping of solid waste to be disposed of during the construction phase. This area must be situated carefully not to be visually unpleasant to neighbouring estates and residential units. The demarcated area must be easily accessible for dumping trucks to collect waste. The waste, including builder's rubble, will be carted to a nearby registered landfill site.

Where will the construction solid waste be disposed of (describe)?

All solid waste resulting from construction activities will be disposed at the nearest registered landfill site that allows building rubble. The nearest landfill site is Mooiplaas Landfill site which is situated close to Raslow. No solid waste will be dumped on open or adjacent properties.

Will the activity produce solid waste during its operational phase?

<b>YES</b> <b>X</b>	NO
Approximately 2,5kg/ resident/ day	

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?

During the operational phase all disposal of solid waste will be the responsibility of the Local Authority.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?

YES	<b>NO</b> <b>X</b>
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Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

All solid waste resulting from construction activities will be disposed of at a nearby legal landfill site (Mooiplaas Landfill Site – The Waste Group). No solid waste will be dumped on open or adjacent properties.

**Note:** If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation? 

YES	<b>NO</b> <b>X</b>
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If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility? 

YES	<b>NO</b> <b>X</b>
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If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

It is proposed that all waste construction materials be sorted into recyclable and non-recyclable materials. The recyclable materials should be re-used wherever possible or disposed of by a reputable recycling company.

**Liquid effluent (other than domestic sewage)**

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system? 

YES	<b>NO</b> <b>X</b>
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If yes, what estimated quantity will be produced per month? 

m <sup>3</sup>	
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If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)? 

YES	NO
-----	----

Will the activity produce any effluent that will be treated and/or disposed of on site? 

Yes	<b>NO</b> <b>X</b>
-----	-----------------------

If yes, what estimated quantity will be produced per month? 

m <sup>3</sup>	
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If yes describe the nature of the effluent and how it will be disposed.

Not applicable

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility? 

YES	<b>NO</b> <b>X</b>
-----	-----------------------

If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Not applicable

**Liquid effluent (domestic sewage)**

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system? 

<b>YES</b> <b>X</b>	NO
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If yes, what estimated quantity will be produced per month? 

401.844 kl/ day = 34 659.06 kl/ month	
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If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)? 

YES	<b>NO</b> <b>X</b>
-----	-----------------------

Will the activity produce any effluent that will be treated and/or disposed of on site?

YES	<b>NO</b> X
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If yes describe how it will be treated and disposed off.

Not applicable

**Emissions into the atmosphere**

Will the activity release emissions into the atmosphere?

The proposed development will not generate any emissions. Some additional vehicle/truck traffic during the construction phase may have an influence but this can be regarded as insignificant.

YES	<b>NO</b> X
YES	NO

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

The proposed development will not generate any emissions.

**2. WATER USE**

Indicate the source(s) of water that will be used for the activity

Municipal X	Directly from water board	groundwater	river, stream, dam or lake	other
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Not applicable

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix

Does the activity require a water use permit from the Department of Water Affairs?

<b>YES</b> X	NO
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If yes, list the permits required

A Water Use License Application was submitted to the Department of Water and Sanitation as a wetland/watercourse traverses the site. The Department of Water and Sanitation is busy perusing the application in order to make a decision regarding the issuing of the Water Use License.

If yes, have you applied for the water use permit(s)?

<b>YES</b> x	NO
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If yes, have you received approval(s)? (attached in appropriate appendix)

YES	<b>NO</b> X
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**3. POWER SUPPLY**

Please indicate the source of power supply e.g. Municipality / Eskom / Renewable energy source

City of Tshwane Metropolitan Municipality

If power supply is not available, where will power be sourced from?

Not applicable

**4. ENERGY EFFICIENCY**

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The developer will promote energy efficiency, renewable energy and post contract energy management as follows:

Electrical Energy Efficiency

- Provide state of art devices and equipment providing for maximum efficiency e.g. luminaries with fluorescent lamps and electronic control gear i.e. providing more light output per watt consumed.
- Provide appropriate systems for electrical demand management e.g. power factor correction equipment, building management systems, etc. i.e. allowing the shedding of non-critical loads i.e. air conditioning loads to manage precinct load factor in conjunction with the utility.

Electrical Renewable Energy

The developer will promote renewable energy systems by providing space, risers etc. for tenants to link to the following renewable energy systems:

- Use of day lighting in perimeter areas via light shelves and controlled shading.
- Voltaic panels for the charging of batteries providing UPS backup in buildings.

The following could also be considered:

- Where possible energy saving light bulbs must be used in all the units as well as outside.
- Time switches must be used for outdoor lighting.
- Geysers must be fitted with insulation blankets.
- Solar panels can be used to heat the water and geysers and for outdoor lighting.

The developer is committed to search and investigate more solutions and opportunities to increase the sustainability of this development making it a project that will be a landmark on many levels.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

The following alternative energy sources can be considered:

**Wind turbines**

This option was rejected because the wind conditions required cannot be met in this region.

**Biomass**

This option was rejected because the fuel required for producing electricity is not locally available, the distance between the source of biomass and the power plant must be short for economic viability.

**Gas**

This option was rejected because natural gas is not available and the Egoli Gas pipeline is remote and the energy spent in processing the gas and transporting it affects the viability of this process. Gas as a source of energy could be used by individuals for ovens, stoves and heaters for example.

**Coal fired generation**

This option was rejected because of the distance from the coal fields and because pollution is not allowed in this area.

**Nuclear**

This option could not be considered due to South Africa's nuclear policy.

**Solar**

Solar power generation will be encouraged with each individual building.

## SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i)).

### 1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

A Public Participation Process was conducted according to the National Environmental Management Act, 1998 (Act No 107 of 1998) and the new Amended Environmental Impact Assessment Regulations, December 2014 (and updated on 7 April 2017).

- Site notices were erected (23 February 2017) at prominent points on and around the study area.
- Flyers were distributed (23 February 2017) to the neighboring properties and estates/ developments that may be affected by the proposed development.
- Notices regarding the project was e-mailed and faxed to the councilors in the area and possible stakeholders in the area.
- An advertisement was placed in the Beeld newspaper on 21 February 2017.

**Please refer to Appendix E6 for the Comments and Issues report where all comments are addressed.**

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)  
(A full response must be provided in the Comments and Response Report that must be attached to this report):

**Please refer to Appendix E6 for the Comments and Issues report where all comments are addressed.**

### 2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilised in the rating of significance of impacts

#### significance Description Methodology

The significance of Environmental Impacts was assessed in accordance with the following method:

**Significance is the product of probability and severity. Probability describes the likelihood of the impact actually occurring, and is rated as follows:**

Likelihood	Description	Rating
Improbable	Low possibility of impact to occur either because of design or historic experience	2
Probable	Distinct possibility that impact will occur	3
Highly probable	Most likely that impact will occur	4
Definite	Impact will occur, in the case of adverse impacts regardless of any prevention measures	5

The severity factor is calculated from the factors given to "intensity" and "duration". Intensity and duration factors are awarded to each impact, as described below.

**The Intensity factor is awarded to each impact according to the following method:**

Intensity	Description	Rating
Low intensity	Natural and man-made functions not affected.	1
Medium intensity	Environment affected but natural and man-made functions and processes continue.	2
High intensity	Environment affected to the extent that natural or man-made functions are altered to the extent that it will temporarily or permanently cease or become dysfunctional.	4

**Duration is assessed and a factor awarded in accordance with the following:**

Duration	Description	Rating
Short term	<1 to 5 years - Factor 2	2
Medium term	5 to 15 years - Factor 3	3
Long term	Impact will only cease after the operational life of the activity, either because of natural process or by human intervention.	4
Permanent	Mitigation, either by natural process or by human intervention, will not way or in such a time span that the impact can be considered transient.	4

**The severity rating is obtained from calculating a severity factor, and comparing the severity factor to the rating in the table below. For example:**

$$\begin{aligned}
 \text{The Severity factor} &= \text{Intensity factor} \times \text{Duration factor} \\
 &= 2 \times 3 \\
 &= 6
 \end{aligned}$$

A Severity factor of six (6) equals a Severity Rating of Medium severity (Rating 3) as per table below:

Severity Factor	Severity	Rating
Calculated values 2 to 4	Low Severity	2
Calculated values 5 to 8	Medium Severity	3
Calculated values 9 to 12	High Severity	4
Calculated values 13 to 16	Very High severity	5

A Significance Rating is calculated by multiplying the Severity Rating with the Probability Rating.

Significance	Rating	Influence
Low significance	Rating 4 to 6	Positive impact and negative impacts of low significance should have no influence on the proposed development project.
Medium significance	Rating >6 to 15	Positive impact: Should weigh towards a decision to continue Negative impact: Should be mitigated to a level where the impact would be of medium significance before project can be approved.
High significance	Rating 16 and more	Positive impact: Should weigh towards a decision to continue, should be enhanced in final design. Negative impact: Should weigh towards a decision to terminate proposal, or mitigation should be performed to reduce significance to at least medium significance rating.





Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

### Proposal

Potential impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
<b>PLANNING PHASE</b>				
<b>Adverse Impacts</b>				
<b>Cultural/Historical</b>				
Low Potential for destroying potential heritage finds.	<b>Low</b>	It is not anticipated that any graves or important cultural findings will be discovered during the construction of the proposed residential development.	<b>Low</b>	The Heritage study confirmed that no cultural heritage resources are present on the site.
<b>Environmental legal compliance</b>				
No financial provision for environmental management during construction and operational phase.	<b>Moderate</b>	Developer to budget for environmental mitigation measures such as eradication of alien plants within the development site, specialist that might be required if archaeological finds are unearthed during construction, or sensitive fauna or flora is identified during construction. Developer also to budget for ECO to be part of the development team.	<b>Low</b>	Developer might omit budgeting for environmental monitoring.
<b>Ecological Sensitive areas</b>				
Destruction of ecological sensitive areas identified on site.	<b>Moderate</b>	All sensitive areas are to be denoted as No-Go areas during construction in order to avoid any pollution of the watercourse or further erosion.  This wetland area can be rehabilitated and must be left as natural areas which will contribute to the aesthetics of the approved development.	<b>Low</b>	Further degradation of the wetland area.
<b>Wetland functioning</b>				
The proposed development could potentially negatively impact on the wetland/watercourse on the site.	<b>Moderate</b>	A wetland/watercourse that runs in a westerly direction on the site must be protected and rehabilitated and good stormwater management measures should be put in place.  It is proposed that the stormwater overflow will flow on the two-meter-long reno mattress. Subsequent to the reno mattress of each stormwater outlet,	<b>Low</b>	If the speed of the stormwater is slowed down and slightly diverted (by

		indigenous wetland vegetation, boulders, and vegetated berms should be implemented to further maximise the ecological functioning of the wetland system. This system will help with dispersing the energy of the stormwater at the same time improve the water quality through the wetland vegetation filtration process.		other measures as explained) from the wetland, the wetland will be protected.
<b>Protected fauna</b>				
Potential presence of fauna species.	<b>Low</b>	Stormwater structure design should block amphibians from entering the road surface.	<b>None</b>	Design parameter might be omitted from final design drawings.
<b>CONSTRUCTION PHASE</b>				
<b>Beneficial Impacts</b>				
<b>Institutional Environment</b>				
The proposed development activity compliments proposed developments in the area i.e. the approved development on the site.	<b>High</b>	None due to positive impact.	<b>None</b>	No risk due to positive impact.
<b>Social &amp; Economic Environment</b>				
Creation of job opportunities during construction and operational phase of the project.	<b>Moderate</b>	The proposed residential development will create job opportunities during the construction phase of the project. It is recommended that local employment be sourced.	<b>None</b>	No risk due to positive impact.
<b>Fauna &amp; Flora</b>				
Eradication of invasive plant species.	<b>High</b>	Eradication of invasive plant species during the construction phase would benefit the biophysical environment. Not necessary to mitigate.	<b>None</b>	No risk due to positive impact.
<b>Adverse Impacts</b>				
<b>Services</b>				
Disruption of services to adjacent properties during connecting of newly installed services.	<b>High</b>	Neighbours are to be informed of any service disruptions, due to connecting to services at least 48 hours prior to service disruption. Service disruption should be as short as possible.	<b>Low</b>	Low risk due to communication.
<b>Protected fauna</b>				
Potential presence of fauna species.	<b>Moderate</b>	Contractors should be made aware of potential presence of fauna species. No killing or capturing of species. Presence of threatened species should be identified prior to construction activities.	<b>Low</b>	Contractors could ignore the presence

				of faunal species.
<b>Ecological Sensitive areas</b>				
Destruction of ecological sensitive areas identified on site	<b>High</b>	All sensitive areas are to be denoted as No-Go areas during construction. ECO to monitor.	<b>Low</b>	Contractors could disobey signage.
<b>Geology &amp; Soils</b>				
If not planned and managed correctly topsoil will be lost.	<b>Low</b>	<ul style="list-style-type: none"> <li>• Topsoil removed from the proposed excavations should be stored separately from all stockpiled materials and subsoil, according to the stockpiling methods as described below. The stockpiled topsoil should be used for rehabilitation and landscaping purposes after construction has been completed;</li> <li>• The construction of residential units could leave soils exposed and susceptible to erosion. Soils should be stored adjacent to the excavated trenches that are excavated to install services, and this should be filled up with the in-situ material as the services are installed. All stones and rocks bigger than 80 mm should be removed from the top layer of soil and these disturbed areas should be re-vegetated immediately after works in a specific area are completed to prevent erosion;</li> <li>• Excavations on site must be kept to minimum and done only one section at a time. Excavated soils must be stockpiled directly on the demarcated area on site.</li> </ul>	<b>Low</b>	Soil erosion could occur if mitigation is not implemented
<b>Air quality pollution</b>				
Construction during the dry and windy season could cause excessive dust pollution during construction works.	<b>Low</b>	Regular and effective damping down of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that will have a negative impact on the surrounding residents and road users. When necessary, these working areas should be damped down at least twice a day.	<b>Low</b>	If mitigation is not implemented drivers visibility could be impaired.
Nuisance to neighbours and road users in terms of dust generation due to construction during the dry and windy season.	<b>Moderate</b>	The application site must be damped at a regular basis with water to prevent dust pollution to nearby residential area and commuters utilising surrounding roads.	<b>Low</b>	If mitigation is not implemented residents could complain about nuisance dust.
The noise created by earthmoving machinery will result in an increase in	<b>Low</b>	All construction activities must be restricted to normal working hours from 6:00 in the morning to no later than 19:00 in the afternoons. No construction may take	<b>Low</b>	If mitigation is not

ambient noise levels. This will be short term, being generated only during the day.		place on Sundays and public holidays.		implemented residents could complain about nuisance noise.
<b>Habitat</b>				
Destruction of vegetation	<b>Low</b>	It is recommended that natural vegetation be retained as far as possible, if any natural areas are left. Excavations for the residential development should be done only as necessary and the footprint of disturbance should be limited.	<b>Low</b>	Low risk of total destruction of vegetation occurring on site
<b>Hydrology &amp; groundwater</b>				
Increased stormwater run-off volumes and velocity	<b>Low</b>	Due to the clearing of vegetation the volume of stormwater run-off will increase as well as the velocity. Temporary stormwater management measures should be implemented to manage stormwater during the construction phase.	<b>Low</b>	If stormwater infrastructure is inadequate, erosion could occur.
Hydrocarbon pollution of surface and ground water	<b>Moderate</b>	Temporary stormwater management measures should be implemented to manage stormwater during the construction phase.	<b>Low</b>	Run-off can pollute the water resources in the surrounding area.
Excavated materials that are stockpiled in wrong areas can interfere with the natural drainage.	<b>Low</b>	The proposed development site varies in elevation; however an area must be allocated for stockpiling of topsoil before any construction take place on the application site. The stockpiles must be situated away from any water source or drainage channel. A sediment fence or barrier must be constructed around the stockpile, to prevent soil from washing away by rain or any water.	<b>Low</b>	If mitigation is not implemented, topsoil could be lost.
Construction during the rainy season can cause delays and damage to the environment.	<b>Low</b>	It is recommended that the construction phase be scheduled for the winter months; It is also recommended that the precautionary measures be taken in order to prevent the extensive loss of soil during rainstorms. Large exposed areas should adequately be protected against erosion by matting or cladding; Measures should be implemented during the rainy season to channel stormwater away from open excavations and foundations.	<b>Low</b>	If mitigation is not implemented, erosion could occur.

<b>Roads and Traffic</b>				
Impact on provincial and national roads	<b>Moderate</b>	Considering the proposed development is in close proximity to the Rooihuiskraal Road/ M37 and the site borders the N14 highway.	<b>Low</b>	If mitigation is not implemented , GDRT/ SANRAL could object to the development
Heavy vehicle traffic increase could disrupt the surrounding landowners' daily routines.	<b>Low</b>	Heavy vehicles responsible for material deliveries must be instructed to only use the main roads during off-peak hours.	<b>Low</b>	If mitigation is not implemented , traffic flow could be negatively affected.
Provision for safe and effective traffic flow.	<b>Moderate</b>	Health and safety mitigation/precautionary measures should be implemented during the construction work with regards to any upgrades near roads with public traffic.	<b>Low</b>	If mitigation is not implemented , motorists' safety could be at risk.
Access to existing properties.	<b>Low</b>	Construction activities should cater for continued access to existing properties, if applicable.	<b>Low</b>	If mitigation is not implemented , residents could complain about accessibility to their properties.
Construction might impact traffic flow.	<b>Moderate</b>	Liaison is required with the responsible traffic authorities to ensure compliance with legal requirements during construction activities. Appropriate signage and barricading will be required to ensure safe construction activities and smooth traffic flow during the construction phase.	<b>Low</b>	If mitigation is not implemented , motorists' safety could be at risk.
<b>Safety and Security</b>				
During the construction phase safety	<b>Moderate</b>	• Construction must be completed in as short time as possible.	<b>Low</b>	If mitigation is

and security problems (especially surrounding residents) are likely to occur.		<ul style="list-style-type: none"> <li>No construction worker or relative may reside on the construction site during the construction phase. All construction workers must leave the site at the end of a day's work.</li> <li>A security guard should be appointed on site to prevent any loss of materials and damage to construction equipment.</li> </ul>		not implemented , residents and construction companies could be affected by crime.
The excavations associated with proposed residential development could pose a safety risk to pedestrians.	<b>Moderate</b>	The necessary safety precautions must be in place i.e. excavations must be fenced off with barrier tape; signage must be in place to identify excavations.	<b>Low</b>	If mitigation is not implemented , pedestrians' safety could be at risk.
Construction activities might affect the public e.g. road users	<b>Moderate</b>	Public safety is to be catered for during the construction phase.	<b>Low</b>	If mitigation is not implemented the public's safety could be at risk.
<b>Visual Impact</b>				
Dumping of builder's rubble on neighbouring properties.	<b>Low</b>	A specific location for building rubble must be allocated on site in order to concentrate and collect the building rubble and cart it to a registered landfill site. The allocated area must be out of sight of neighbouring properties not to have a visual impact.	<b>None</b>	If mitigation is not implemented , pollution could occur.
Stockpile areas for construction materials could have a negative visual impact and possibly impair drivers' views.	<b>Moderate</b>	An area on the site must be allocated for the stockpile of construction materials. The area must be situated on the construction site, and must be situated to have a minimal visual impact on the neighbouring area. Stockpiles may not be stockpiled higher than 2m in order to prevent impairing views (line of sight) of drivers utilising the surrounding roads.	<b>Low</b>	If mitigation is not implemented , vehicle accidents could occur.
The construction vehicles, the site camp, and other construction related facilities will have a negative visual impact during the construction phase.	<b>Moderate</b>	Before any construction commence on site, an area on site must be demarcated for a site camp. The selected site should not impair views (line of sight) of drivers utilising upgraded roads, nor should it be a distraction.	<b>Low</b>	If mitigation is not implemented , community complaints could occur.
<b>Cultural and Archaeology</b>				

Occurrence of cultural historical assets on the proposed development site.	<b>Low</b>	It is not anticipated that sites or features of cultural/ historical significance will be unearthed during construction; however, if finds are exposed during construction work, it should immediately be reported to an appropriately qualified specialist. Construction workers to be trained in the identification of cultural and historical finds.	<b>Low</b>	Cultural heritage finds unearthed during construction, could be destroyed
<b>Flora &amp; Fauna</b>				
Construction works might cause destruction of protected species	<b>Moderate</b>	No protected species were recorded on site, except for the two Orange List plant species. Potential Red List fauna species might utilise the study area occasionally.  The following must be applied: <ul style="list-style-type: none"> <li>• Construction personnel should be trained in identification of faunal species.</li> <li>• The contractors must ensure that no fauna species are trapped, hunted, or killed during the construction phase.</li> <li>• Should any mammal species be encountered during the construction phase, they should be relocated to natural areas in the vicinity.</li> <li>• All Orange listed species and the mentioned orchids should be relocated to the northern section of the site where no development will take place.</li> </ul>	<b>Low</b>	If mitigation is not implemented, protected species could be destroyed.
Uncontrolled fires may cause damage and loss to vegetation and fauna in the area.	<b>Low</b>	<ul style="list-style-type: none"> <li>• No fires are allowed on the construction site.</li> <li>• Smoking only allowed in designated areas away from vegetation which could possibly catch fire.</li> <li>• Cigarette disposal facilities should be catered for in the designated smoking areas.</li> </ul>	<b>Low</b>	Protected species could be destroyed.
<b>Waste Management</b>				
Site office, camp and associated waste (visual, air and soil pollution)	<b>Moderate</b>	The site camp should not be located in a highly visual area on the study area, or a screen or barrier should be erected as not have a negative impact on the sense of place. The site camp and the rest of the study area should appear neat at all times; A temporary waste storage point shall be determined and established on site by means of demarcation. This storage points shall be accessible by waste removal vehicles. The temporary storage site may not be highly visible from the properties of the surrounding residents. Waste materials should be removed from the site on a regular basis (at least weekly), to a registered landfill site.	<b>Low</b>	If mitigation is not implemented, community complaints could be received.
Disposal of construction waste and waste materials.	<b>Moderate</b>	All the waste generated by the proposed residential development construction must be temporarily stored at a preselected area on site to be carted to a registered landfill site allowed to take building rubble; Waste storage should occur in areas that have already been disturbed.	<b>Low</b>	If mitigation is not implemented, pollution

		These small waste receptacles must be emptied at the temporary waste storage area on a weekly basis for removal. All waste must be removed to a registered landfill site on a weekly basis. No waste materials may be disposed of on or adjacent to the site; The storage of solid waste on site, until such time that it may be disposed of, must be in the manner acceptable to the local authority; and Records of waste reused, recycled, and disposed must be kept for future reference or inspection by authorities.		might occur.
<b>OPERATIONAL PHASE</b>				
<b>Beneficial Impacts</b>				
<b>Social &amp; Economic Environment</b>				
Compatibility with the Local Municipality's development framework.	<b>High</b>	Optimum use of services.	<b>None</b>	No risk due to positive impact.
<b>Adverse Impacts</b>				
<b>Fauna and Flora</b>				
Invasive plant species occurrence	<b>Moderate</b>	Alien plant eradication to continue during operational phase of the project. Should any alien plant species occur in the areas where construction works and ground works took place, it should be eradicated from the area.	<b>Low</b>	If mitigation is not implemented, invasive plants could spread.
<b>Hydrology and groundwater</b>				
Increased stormwater run-off volumes and velocity	<b>Low</b>	Due to the impermeable surfaces (specifically the roads and bridge) the volume of stormwater run-off will increase as well as velocity. Stormwater will have to be effectively channelled and stormwater infrastructure will have to be maintained.	<b>Low</b>	If mitigation is not implemented, erosion could occur.

**No-Go Alternative**

Potential impacts	Significance rating of impacts	Proposed mitigation	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
The no-go alternative will result in no development taking place within the area. No positive impacts are foreseen for the no-go alternative, as it would result in the application site remaining in its current state. The present state of the study site is associated with vacant land open to dumping. With the study area not being developed, the illegal dumping of rubble and waste will continue. This poses a risk of water pollution as well as soil pollution. It may also result in vagrants occupying the site and possible illegal informal settlements which can also encourage criminal activities in the area.				



The social and economic benefits associated with the potential development will not be realized if the development does not go ahead. There will be no job opportunities for the local community during the short and long term. From an ecological point of view, it is also crucial that the development takes place on the site in order to implement stormwater management measures and possibly rehabilitate the water course. Without any development the watercourse will continue being polluted and erode even further.

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Geotechnical Investigation  
 Wetland Study  
 Fauna and Flora study  
 Civil Engineering Services Report

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

There are no known gaps in this assessment.

### 3. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

#### Proposal

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
<b>Geology &amp; Soils</b>				
Soil erosion, siltation, and gully formation.	<b>Low</b>	Compaction of fill material following construction should take place. Topsoil stockpiled should be returned and used for rehabilitation of disturbed areas.	<b>Low</b>	If no mitigation measures are implemented, erosion of fill material could occur.
Loss of topsoil due to poor rehabilitation.	<b>Low</b>	Rehabilitation works must be done immediately after the involved works in an area is completed in order to prevent loss of topsoil and possible erosion.	<b>Low</b>	If no mitigation measures are implemented, loss of topsoil could occur.
<b>Hydrology &amp; Groundwater</b>				
Impacting wetland and functionality	<b>Moderate</b>	Decommissioning activities within 500m from a wetland poses potential for water pollution.	<b>Low</b>	If no mitigation measures are implemented,

groundwater				wetland could be negatively impacted.
Not reinstating natural run-off/drainage following completion of the decommissioning phase.	<b>Low</b>	Due to construction/decommissioning activities such as excavations and stockpiling, the natural drainage of the area will temporarily be changed. Following completion of the decommissioning phase and completion of rehabilitation, natural drainage should be reinstated to its former (prior to construction) state.	<b>Low</b>	If no mitigation measures are implemented, natural run-off could be negatively altered.
Demolition works during the rainy season can cause unnecessary delays and damage to the environment, especially damage to existing roads in the area.	<b>Low</b>	Should decommissioning take place in the wetter months, frequent rain could cause very wet conditions, which makes it extremely difficult to do the necessary rehabilitation works of disturbed areas. Wet soils are vulnerable to compaction. Wet conditions often causes delays and the draining of water away from the works (in the case of high water tables) into the water bodies of the adjacent properties, could (if not planned and managed correctly) have an impact on the water quality of these water bodies. Rehabilitation should be planned to take place prior to the onset on the rainy season i.e. prior to spring, if possible.	<b>Low</b>	If no mitigation measures are implemented, the environment could be damaged.
<b>Safety &amp; Security</b>				
Decommissioning activities could cause danger to drivers and pedestrians.	<b>Moderate</b>	The necessary safety precautions must remain in place until decommissioning phase is concluded i.e. signage must be in place to identify activities in progress.	<b>Low</b>	If no mitigation measures are implemented, erosion of fill material could occur.
<b>Waste Management</b>				
Site office, camp and associated waste (visual, air and soil pollution)	<b>Moderate</b>	Temporary site camp and waste storage areas are to be decommissioned. Disturbed areas are to be rehabilitated and returned to its former state (prior to construction commencing).	<b>Low</b>	If no mitigation measures are implemented, sense of place will be negatively affected.
Disposal of builders waste and waste materials.	<b>Moderate</b>	All waste generated during the decommissioning phase of the project is to be collected and disposed of at a registered landfill site. Records must be kept of waste reused, recycled, and disposed for inspection by authorities.	<b>Low</b>	If no mitigation measures are implemented, the environment will be polluted.
<b>Roads &amp; Traffic</b>				
Heavy vehicle traffic increase could disrupt the surrounding landowners' daily routines.	<b>Low</b>	Heavy vehicles responsible for collecting waste or rehabilitation during the decommissioning phase must be instructed to only use the main roads during off-peak hours.	<b>Low</b>	If no mitigation measures are implemented, residents might complain.
Restrictions of access to surrounding properties and the construction area during decommissioning and closure phases.	<b>Low</b>	To minimize the impacts on local traffic, vehicles associated with decommissioning should avoid using the local road network during peak traffic times. These vehicles should use only specific roads and strictly keep within the speed limits and abide to all traffic laws. No speeding or reckless driving	<b>Low</b>	If no mitigation measures are implemented, residents might complain.

		should be allowed. Access to the site for decommissioning vehicles should be planned to minimize the impact on the surrounding network; and Warning signs should be erected on the roads that these vehicles will use, at big crossings/ access roads and on the site if needed.		
Damage to roads.	<b>Low</b>	Provisions made for temporary access to and from the construction/ decommissioning site along local roads should be removed. Any damage to the local road curbs at access points to construction site caused by construction activities should be repaired.	<b>None</b>	If no mitigation measures are implemented, road could be damaged without being repaired.
Access to adjacent properties	<b>Low</b>	Existing accesses to properties should be restored to former state prior to construction having commenced, in order to prevent complaints.	<b>None</b>	Adjacent properties might not be accessible.
<b>Air quality and noise</b>				
Demolition works during the dry and windy season.	<b>Low</b>	Regular and effective damping down of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that will have a negative impact on the surrounding environment. When necessary, these working areas should be damped down at least twice daily.	<b>Low</b>	If no mitigation measures are implemented, dust pollution could occur.
The noise created by decommissioning activities will result in an increase in ambient noise levels. This will be short term, being generated only during the day.	<b>Low</b>	All decommissioning and closure activities must be restricted to normal working hours from 6:00 in the morning to no later than 19:00 in the afternoons. No construction/ decommissioning may take place on Sundays and public holidays.	<b>Low</b>	If no mitigation measures are implemented, noise pollution could occur.
<b>Visual Impact</b>				
Dumping of builder's rubble on neighbouring properties.	<b>Moderate</b>	All waste temporarily stored on the construction site during the operational phase has to be removed from the site during the decommissioning phase and prior to the project being regarded as closed.	<b>Low</b>	If no mitigation measures are implemented, pollution could occur resulting in community complaints.
<b>Flora</b>				
Not immediately rehabilitating disturbed areas resulting in spread of invasive plants and weeds.	<b>Moderate</b>	Disturbed areas to be rehabilitated as soon as construction has concluded in order to prevent the spread of invasive plants and weeds.	<b>Low</b>	If mitigation measures is not implemented, invasive species might thrive.
No rehabilitation with indigenous plant species resulting in spread of aliens.	<b>Moderate</b>	All landscaping should use indigenous plants only, with preference given to endemic plant species where possible.	<b>Low</b>	If mitigation measures is not implemented, invasive species might thrive.

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Geotechnical Investigation  
Wetland Study  
Fauna and Flora study  
Civil Engineering Services Report

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

Not applicable.

#### 4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

Should the proposed residential development be approved, the majority of cumulative impacts will be related to the construction phase. Residential developments within an urban residential area have very low environmental impacts during its operational phase.

- Traffic flow could be negatively affected by the proposed construction activities coupled with peak traffic hours. It is thus important that use of access roads be limited to off-peak hours. Traffic flow could be altered when the development is operational due to the additional residents.
- Cumulative negative visual impact on surrounding views due to the camp site, movement of construction vehicles, building rubble storage, and construction works etc. This impact may be minimized by locating the site camp and rubble storage area in an area with low visibility from surrounding developments and road networks.
- Background dust pollution caused by traffic could be aggravated by clearing of vegetated areas. Dust control can be applied by means of water trucks (grey water during water restriction periods), particularly in the dry winter months.
- During the construction phase some safety problems (especially for the surrounding residents and road users) are likely to occur due to construction activities. In order to minimize this, site workers are not to be allowed to sleep on the construction site at night and provision for adequate security/ site supervision must be made during the day.
- Potential cumulative impact on the wetland system situated on the proposed development site. Poor stockpiling could lead to topsoil stockpiles washing away and silting up the wetland or stormwater infrastructure. Increased stormwater run-off due to cleared areas, could lead to erosion and siltation of the wetland.

As illustrated, these cumulative impacts can be mitigated if activities are correctly planned and mitigation measures are implemented to manage activities which could cause any negative cumulative impacts.

#### 5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

**Proposal**

**The major impacts that is likely to occur during the construction and operational phase, after management, include:**

**SOCIAL ENVIRONMENT**

- Construction activities (campsite, rubble storage areas etc.) will be placed out of site from local residents and traffic as far as possible, but might be temporarily visually unpleasant.
- Surrounding residents might experience intervals of service disruptions. This will be mitigated as far as possible by avoiding this otherwise notifying the residents.
- Considering that cleared areas will be dampened it is not foreseen that air pollution will be a concern to residents and road users on the N14 highway and in the surrounding area.

**ECONOMIC ENVIRONMENT**

- The approved development will contribute to the economy of the area. The development of the residential area will create jobs for skilled and unskilled workers during the construction phase. Maintenance and management of the residential area will create job opportunities during the operational phase as well.

**NATURAL ENVIRONMENT**

- The study area is extremely disturbed and transformed by human activities and it is therefore not expected that the natural environment will be severely impacted upon.
- Temporary stormwater management measures will be installed in order to reduce run-off and potential sedimentation in areas down slope from the study area.
- Functionality of the wetland on the development site will not be affected by the construction activities considering stockpiling methods and construction during dry periods, which will prevent loss of topsoil. Temporary stormwater management measures will be installed in order to reduce run-off and potential sedimentation towards the wetland.

**Alternative 1**

The impacts will be similar to that of the proposed Alternative 1 except for the following:

The layout of Alternative 2 encroaches slightly in to the buffer zone of the wetland. From a planning and development feasibility point of view, it is more practical to limit development to one side of the proposed access road and have larger properties than to break it up in smaller development pieces.

The proposed layout does not influence the 100yr and 50 year floodlines and the wetland in its current state is severely degraded. The portion of development encroaching into the wetland is compensated for the north of the development and to the north of the access road where no construction will take place.

However the impact of this alternative 2 on the wetland area will be bigger than the proposal as the layout of alternative 2 clearly indicates development encroaching into the 15 meter buffer area of the wetland. Therefore it is suggested from an environmental perspective that this alternative should not be considered favourable.

#### **Alternative 2**

Not applicable

#### **No-go (compulsory)**

The no-go alternative will result in no residential development. No positive impacts are foreseen for the no-go alternative, as it would result in the application site remaining in its current state. The present state of the study site is associated with illegal dumping and a degrading natural environment. This poses a great threat to the soil and groundwater. It will also be a social impact in terms of visibility and air quality (smell) and safety. It may also result in vagrants occupying the site and possible illegal informal settlement which can also encourage criminal activities in the area.

The ecological environment will be deprived from any positive impacts should no development be approved. The watercourse is greatly disturbed and eroded and the number of alien and invasive plant species on the site is not beneficial to the ecological environment.

A residential development will fit in with the surrounding area and eliminate illegal dumping, therefore avoid pollution of the natural area. The social and economic benefits associated with the potential development (approved) will not be realized if the residential development cannot go ahead.

## **6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE**

For proposal:

When considering the impacts of the site it is important to look at the ecological, institutional, economical and social impacts that the proposed development could have on the site. To follow is a short summary in bullet format of each entity as mentioned.

#### **Bio-Physical**

- Should the management measures in the Environmental Management

Programme (EMPr) (stockpiling, stormwater management etc.) be followed it is not anticipated that the residential development will have any negative effect on the bio-physical environment. It is further recommended that prior to construction commencement, a waste management company should be appointed to clean up the site from the illegal dumping activities that took place on the site.

### **Ecological**

- No Red Listed flora or fauna species are expected to occur on the site.
- The disturbed areas towards the east and north-west of the study site should be rehabilitated, and all the Orange Listed species and the mentioned orchids on the study area should be relocated to the northern section of the site where no development is to take place.
- Eradication of alien vegetation would improve conservation of indigenous flora species.
- Rehabilitation of natural vegetation should proceed in accordance with a rehabilitation plan compiled by a registered specialist in terms of the Natural Scientific Professions Act (No. 27 of 2003).
- Stormwater management

### **Institutional**

- The proposed residential development will result in the optimum utilisation of services of the surrounding urban area.
- The proposed residential development mainly occurs within Zone 1 of the GPEMF i.e. identified as Urban Development Zone with a section occurring in Zone 2.

### **Economical**

- The construction and operational phase of the residential development will create needed employment opportunities to several skilled, semi-skilled, and un-skilled individuals.
- There will be rates and taxes payable to the local municipality.

### **Social**

- The development will create employment opportunities during the construction and operational phase.
- The developer will have to notify surrounding residents in the case of service disruptions.

Based on the above mentioned (Bio-physical, Ecological, Institutional, Economical and Social) characteristics it is evident that the site is suitable for



the proposed residential development.

Numerous job opportunities will be created during the construction and the operational phase of the development which will be beneficial for the Gauteng Province, the local authority as well as the community.

The information provided all through-out the report mainly states that most of the construction related activities could be mitigated efficiently or to acceptable levels and therefore only limited ecological impacts are anticipated. During the construction phase, as with any other development, the proposed residential development will in majority have an impact during the construction phase as it is already in an urban residential area and therefore it is expected that the operational phase impacts will be limited.

In terms of the above mentioned information, we are of the opinion that the proposed residential development (only if planned, implemented and managed correctly) will promote sustainable development and it will have a significant positive impact on the local area.

It is therefore requested that the development be allowed to proceed, and that the implementation of the Environmental Management Programme (**Appendix H**) be a condition of such an approval.

For alternative:

**Kindly note that only the preferred alternative (Residential 3) is considered as explained on page 42 – 43.**

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

This application for the proposed development has been in circulation for a number of years. During the years many challenges, trial and errors were faced along the way. At this advanced stage with this application the developer and the project team are relatively confident with the selected layout of the proposed development. Due to many challenges on the site (Eskom overhead power lines to the north of the site; a wetland/ watercourse area mainly in the centre of the study area; a bridge crossing the wetland/ watercourse etc.) and numerous meetings between the competent authority; council (CoT); stakeholders and the professional team, the selected layout plan was identified as the best suitable layout to compliment the site and incorporate all the natural and man-made factors on the site.

The site in its current status is severely degraded due to historic and on-going illegal human activities in the form of using it as an illegal dumping site and even at one stage animal carcasses were found present. The dumping, rubble, illegal vagrants etc. on the site only impact more negatively to the already disturbed nature of the site. People are utilizing the land over weekends for recreational activities in the form of riding on their quad bikes etc.. These activities as a result cause a lot of damage and only add to removal of vegetation as well as creating siltation in the wetland/ watercourse area only to mention a few. The watercourse/ wetland area are also not controlled or protected and according to the wetland specialist, he rather suggested a rehabilitation plan for the already degraded wetland as well as practical proper stormwater measures than enforcing a strict wetland buffer around the wetland/ watercourse. He also stresses the fact that the stormwater diverted onto the proposed site should be strictly addressed in a proper way. He is of the opinion that should this matter be successfully addressed and implemented, the wetland area can actually function in a proper way.

Once again as mentioned many times in the report the stormwater are one of the most important matters on this study area. If the stormwater of this site is sufficiently addressed and if the mitigation measures are strictly adhered to, the proposed site can actually be rehabilitated in order to ensure a cleaner healthier well maintained wetland/ watercourse. The design of the development is also created in such a manner that the development will face the wetland/ watercourse area. This actually ensures that the wetland/ watercourse area will be rehabilitated and thereafter maintained in such a way to be aesthetically pleasing to the residents. It is also expected with the rehabilitation plan that the wetland/ watercourse area will furthermore attract bird and other faunal species which in fact will actually create a well-balanced development where nature and human activities are combined in such a way to be pleasing to both.

Therefore from an environmental point of view, also taking into consideration, all other characteristics (bio-physical, institutional, social and economical) should all the recommendations be adhered to and followed we cannot see why this application should not continue. We are also of the opinion that this proposed residential development is completely in line with other similar developments in the vicinity of the study area (for example the development by Cosmopolitan further to the west of the site which received authorization and rights to construct on both sides of the watercourse area).

It can actually be stated that the proposed residential development, should it

be approved, will be more beneficial to the environment as well as the neighbouring developments than leaving it in its current status. As explained, by developing this portion of land it will ensure a safe, secure and well maintained development that will as a matter of fact rehabilitate the study site as well as the watercourse/ wetland area. Therefore from our viewpoint we fully support the proposed residential development.

**7. SPATIAL DEVELOPMENT TOOLS**

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

Spatial data was used to determine the agricultural potential, presence of rivers and wetlands and urban edge. Together with the Gauteng Conservation Plan (c-plan) data, the presence of ecological support areas and protected areas were also established.

**8. RECOMMENDATION OF THE PRACTITIONER**

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).

<b>YES</b>	NO
<b>X</b>	

If “NO”, indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):


If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

Bokamoso is of the opinion that both beneficial and adverse impacts were thoroughly assessed, and the needs and benefits for this project have been assessed so as to give the proposed residential development the go-ahead. As a result, Bokamoso is of the opinion that the proposed residential area will have a significant long-term socio-economic beneficial impact on the subject property. Considering all the above mentioned information it is requested that this Basic Assessment be approved subject to the implementation of the mitigation measures contained in the Environmental Management Programme (**Appendix H**) and the other mitigation measures and recommendations mentioned below to achieve maximum advantage from beneficial impacts, and sufficient mitigation of adverse impacts. Should all the recommendations be adhered to it is foreseen that there would be no reason for this application not to be approved.

It is recommended that, based on the findings of the Basic Assessment Report and supplemental specialist information that:

- It is recommended that a rehabilitation plan for the site and watercourse/ wetland area be conducted, implemented and adhered to;
- The stormwater mitigation measures as suggested in the report should be made a condition of the environmental authorization in order to ensure proper functioning of the watercourse/ wetland as well as to allow the development to operate successfully;
- All recommendation made by the Geotechnical study should be adhered to;
- The recommendations made in the noise impact study should be adhered to and made a recommendation of the environmental authorization;
- All recommendation of the traffic impact study should be adhered to;
- The recommendation from the fauna, flora and wetland report should be strictly adhered to and it is suggested to be made a condition of the environmental authorization;
- Should the proposed residential development obtain the necessary environmental authorization, the Environmental Management Programme (EMPr) must be implemented for the construction and operational phases of the development. The EMPr, as attached to this document, should be made part of the contractual documents of the contractors;
- Mitigation measures, as set out in the EMPr, must be implemented during the construction and operational phases;
- External environmental monitoring must be conducted to ensure overall compliance with legislative requirements and the EMPr;
- If during construction any evidence of archaeological sites or artefacts, paleontological fossils, graves or other heritage resources are found, the operations must be stopped and a qualified archaeologist or SAHRA must be contacted immediately for an assessment of the find;
- The safety and security of the people in the surrounding area are important and must be taken into careful consideration during the construction phase;
- Local people are to be given employment preference.

**9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT** (as per notice 792 of 2012, or the updated version of this guideline)

The need and desirability for the proposed residential development was

created by having a vacant piece of land situated in a perfect position where it is surrounded by similar developments and has easy access to the site and are in close proximity to major traffic routes. The proposed development is compatible with the surrounding area and a demand was identified for such developments in the market. Due to all the developments in the area all the necessary engineering services are present and available for the proposed development. This proposed residential development will furthermore add to the advantages of infill developments as opposed to urban sprawl.

Medium to high density residential developments have become a trend in South Africa in order to accommodate the growing population. The demand for higher density developments can be substantiated by the benefits that come with densification. Higher density developments promote a sustainable city in the long term because they make optimal use of limited resources such as land and existing infrastructure and services. In addition, densification within close proximity to economic centres, social amenities and educational institutions promotes access to job opportunities and ensures the social well-being of the population.

**10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED**  
*(CONSIDER WHEN THE ACTIVITY IS EXPECTED TO BE CONCLUDED)*

**10 years**

**11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)** (must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers “Yes” to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached

**YES**  
**X**

## SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other

- Appendix li: Company Profile and CV
- Appendix lii: Enlarged figures
- Appendix liii: Application Form
- Appendix liv: Departmental Correspondence

### CHECKLIST

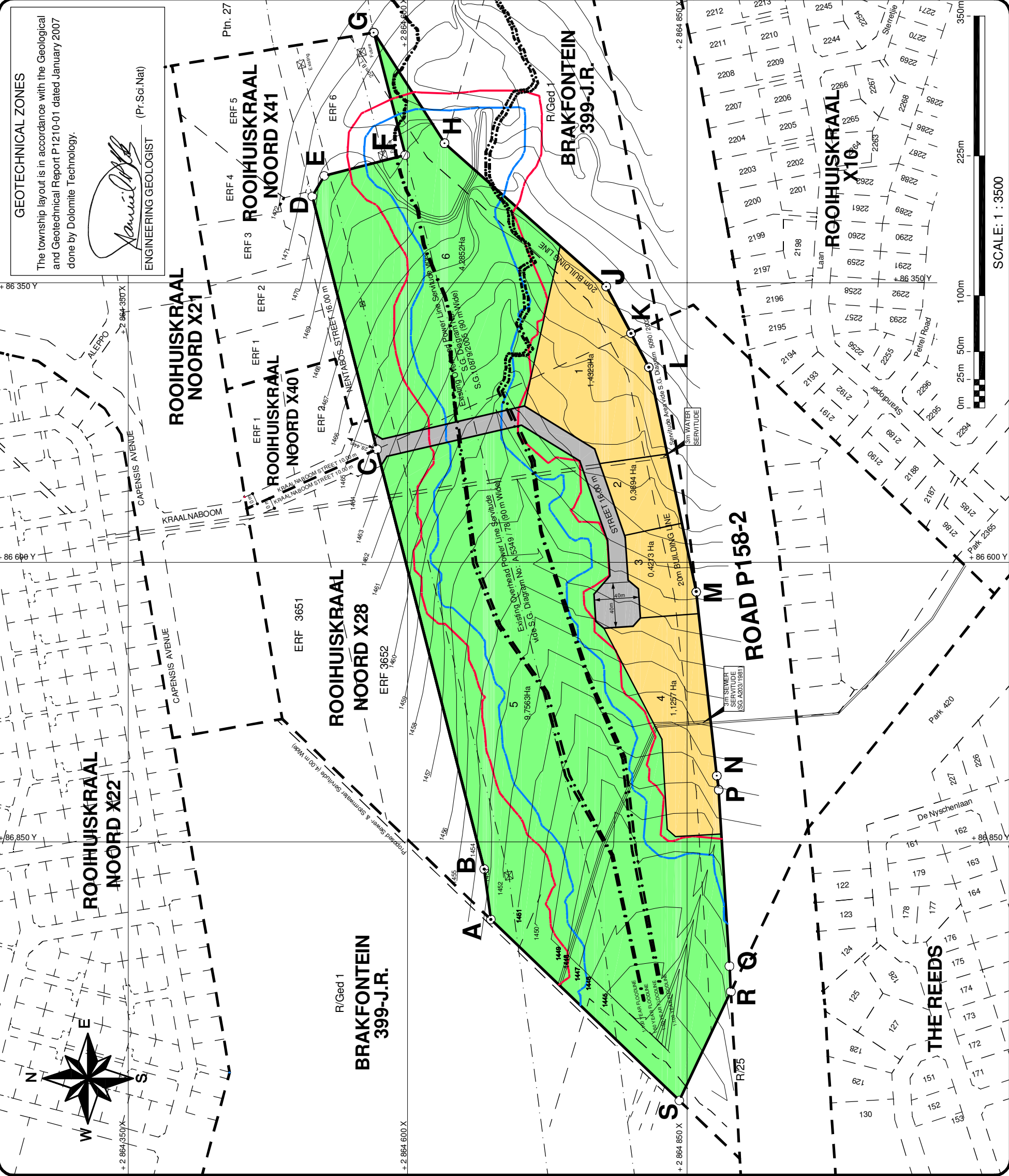
To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.



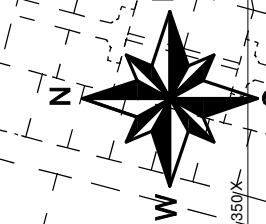
# Appendix A

Site Plan(s)



**GEOTECHNICAL ZONES**  
 The township layout is in accordance with the Geological and Geotechnical Report P1210-01 dated January 2007 done by Dolomite Technology.

*Samuel M. M. (Pr.Sci.Nat)*  
**ENGINEERING GEOLOGIST**



**PROPOSED TOWNSHIP**  
**ROOIHUISKRAAL**  
**NOORD EXT.29**

SITUATED ON PART OF RE OF PTN.9 AND A PART OF PORTION 145 OF THE FARM BRAKFONTEIN 399-JR

USES	ERF NO.	AMOUNT	AREA (m <sup>2</sup> )	%
RESIDENTIAL 3	ERVEN 1-4	4	33487m <sup>2</sup>	18,58%
PRIVATE OPEN SPACE	ERVEN 5-6	2	140415m <sup>2</sup>	77,92%
STREET		6	6298m <sup>2</sup>	3,49%
<b>TOTAL</b>		<b>6</b>	<b>180200m<sup>2</sup></b>	<b>100%</b>

Min. Gradient of Streets: 1 : 45  
 Max. Gradient of Streets: 1 : 17  
 Total length of Streets: 350m

Date: Last Amendment: NOVEMBER 2014

**NOTES:**  
 1.) The figure A to S, A denotes the township boundary.  
 2.) All measurements are approximate.  
 3.) The figure denotes a wetland.  
 4.) The line represents the wetland buffer.

**FLOOD LINE:**  
 In terms of the Regulations of Article 144 (Act 36 of 1998), is hereby stated that this township is affected by a floodline with an expected frequency of one every 50 years and one every 100 years in the public stream.

PR. ING. *Steenkamp* ..... 9.7.2022

**CONTOURS:**  
 The contours on this plan are in accordance with Regulation 18 (1)(a)(1) of the Townplanning- and Townships Ordinance, Ord. 15 of 1986. The contours on this plan were obtained from Jack Marczak.

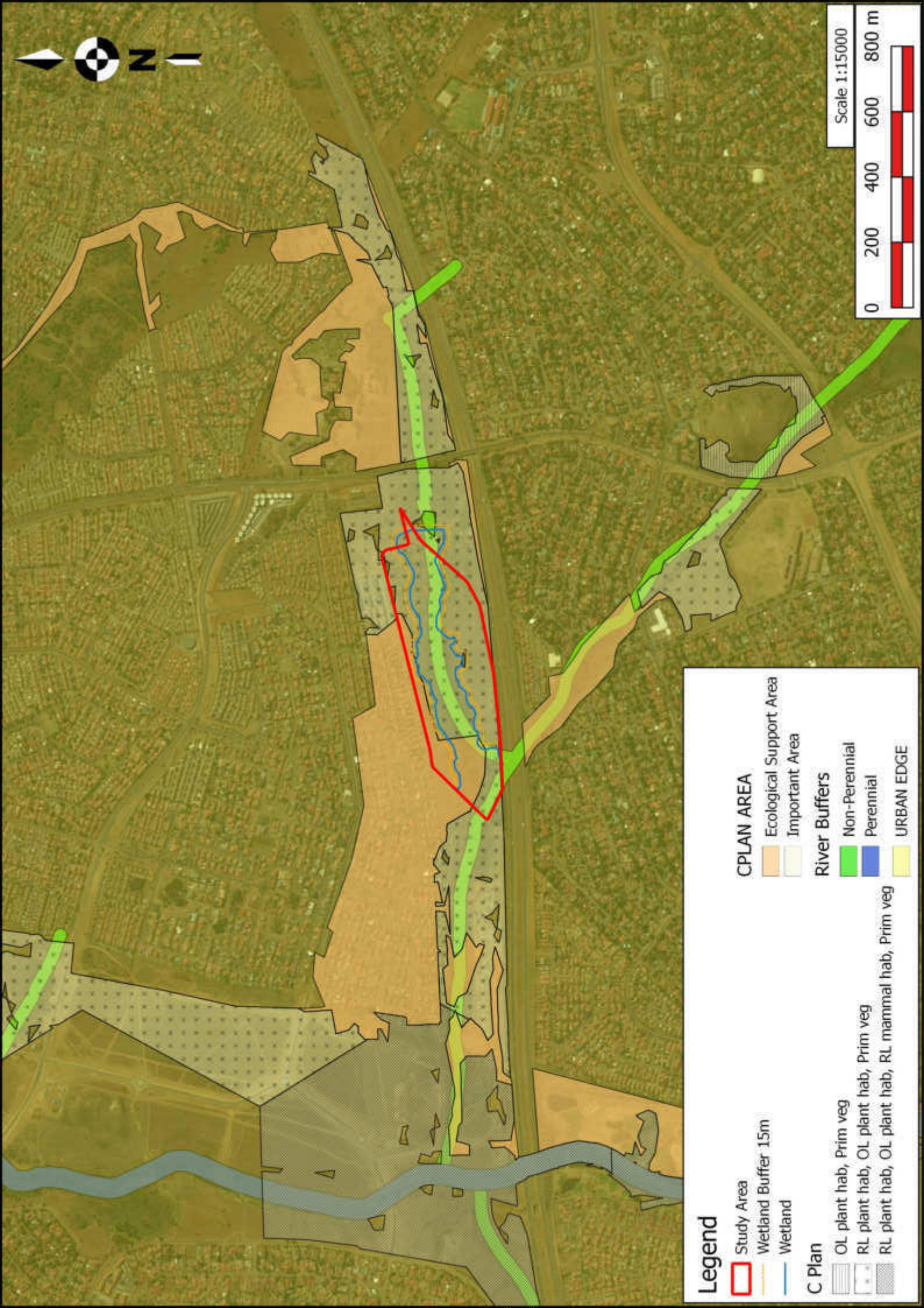
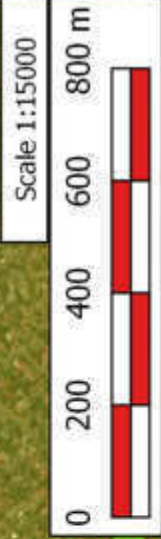
LOCAL AUTHORITY'S NUMBER: RHKNX29/05  
 PLAN NUMBER: D1212 / 10  
 LOCAL AUTHORITY: CITY OF TSHWANE

**PLANDEV**  
 Stads- en Streekbeplanners  
 Town- and Regional Planners

Highveld CENTURION  
 7710, Centurion, 0046  
 Tel: (012) 665-2330/12  
 Fax: (012) 665-2333  
 e-mail: plandev@safrica.com

SCALE: 1 : 3500      DATE: NOVEMBER 2014





### Legend

- Study Area
- Wetland Buffer 15m
- Wetland

### C Plan

- OL plant hab, Prim veg
- RL plant hab, OL plant hab, Prim veg
- RL plant hab, OL plant hab, RL mammal hab, Prim veg

### CPLAN AREA

- Ecological Support Area
- Important Area

### River Buffers

- Non-Perennial
- Perennial
- URBAN EDGE

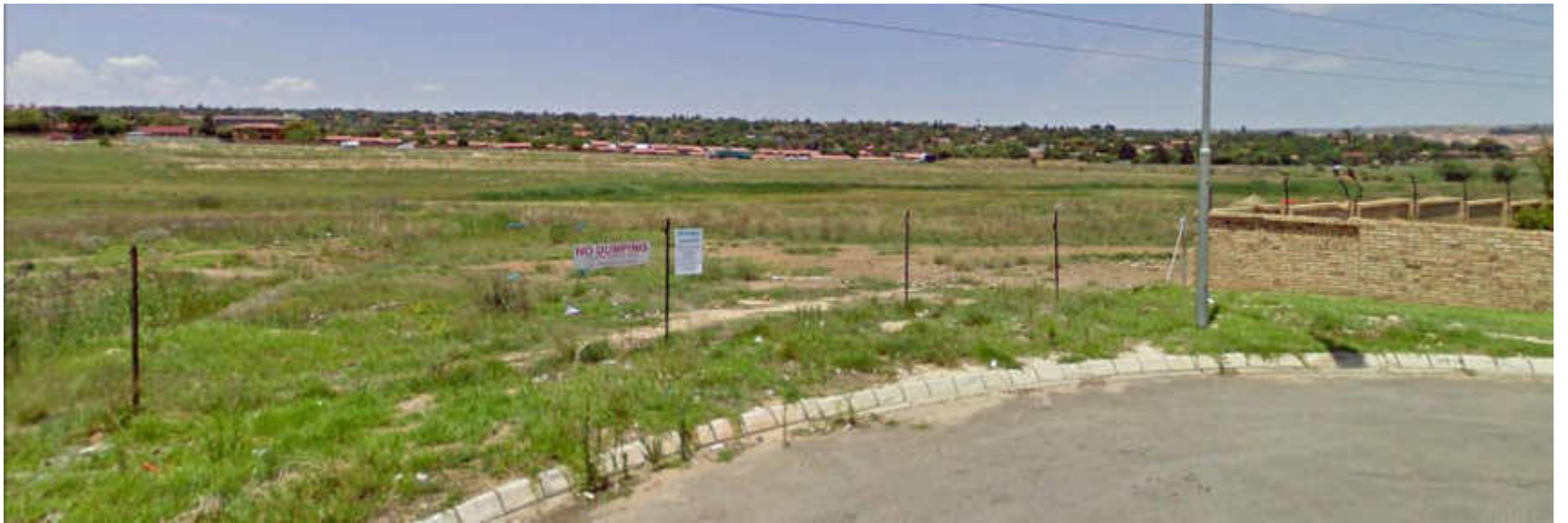


# Appendix B

## Photographs



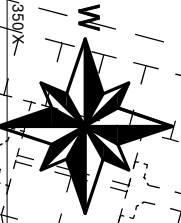






# Appendix C

Facility illustration(s)



ROOIHUISKRAAL  
NOORD X22

**GEOTECHNICAL ZONES**

The township layout is in accordance with the Geological and Geotechnical Report P1210-01 dated January 2007 done by Dolomite Technology.

*Naamie Pieterse*  
ENGINEERING GEOLOGIST (Pr. Sci. Nat.)

ROOIHUISKRAAL  
NOORD X21

ROOIHUISKRAAL  
NOORD X41

ROOIHUISKRAAL  
NOORD X40 I

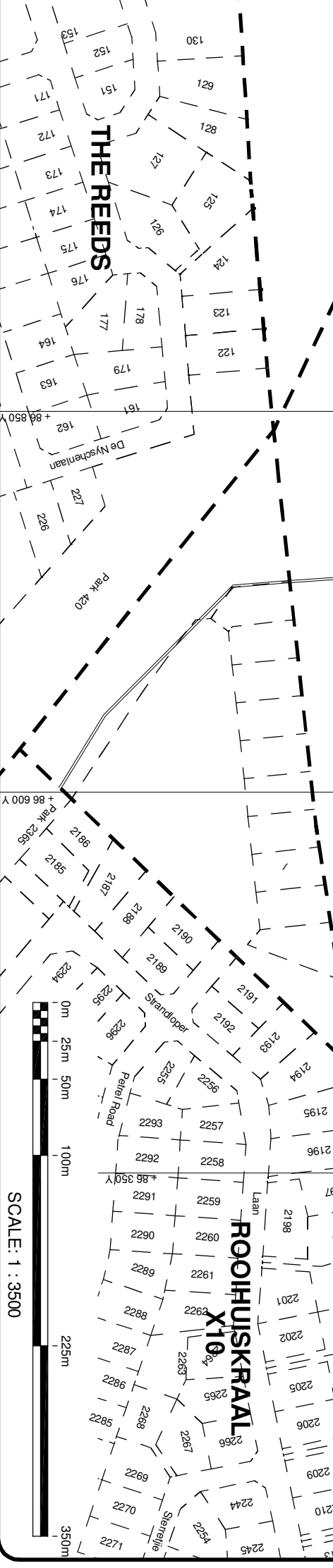
ROOIHUISKRAAL  
NOORD X28

BRAKFONTEIN  
399-J.R.

BRAKFONTEIN  
399-J.R.

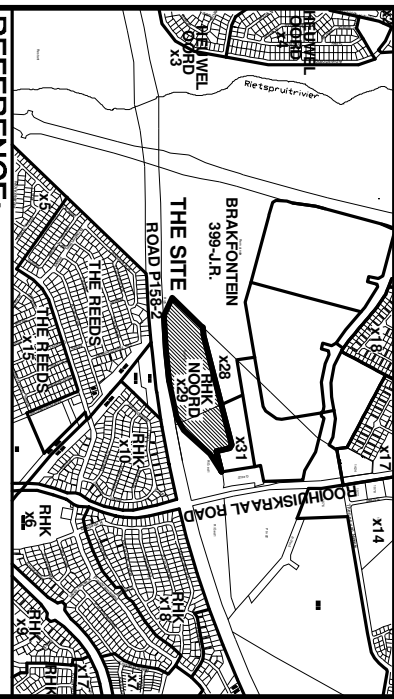
ROAD P158-2

THE REEDS



**PROPOSED TOWNSHIP  
ROOIHUISKRAAL  
NOORD EXT.29**

SITUATED ON PART OF RE OF PTN.9 AND A PART OF PORTION 145 OF THE FARM BRAKFONTEIN 399-JR



**REFERENCE:**

USES	ERF NO.	AMOUNT	AREA (m <sup>2</sup> )	%
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 Max. Gradient of Streets: 1 : 17  
 Total length of Streets: 350m  
 Date: Last Amendment: NOVEMBER 2014

**NOTES:**

- 1.) The figure A to S, A denotes the township boundary.
- 2.) All measurements are approximate.
- 3.) The figure denotes a wetland.
- 4.) The line represents the wetland buffer.

**FLOOD LINE:**

In terms of the Regulations of Article 144 (Act 36 of 1996), is hereby stated that this Township is affected by a floodline with an expected frequency of once every 50 years and one every 100 years in the public stream.

PR. ING. *Jack Marczak*  
9-7-2012

**CONTOURS:**

The contours on this plan are in accordance with Regulation 18 (1)(a)(1) of the Townplanning- and Townships Ordinance, Ord. 15 of 1986. The contours on this plan were obtained from Jack Marczak.

LOCAL AUTHORITY'S NUMBER: RHKNX29/05

PLAN NUMBER: D1212 / 10

LOCAL AUTHORITY: CITY OF TSHWANE

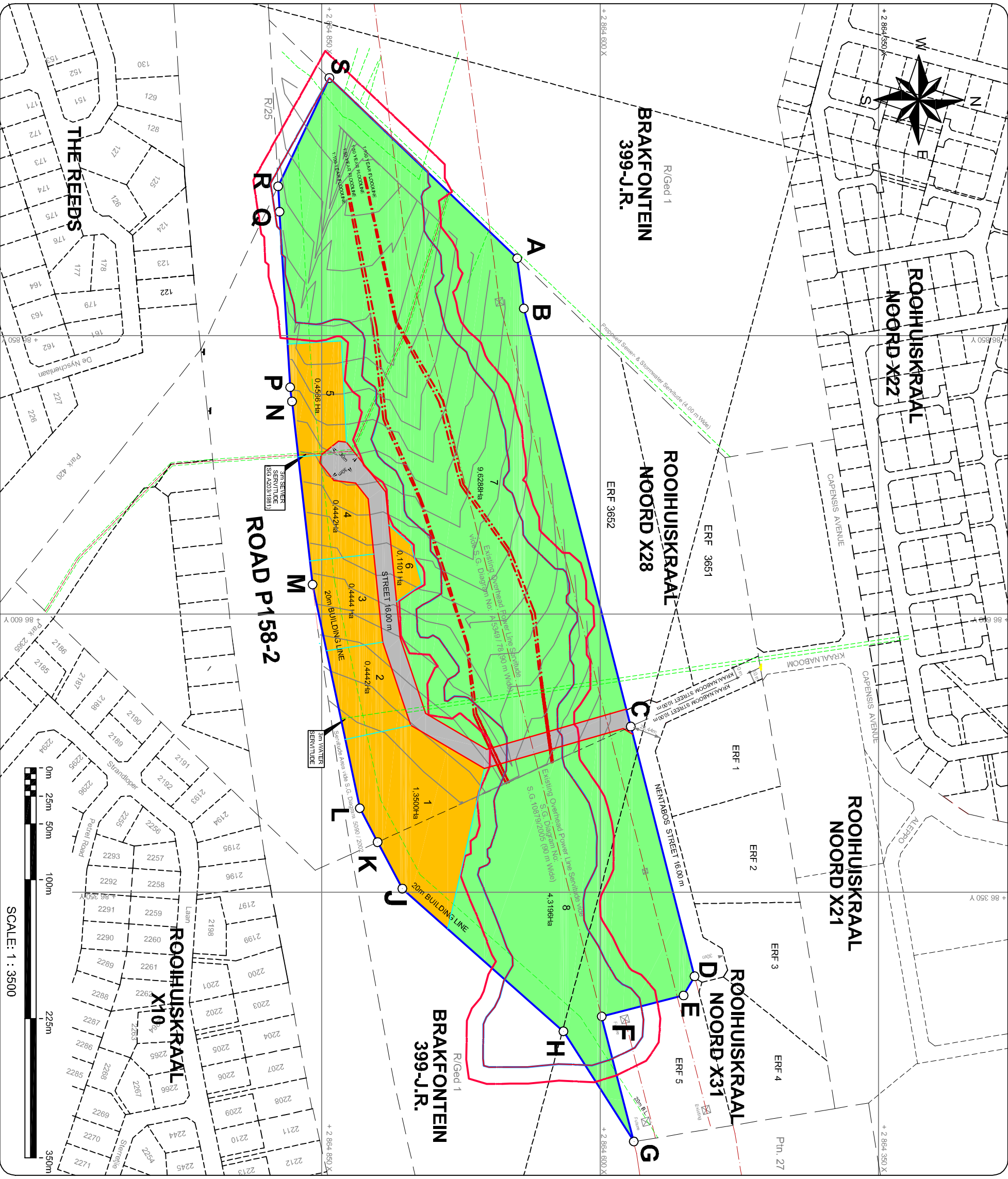
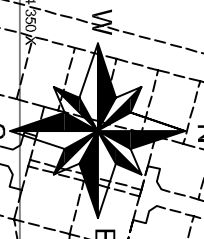
**PLANDEV**

Plander House  
 Highveld Office Park  
 Charities de Gaullie Crescent  
 Hillview  
 CENTURION  
 7710, Centurion, 0046  
 Tel: (012) 665-2330/12  
 Fax: (012) 665-2333  
 e-mail: planderdev@afrika.com



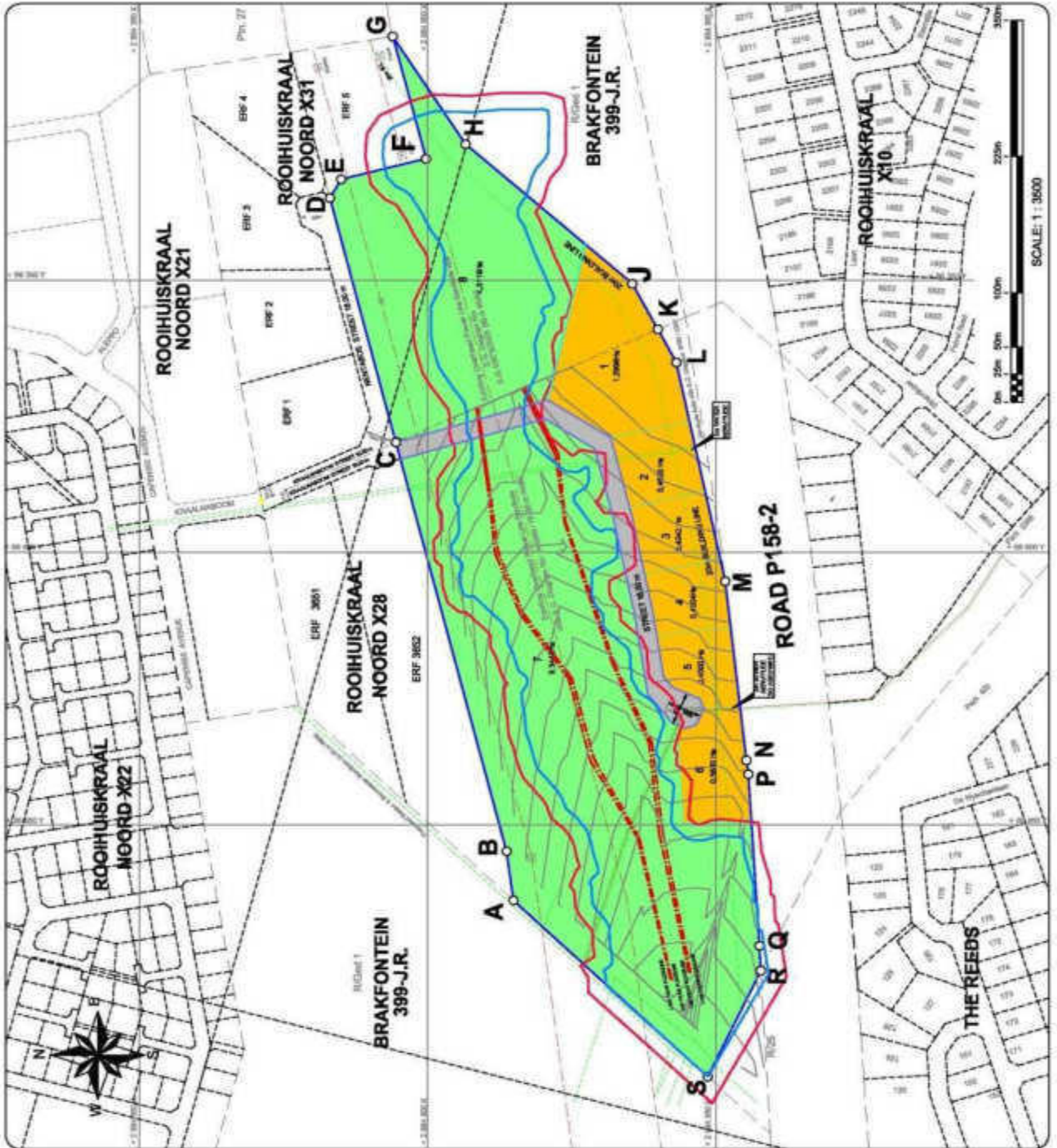
SCALE: 1 : 3500

DATE: NOVEMBER 2014



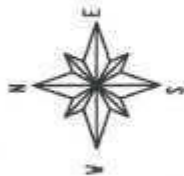


# Alternative 2A Layout Plan



# DEVELOPMENT PROPOSAL

## ROOIHUISKRAAL NOORD EXTENSIONS 28, 29 AND 31



LOCAL AUTHORITY: CITY OF TSHWANE

OUR REFERENCE NUMBER: D1272DEV/10/N

PlanDev House  
Highveld Office Park  
Charles de Gaulle Crescent  
Highveld  
CENTURION  
253 7710, Centurion 0048  
Tel: (012) 665-2300/1/2  
Fax: (012) 655-2033  
e-mail: plandev@plandev.com

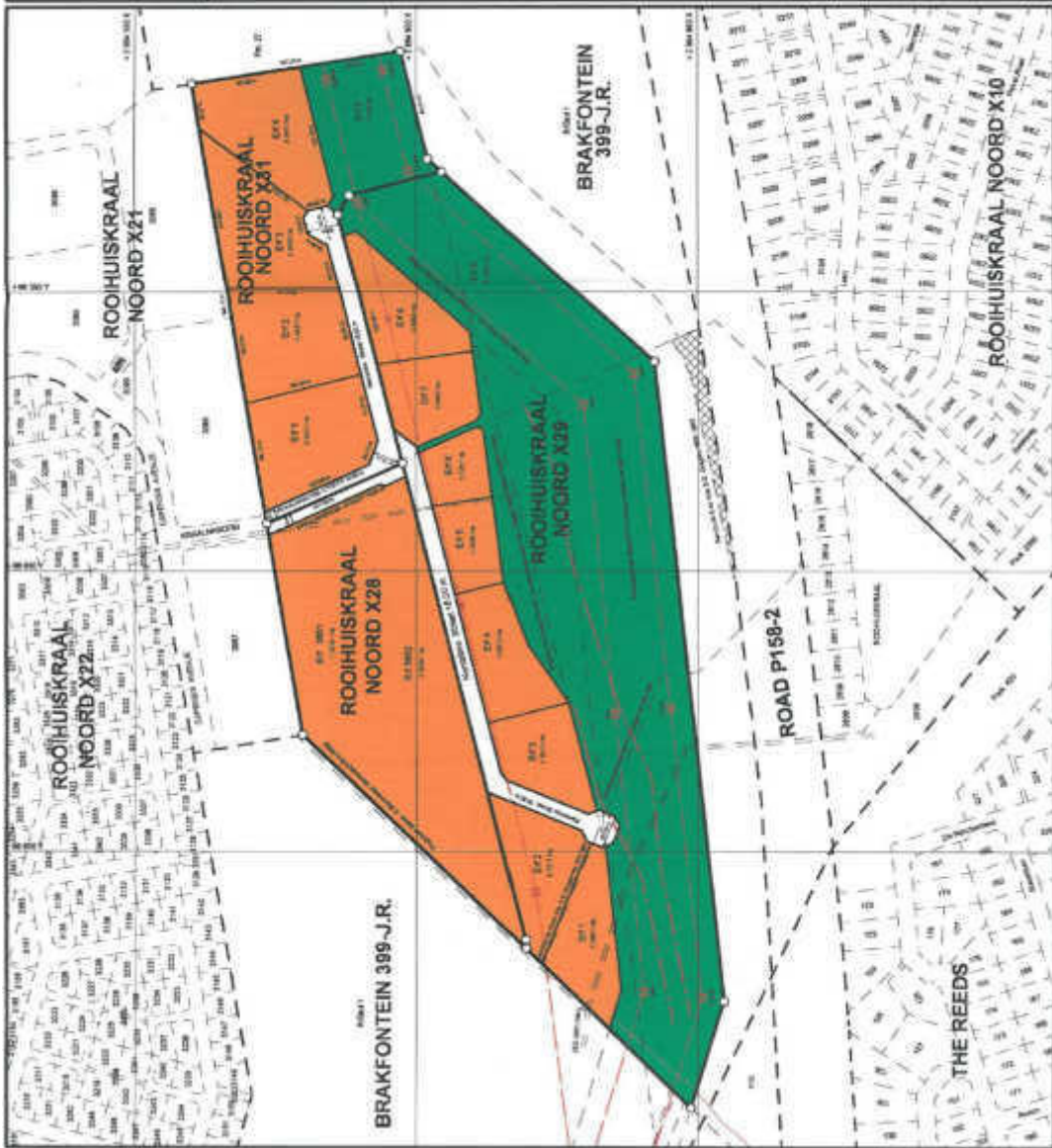


# PLANDEV

Stads- en Sreekbeplanners  
Town- and Regional Planners

SCALE: 1 : 4 000

DATE: OCTOBER 2007



# Appendix D

Route portion information

**N/A**



# **Appendix E**

## Public Participation Information



# Appendix Ei

Proof of Newspaper advertisement



# Geklassifiseerd

T: 087 741 3130 | F: 012 485 9067 | E: olx@beeld.com

## LANDBOU

- 2201 Bye & bysboerdery
- 2202 Boergate
- 2205 Implement/maasjornie
- 2210 Vee & pluimvee
- 2215 Organies
- 2220 Ander diere
- 2225 Produkte
- 2230 Tanks & damme

## SAKE

- 2401 Te huur
- 2406 Te koop
- 2410 Beleggings
- 2415 Geklassifiseerde
- 2420 Dianste
- 2425 Gevre

## WAKANSIE & REISE

- 2601 Tere & Aktiviteite
- 2605 Reisagents
- 2610 Vaarte
- 2615 Voorsigverhuurings
- 2620 Bulstugtoerusting
- 2625 Gastehuise / B&O / hotelle
- 2626 Selforgoneerde
- 2630 Tydskel
- 2635 Akkommodasie
- 2640 Fees-verdiel
- 2645 Woonesparke
- 2650 Sport-verdiel
- 2655 4x4-voete
- 2660 Plaaswagies
- 2665 Bestemmings
- 2701 Suldelike Afrika
- 2705 Namibië
- 2710 Buteland
- 2715 Mozambiek
- 2720 Ander
- 2725 Boeveld
- 2730 Botswana
- 2735 Krugerpark
- 2740 Suid-Kaap
- 2745 Suidkur
- 2750 Weatse
- 2755 Tulinroete
- 2760 Noordkur
- 2800 Provinsies
- 2801 Wes-Kaap
- 2805 Oos-Kaap
- 2810 Vrystaat

## BOEDELEKENNINGS

- 4201 Boedele: Krediteure en debiteure
- 4205 Boedele: Likwidasie en verspreiding
- 4210 Kuratelle
- 4215 Inasfvente boedele
- 4220 Oorga van boedele
- 4225 Rehabilitasie

## VEILING

- 4401 Openbare veilinge

## EKSEKUSIEVERKOPING

- 4501 Gereguleerde verkoping

## GROEN

## PERSOONLIKE DIENSTE

- 4601 Verkope
- 4605 Dianste

## LENINGS

- 4801 Verkope
- 4805 Dianste

## FINANSIEEL

- 1420

## SKULDPROBLEME?

RAAK ONTSLAE VAN SKULD EN MAAK 'N NUWE BEGIN

Kry vinnige professionele advies by Wessel Oosthuizen Prokureurs

## Sekwestrasie Boedeeloorgawes Likwidasie

SKAKEL ONMIDDELIK OM JOU SKADE TE BEPERK Eerste konsultasie GRATIS

Skakel Wessel: 012 654 1438 083 268 0704

Saxby 1018, Eldonagne, Centurion

## PERSONEEL

- 3716 Buteland
- 3720 Deeltids / tydelik
- 3725 Personeel / Menslike hulpbronne
- 3730 Personeelagentskappe
- 3735 Professioneel / bestuur
- 3740 Kleinhandel
- 3745 Sekuriteits / PA
- 3750 Veiligheid
- 3755 Skakelbord / ontvangs
- 3760 Verkope & bemarking
- 3765 Opleidingskursusse
- 3770 Tegies
- 3775 Vaardighede
- 3780 Vastbedryf

## REGSKENNISGEWINGS & TENDERS

- 4001 Egskeidings / huweliks-kontrakte-saansoeke
- 4005 Pensioen / voorsorgfondse
- 4010 Algemene kennisgewings
- 4015 Sakeliasasie
- 4020 A/JV/verdragings
- 4025 Dorpsbeleggings
- 4030 Dorpsvestiging-stigting
- 4035 Dranklisenasie
- 4040 Verore dokumente
- 4045 OIS (omgewingsimpak-studies)
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- 4065 Verkoop van sakewermering
- 4070 Aannemings
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## SKULDPROBLEME?

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## Sekwestrasie Boedeeloorgawes Likwidasie

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## GROEN

## PERSOONLIKE DIENSTE

- 4601 Verkope
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# Appendix Eii

Proof of Site Notice

---

# NOTICE OF AN ENVIRONMENTAL AUTHORISATION APPLICATION

---

Notice is hereby given that an application for a **Basic Assessment Process** in terms of the EIA Regulations, 2014 (Regulations in terms of Chapter 6 of the National Environmental Management Act, 1998, as amended) will be lodged with the Gauteng Department of Agriculture and Rural Development.

**Project & Property Description:** The proposed development to be known as **Rooihuiskraal Noord X29** that is situated on **a part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR.**



**Location:** The study area is located to the north of the N14 highway and west of the M27 Rooihuiskraal Road. The site is surrounded by existing residential developments and is situated within the area of jurisdiction of the City of Tshwane Metropolitan Municipality.

**Listed Activities applied for in terms of NEMA EIA Regulations, 4 December 2014:**

GNR 983 (Listing Notice 1) – Activity 9, 10, 11, 12, 19 & 27.

GNR 985 (Listing Notice 3) – Activity 4, 12 & 14.

**Proponent:** Lezmin 1066 BK

**Date of Notice:** 21 February 2017 – 24 March 2017

In order to ensure that you are identified as an Interested and/or Affected Party (I&AP) please submit your name, contact information and interest in the matter, in writing, to the contact person provided below **within 30 days from the date of commencement of this Notice.**

**Queries regarding this matter should be referred to:**

**Bokamoso Landscape Architects and Environmental Consultants CC**

Public Participation registration and Enquiries: **Juanita De Beer**

Tel: (012) 346 3810

P.O. Box 11375

Maroelana 0161

Project Enquiries: **Anè Agenbacht**

Fax: (086) 570 5659

E-mail: [reception@bokamoso.net](mailto:reception@bokamoso.net)

[www.bokamoso.net](http://www.bokamoso.net)









# Appendix Eiii

Written Notice

# Review of the Draft Basic Assessment Report for the proposed Rooihuiskraal X29



A period of 30 days will be allowed for review and comments on the Draft Basic Assessment Report for the proposed Rooihuiskraal X29 from **12 June 2017 – 13 July 2017**.

Your comments should be sent directly to our office at Bokamoso. Attention: Anè Agenbacht or Juanita De Beer ([reception@bokamoso.net](mailto:reception@bokamoso.net) or fax: 086 570 5659).

**A copy of the report will be available at:**

**Venue:** Rooihuiskraal Library

**Address:** Tiptol Corner, Centurion, 0157

**Attention:** Catherine

**Tel:** 012 358 5640

**Date:** 12 June 2017 – 13 July 2017

**Also available on our Website:** [www.bokamoso.net](http://www.bokamoso.net)

Please do not hesitate to contact us should you have any queries regarding the abovementioned development.

Contact person: **Juanita De Beer**

Tel: 012 346 3810 Fax: 086 570 5659

E-mail: [reception@bokamoso.net](mailto:reception@bokamoso.net)



LEBOMBO GARDENS BUILDING  
36 LEBOMBO ROAD  
ASHLEA GARDENS  
0081

P.O. BOX 11375  
MAROELANA  
0161

Tel: (012) 346 3810  
Fax: 086 570 5659  
E-mail: lizelleg@mweb.co.za  
Website: www.Bokamoso.net

**Bokamoso**  
ENVIRONMENTAL

Landscape Architects, Environmental Consultants,  
Environmental Auditing, Water License Applications

## Acknowledgement of Receipt

Rooihuiskraal Library  
Tiptol Corner, Centurion, 0157  
Tel: 012 358 5640

12 June 2017

Attention: Catherine

**RE: DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED ROOIHUISKRAAL X29**

Please find herewith 1 x Hard Copy of the Draft Basic Assessment Report & Issues and Comments Register for the abovementioned project.

**By Hand**

Name and Surname : KATHRYN SILLER  
(Receiver)

Date: 12 JUNE 2017

Where: ROOIHUISKRAAL

Signature: SILLER

Sender: Juanita De Beer



---

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Maroelana 0161

Project Enquiries: **Anè Agenbacht**

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Dear Landowner/Tenant

21 February 2017

You are hereby informed that **Bokamoso Landscape Architects and Environmental Consultants CC** were appointed (as EAP) by **Lezmin 1066 BK** to conduct the Basic Assessment Process in terms of the 2014 NEMA EIA Regulations for the proposed **Rooihuiskraal Noord X29 that is situation on a part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR.**

**Project Description:**

The proposed development to be known as Rooihuiskraal Noord X29 that is situated on a part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR.

In terms of Regulation No. R982 published in the Government Notice No. 38282 of 4 December 2014 of the National Environment Management Act, 1998 (Act No. 107 of 1998) Governing Basic Assessment Procedures (Notice 1 – Governing Notice R983 and Notice 3 Governing Notice R985) of the 2014 amended NEMA Regulations, the EAP must inform all landowners and tenants of properties adjacent to the proposed development.

This letter serves as notification to you, (landowner/tenant) of the property of the proposed development. Bokamoso requests that you supply the contact details of any tenants or other interested and affected parties that may reside or work on the property. Bokamoso will supply these parties with the necessary notification letters.

Alternatively, you are also welcome to distribute copies of your notification to these parties. We will however require proof that you supplied the notices to the tenants, landowners, workers etc. An alternative to the above option is to act as representative on behalf of these parties.

Please confirm within 30 days (via email/fax) that you received the landowners/tenant notification and this letter, please note that you can register throughout the Basic Assessment process. Kindly also confirm the number of tenants, if any, on your property and the preferred method of communication.

Please may you notify Bokamoso if you are planning to sell your property as the new owners will be required to be registered as an I&AP.




Regards

.....  
Lizelle Gregory/Juanita De Beer

# Rooihuiskraal X29 - Landowner Notification

012 654 5135/0938

Acknowledgement of Receipt of land owner notification concerning the proposed Rooihuiskraal X29 Project.

	Name	Address	Contact Details	Signature
1	Simphine Nkomo	Nentabes str Rooihuiskraal Villa Rosso	Email: nshipeza@ hotmail.com Fax: Tel:	
2	THOMAS	CASA AZUL Security	Email: C Fax: Tel:	
3	JOSEPH	Amberfield Valley	Email: Fax: Tel: 060 993 5874	
4	Sipho Security	Casaverde Kraalnaboom	Email: Boykie manager Fax: Tel: 061 688 0288	gave notice to security (SIPHO)
5	Benny Gader worker	Sponsoor view Kraalnaboom AV	Email: Proudly Fax: Nu'dor Propet Tel: 0834607134	gave notice to Benny
6	Jayden Estate	Aleppo Cres st.	Email: George (caretaker) Fax: Tel: 076 8951364	Nobody there Notice was put in post box.
7			Email: Fax: Tel:	
8			Email: Fax: Tel:	
9			Email: Fax: Tel:	
10			Email: Fax: Tel:	
11			Email: Fax: Tel:	
12			Email: Fax: Tel:	
13			Email: Fax: Tel:	
14			Email: Fax: Tel:	
15			Email: Fax: Tel:	

Refused to sign.

Refused to sign.



# **Appendix Eiv**

## Comments and Issues Register

**COMMENT AND RESPONSE REPORT-  
FOR THE PROPOSED ROOIHUISKRAAL NORTH X29**

Issue	Commentator	Response
<p>Is it possible to supply me with the location?</p> <p>What type of development is it?</p>	<p>Cllr Kingsley Wakelin <a href="mailto:Ward48.da@gmail.com">Ward48.da@gmail.com</a> <b>Ward Councillor 48</b> 21 February 2017</p>	<p>Thank you for your response, please refer to the location description below and the attached kml file for easier access to the study area:</p> <ul style="list-style-type: none"> <li>The study area is located to the north of the N14 highway and west of the M27 Rooihuiskraal Road. The site is surrounded by existing residential developments and is situated within the area of jurisdiction of the City of Tshwane Metropolitan Municipality.</li> </ul> <p>The type of development is Residential.</p>
<p>I am unable to open up the format. Can you possibly send me a pdf?</p> <p>Thank you for your notification regarding this development.</p> <p>In terms of the National Heritage Resources Act, no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that prior to development it is incumbent on the developer to ensure that a Heritage Impact Assessment is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.</p>	<p>Andrew Salomon <a href="mailto:asalomon@sahra.org.za">asalomon@sahra.org.za</a> <b>Sahra</b> 22 February 2017</p>	<p>Please refer to the attached document as requested.</p> <p>Noted.</p> <p>Please refer to the attached Appendix G for the Heritage Impact Assessment.</p>

<p>The quickest process to follow for the archaeological component is to contract an accredited specialist (see the website of the Association of Southern African Professional Archaeologists <a href="http://www.asapa.org.za">www.asapa.org.za</a>) to provide a Phase 1 Archaeological Impact Assessment Report. This must be done before any large development takes place.</p> <p>The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38) about the process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites.</p> <p>Where bedrock is to be affected, or where there are coastal sediments, or marine or river terraces and in potentially fossiliferous superficial deposits, a Palaeontological Desk Top study must be undertaken to assess whether or not the development will impact upon palaeontological resources – or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. Please note that a nationwide fossil sensitivity map is available on SAHRIS to assist with determining the fossil sensitivity of a study area.</p> <p>If the property is very small or disturbed and there is no significant site the heritage specialist may choose to send a letter to the heritage authority motivating for exemption from having to undertake further heritage assessments.</p> <p>Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscape or views/capes must also be assessed.</p>		
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<p>Our telephone conversation regarding above development, refers.</p> <p>Could you please forward me a map of the new development site. The new site will be known as Rooihuiskraal Noord X29.</p>	<p>Marcel Beetge  <a href="mailto:office@amberfield-valley.co.za">office@amberfield-valley.co.za</a>  23 February 2017</p>	<p>Thank you for your response, please refer to the attached Map, Public Notice and Landowner &amp; Tenant Letter regarding the proposed Rooihuiskraal North X29 Project.</p> <p>Bokamoso Environmental will appreciate your assistance to distribute the attached documents to all the residents (tenants and landowners) of Amberfield Valley Estate.</p>
<p>I am a tenant from the complex Swiss le Grande No 4.</p> <p>I moved into the complex in September 2012 and I oppose the proposed Rooihuiskraal North X29 development.</p> <p>I am registered as a Professional Natural Scientist (400134/10) in the fields of zoological and environmental sciences. I myself an am environmental assessment practitioner with 10 years' work experience specializing in ecological and wetlands.</p> <p>I will furnish Bokamoso with a more detailed explanation when the draft basic assessment report is available for public review, however some items that is not mentioned in your letter are:</p> <ul style="list-style-type: none"> <li>• There is a fully functional wetland which forms part of the Rietspruit catchment flowing right through the proposed development. No mention to the tenants nor the public were made that there is a need for a water use license application for this proposed development.</li> <li>• The complex I stay in is situated on the border of 1:100 year floodline and I have seen how terrible this wetland and river system can get with vast amounts of water and rain as was the case this week. Undertaking a development within these conditions will have a catastrophic impact to the environment and to the general society in general especially the owners of the new proposed development.</li> <li>• From an ecological point of view, this wetland sustains a vast</li> </ul>	<p>Ronaldo Retief  <a href="mailto:ronaldoretief@gmail.com">ronaldoretief@gmail.com</a>  24 February 2017</p>	<p>Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed Rooihuiskraal North X29 Project.</p> <p>Bokamoso Environmental noted your comments on our Issues and Comments Register and will keep you updated regarding the process in the future.</p> <p>Please note that the Project Consultant will respond to your queries as soon as possible.</p> <p><b>Project Consultant's response:</b>  Thank you for your response and valuable inputs regarding the Rooihuiskraal North X29 project.</p> <p>To follow now is answers to your questions below:</p> <ul style="list-style-type: none"> <li>• Thank you for your concern and comment regarding the wetland/watercourse. Please</li> </ul>

<p>number of species in terms of wildlife and plants and development within this 1:100 year floodline zone will not only have a negative impact on the social scale, but also on the environment itself.</p> <ul style="list-style-type: none"> <li>• Access and traffic on Netabos, Kraalnaboom Avenue and Capensis is already a disaster. Kraalnaboom Avenue is so narrow, and this is currently the only access to Lenchen Road and Rooihuiskraal Road. The number of units and tenants of the proposed development will have a major impact on the existing road infrastructure.</li> </ul> <p>There are a few of a vast number of comments I have. I will provide you with a full list of questions, concerns and requests once a public meeting was held and when the draft report is circulated.</p> <p>My contact details are as follows:  Ronaldo Retief Pr. Sci.Nat  4 Swiss le Grande  33 Kraalnaboom Avenue  Rooihuiskraal Noord  Centurion  0157</p> <p>PO Box 11816  Wierdapark South  0057</p> <p><a href="mailto:ronaldoretief@gmail.com">ronaldoretief@gmail.com</a>  Cell: 072 666 6348</p> <p>Prism Environmental Management Services cc  2 Coldstream Street  Unit 4 Coldstream Office Park  Little Falls  Roodepoort  1401  011 475 0210</p>		<p>note that this project has some history and that an Environmental Authorization Process was previously undertaken for this project. There is in fact a Water Use License Application in the process and the application was already submitted to the DWS a long time ago, however certain amendments to the application will be made. Once these amendments are made we will be in a position to make this information available to you. Therefore the WULA was advertised simultaneously with the previous Basic Assessment Process.</p> <ul style="list-style-type: none"> <li>• Thank you for your inputs in this regard, however as explained we have already considered these factors as part of the previous environmental process and had numerous interventions (site visits and meetings) with GDARD and the relevant specialists due to the fact that the 1:100 year floodline was regarded as a concern during the previous process. More information and detail will be made available in the Draft Basic Assessment Report.</li> <li>• Your comment is relevant and valued. Please note once the Environmental Authorization is</li> </ul>
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		<p>approved the watercourse/wetland area will be earmarked as Private Open Space which means that the Body Corporate will take care of this area in order to ensure maintenance and protection of this area. It is furthermore planned to keep the area as natural as possible and also enhance the ecological status of the site specifically to keep the current bird and animal life as far as possible. It is also planned to have the units facing towards the wetland area and therefore this area will be conserved as far as possible.</p> <p>During the previous site visits it was noted that a lot of rubble are dumped on the site especially over weekends. Carcasses of animals were also dumped at the site and evidence of this is available. Therefore considering this it is also a huge concern that should the site remain in its current status that the litter is entering into the watercourse/wetlands which is not ideal for the animals or ecological status of this wetland/watercourse.</p> <ul style="list-style-type: none"> <li>• As Bokamoso is not a specialist in this field we are busy obtaining inputs from the Traffic Engineer</li> </ul>
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		<p>and their feedback regarding your question above will be forwarded to you as soon as we are in receipt of this.</p> <p>It is expected that the Application form and Draft Basic Assessment Report will be submitted to GDARD within the next month. This report will then also be made available to all registered I&amp;APs for perusal.</p> <p>You are more than welcome to supply us with any other questions, inputs or objections regarding this project. We will keep you updated and informed of the progress made with the project.</p>
<p>I would like to be updated on the process of the project and would to get developers information for the properties.</p>	<p>Thabiso Nyamane  <a href="mailto:luthanyva@gmail.com">luthanyva@gmail.com</a>  24 February 2017</p>	<p>Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed Roodhuiskraal North X29 Project.</p> <p>Bokamoso Environmental will keep you updated regarding the process in the future.</p>
<p>Thank you for the information – can please tell us what they plan to do there as the notice doesn't specify? (in an understandable explanation please?).</p>	<p>Karen van Aswegen  <a href="mailto:karenva@nationalletting.co.za">karenva@nationalletting.co.za</a>  24 February 2017</p>	<p>Thank you for your response, please note the proposed development is for a Residential 3 Development for the establishment of a residential security complex consisting of 100 units per hectare (maximum 350 units) with associated services and infrastructure. This is a high density development with 30% coverage and a FSR of 0.6. The height of the buildings is 3 storeys on the ± 18.0200 hectares site.</p>

		<p>The infrastructure associated with the proposed development (i.e. water, storm water, sewer, etc.) will also be addressed as part of this application.</p> <p>Please confirm if we should register you as an Interested and Affected Party on our databases in order to keep you updated on the progress made on this project.</p> <p>The Draft Basic Assessment Report will be made available for perusal and comments soon which will have more detailed information regarding the project.</p> <p>Trust this answer your questions. Please do not hesitate to contact us should you require any other information in this regard.</p>
<p>Thank you, yes please register me.</p>		<p>Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed Rooihuiskraal North X29 Project.</p> <p>Bokamoso Environmental will keep you updated regarding the process in the future.</p>
<p>We hereby register as interested and affected party for the abovementioned proposed township.</p> <p>We are owners/developers of Rooihuiskraal Noord Ext 40 and 41. We are in the process of establishing a township on Rooihuiskraal</p>	<p>Marlise Taljaard  <a href="mailto:marlise@caliber.co.za">marlise@caliber.co.za</a>  <b>Caliber Properties</b>  3 March 2017</p>	<p>Thank you for your response, Bokamoso Environmental registered Caliber Properties as an Interested and/or Affected Party for the proposed Rooihuiskraal North X29 Project.</p>

<p>x42 which are all to the northern side of Nentabos Road. The owner being Blue Magnolia 673 and others.</p> <p>Please send all relevant documentation to us for review.</p>		<p>Bokamoso Environmental noted your comments on our Issues and Comments Register and will keep you updated regarding the process in the future.</p>
<p>As discussed, please keep this Estate, Amberfield Valley Estate, Rooihuiskraal X24, on your email list, for progress reports on the proposed development.</p>	<p>Marcel Beetge  <a href="mailto:office@amberfield-valley.co.za">office@amberfield-valley.co.za</a>  <b>Amberfield Valley Estate</b>  9 March 2017</p>	<p>Thank you for your response, Bokamoso Environmental registered Amberfield Valley Estate as an Interested and/or Affected Party for the proposed Rooihuiskraal North X29 Project.</p> <p>Bokamoso Environmental will keep you updated regarding the process in the future.</p>
<p>We had a project meeting last week with the engineers, GFC Holdings re this project.</p> <p>We have the following urgent questions:</p> <ol style="list-style-type: none"> <li>1. The advertisement period ended on 24 March. Did we have any objections?</li> <li>2. If so, how will it be handled?</li> <li>3. What is the status of the submission?</li> </ol>	<p>Marlise Taljaard  <a href="mailto:marlise@caliber.co.za">marlise@caliber.co.za</a>  3 April 2017</p>	<ol style="list-style-type: none"> <li>1. That is correct the Public Participation was from 21 February 2017 to 24 March 2017. Yes, we have received objections however seeing that some of the concerns were related to specialist inputs we will address these concerns within the Basic Assessment Report.</li> <li>2. Concerns received from the public will be addressed in the Basic Assessment Report which will be released once the application form is submitted to GDARD and the process formally commenced.</li> <li>3. In terms of the Amended NEMA EIA Regulations of 2014 the timeframes pertaining to the project is relatively strict and does not allow for any delays in the process. We await updated</li> </ol>

<p>4. What are we allowed to do in the wetland? May we use it as green space and recreation? Our sewer line for Rooihuiskraal x40-42 (municipal sewer) runs along the boundary wall of Rooihuiskraal x28 where it connects way down at the bottom in a manhole. There was no EIA applicable then?</p> <p>5. Does it stretch all the way to the edge of the boundary walls of the adjacent complexes (all in a westerly direction?).</p> <p>6. What type of bridge are we allowed to construct? Do we have to stay clear of the wetland altogether? The red line or the blue line buffer?</p> <p>7. Is there a buffer minimum? 32m? What the site specific be for this wetland?</p> <p>Can you please urgently confirm me?</p>		<p>specialist reports before we can submit the application to GDARD. We have conducted the Public Participation phase thus far.</p> <p>4. No development will be allowed within the wetland area. The open space will be private open space and for the Home Owners to maintain depending on the outcome of the Environmental Authorization. At this stage it is foreseen that this area will be aesthetically pleasing due to the fact that the units face in the direction of the wetland area. However this cannot be hold against us as we are not the decision makers in this regard.</p> <p>5. Please clarify to what specifically you refer. Is it the wetland or the sewer?</p> <p>6. At this stage the bridge is still under discussion as there are various options and GDARD will have to take the final decision. Please provide me with the map you refer to as the blue or red line as it's uncertain to what you refer to.</p> <p>7. The wetland specialists recommended a 15m buffer around the wetland area due to the area being severely degraded and polluted. Please do not keep us to this as this is what we recommend but it is no</p>
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<p>I have received your report through our body corporate VISION PROPERTIES. I own a unit in the Swiss le Grande complex.</p> <p>After reading the report, I want to inform you that I am against this development.</p> <p>I feel that a development like this with 3 storey flats will disturb our peaceful complex and most of all will destroy the wildlife's habitat. The owner of the area clearly has no feelings for wildlife as the deterioration of the wetland should be of major concern.</p> <p>Besides recharging groundwater supplies and trapping floodwaters, wetlands serve a variety of important ecological functions.</p> <p>I feel that the wetland is neglected on purpose, so people will think that anything better as the current situation will be a better choice. I do not agree with this. I think there are more suitable places to build new housing. Why not clean up the land and give something back to nature. And as in a lot of other cities, the infrastructure in Rooihuiskraal is not really suited for all the traffic going through every morning and evening. This should also be considered when agreeing to a new development.</p>	<p>Evelyn Muilwijk  <a href="mailto:evelynmuilwijk@gmail.com">evelynmuilwijk@gmail.com</a>  13 June 2017</p>	<p>guaranteed that GDARD will approve this buffer. They might enforce a larger buffer.</p> <p>Trust this answers your questions.</p> <p>Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed Rooihuiskraal X29 Project.</p> <p>Bokamoso Environmental noted your comments on our Issues and Comments Register and will keep you updated regarding the process in the future.</p> <p>Noted.</p> <p>The proposed development is planned only on a small section of the entire site (to the south of the site and adjacent to the N14 highway and the watercourse area situated to the north of the development). The largest section (78%) of the site remains vacant and open space (undeveloped). It should also be noted that the wetland area will be rehabilitated from its current severely degraded state and be protected in the future as the proposed development will face in the direction of the wetland. Therefore the watercourse area will be aesthetically pleasing to the residents of the proposed development. Furthermore it will also ensure that ecological environments and habits will be created that will attract but also protect them.</p>
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<p>What can/must I do to stop this development?</p>	<p>Kindly also note due to the buildup area to the north and roads situated to the east and south of the site there is not much connectivity to adjacent properties or movement for ecological life.</p> <p>Kindly note that the watercourse on the site is severely degraded as mentioned above due to numerous human impacts. This is not due to neglect from the developers side. Normally with vacant land people tend to utilize such areas for dumping, vagrants tend to reside on the site and in this specific case it is also used for recreational purposes.</p> <p>The developer does not have any other land available for development and therefore they are seeking authorization for the proposed development on this portion of land. It is also not suggested from an environmental and ecological point of view that the site remains vacant as it only attracts more vagrants, dumping and it becomes a security risk for the neighbouring properties. It also furthermore has a huge negative impact on the watercourse as it is not handled in a protected manner.</p> <p>Kindly note that your objection is acknowledged and noted. As an Interested and Affected Party you have the right to submit your objection against the project.</p> <p>The Gauteng Department of Agriculture</p>
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<p>Can you please provide clarity on your email below – What have you/or will be assessing at Rooihuiskraal X29?</p>		<p>and Rural Development, whom is the competent authority, will then receive your objection as part of our Final Basic Assessment Report. They will then make a decision on whether or not to grant the environmental authorization. Should they decide to grant the environmental authorization you will then be allowed to submit an appeal against the decision.</p>
	<p>Tiaan Appelgryn  <a href="mailto:Tiaan.appelgryn@za.pwc.com">Tiaan.appelgryn@za.pwc.com</a>  13 June 2017</p>	<p>Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed Rooihuiskraal North X29 Project.</p> <p>Bokamoso Environmental Consultants are appointed to undertake the Basic Assessment for the proposed residential development for Rooihuiskraal North X29. In short the proposed development entails a Residential 3, security complex consisting of 100 units per hectare (maximum 350 units) with associated services and infrastructure. This is a high density development with 30% coverage and a FSR of 0.6. The height of the buildings are 3 storeys on the 18,0200 hectares site. Due to the wetland/watercourse as well as the Eskom overhead power line situated on the site approximately 3,4 hectares out of the 18 hectares can be developed.</p> <p>Please note that the Basic Assessment Report is currently available for perusal and comments on our website</p>



		<p>(<a href="http://www.bokamoso.net">www.bokamoso.net</a>). Please have a look at the report as many specialists studies are also attached to the report.</p> <p>Bokamoso Environmental will keep you updated regarding the process in the future.</p>
<p>I would like to register as interest and affected party for the proposed development residential 3 as indicated on the application document.</p> <p>I would like to be part of every process that will concern this proposal since this area is in the wetland protected environment and also in the existing residential 3 which was recently developed close to this area. The area is now going to be predominant by residential 3 which will affect the market value of the surrounding estate due to overpopulation and the type of the units to be proposed.</p> <p>There will have more impact in terms of density population, considering that the area has only one route to access the main road, rooihuiskraal road R37. We have already experiencing the high volume of traffic affecting the surrounding area using Capensis Avenue. The resident using Kraal Naboom Avenue and Capensis are affected. This includes residents Amberfilled Valley estate.</p> <p>Hope you find this in order, looking forward to hear from you.</p>	<p>Mudau Napoleon  <a href="mailto:1napoleonm@gmail.com">1napoleonm@gmail.com</a>  4 July 2017</p>	<p>Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed Rooihuiskraal X29 Project.</p> <p>Please note that the Project Consultant will respond to your comments as soon as possible.</p> <p>Bokamoso Environmental will keep you updated regarding the process in the future.</p> <p>Your comment regarding the Residential 3 development is noted. However according to the Town Planner it will fit in well with the adjacent uses. The need according to the Town Planner confirms that there is a demand for such developments in the market and that it is compatible with the surrounding area.</p> <p>In terms of the road congestions the Traffic Engineer confirmed that road upgrades will be done in the area. Please refer to <b>page 44-46</b> of the Final Basic Assessment Report. Regarding information about the access and road upgrades for the proposed development.</p>

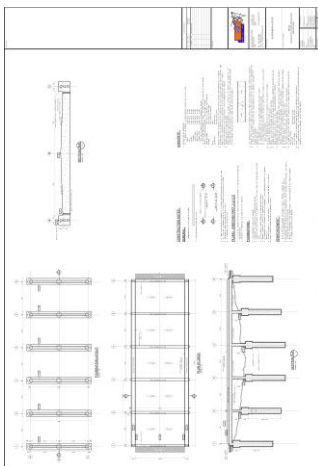
However, for ease of reference I have included the section below.

The only access to the site is via Kraalnaboom Avenue, which is a short collector road originating at its intersection with Capensis Avenue and terminating approximately 200 m to the north of the proposed township's boundary. The extension of Kraalnaboom Avenue will be required which implies that the road will have to cross the wetland by means of a bridge structure (Dhubecon; June 2014).



**Figure 13: The extension of Kraalnaboom Avenue**

According to Dhubecon some road upgrades in the area are required. The roads to be upgraded are the intersection of Capensis Avenue and Kraalnaboom Avenue, the intersection of Capensis Avenue and Lenchen Avenue and then also the intersection of Lenchen Avenue

		<p>and Rooihuiskraal Road. Please refer to Appendix G11 for the Traffic Impact Study conducted by Dhubecon.</p> <p>Telawize (Pty) Ltd Engineers and Project Managers proposed that a concrete bridge structure of 20.3m x 7m and a 2m walkway will be constructed crossing the stream to give access to the development. The bridge will span over the floodlines. The base of the bridge will be supported by concrete piles. The flow of the stream will not be disturbed or changed by the bridge. During construction a temporary diversion of the stream will be done with sandbags.</p>  <p><b>Figure 14: Drawing of the proposed bridge (Refer to Appendix G13 for the Services Report).</b></p>
<p>The Draft Basic Assessment Report (DBAR) regarding the above-mentioned activity received by the Department on 26 May 2017 has reference.</p>	<p>Dan Motaung  <a href="mailto:Dan.Motaung@gauteng.gov.za">Dan.Motaung@gauteng.gov.za</a>  <b>GDARD</b>  5 July 2017</p>	<p>Bokamoso is in agreement with GDARD regarding the applicable legislation. Please refer to <b>pages 13 to 26</b> of the Final Basic Assessment Report for the</p>

<p>This proposed development triggers Activities 12, 19 and 27 listed under Listing Notice 1 of GN. R983 and Activities 4, 12 and 14 listed under Listing Notice 3 of GN. R985.</p> <p><b>1. Alignment of the activity with applicable and policies considered</b></p> <ul style="list-style-type: none"> <li>• Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).</li> <li>• National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).</li> <li>• National Environmental Management Waste Act, 2008 (Act No. 59 of 2008).</li> <li>• National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004).</li> <li>• National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).</li> <li>• Gauteng Provincial Environmental Management Framework, 2015.</li> <li>• The Gauteng Red Data Policy.</li> <li>• The Gauteng Ridges Policy.</li> </ul> <p><b>2. Guidelines GDARD requirements considered</b></p> <p>The proposed establishment of a Residential 3 and Security Complex will be evaluated using GDARD's Provincial Conservation Plan (C-Plan Version 3.3).</p> <p>The Department's comments regarding the proposed activity are as follows:</p> <ul style="list-style-type: none"> <li>• The C-Plan Version 3.3 identifies the site as falling within the Critical Biodiversity Area, Important Area and as a habitat for mammals and having a Non-Perennial River, Wetland and Primary Vegetation.</li> </ul>	<p>section pertaining to the applicable legislation that was considered and that is applicable for this project.</p>
<p>Noted.</p> <ul style="list-style-type: none"> <li>• This information is correct. The site contains a wetland and is classified as a Critical Biodiversity and Important Area as per the GDARD C-Plan Version 3.3. Please refer to <u>page 36 to 40</u> for <u>Section 7. Groundcover</u> and the discussion regarding the fauna, flora and wetlands present on the site. You</li> </ul>	

<ul style="list-style-type: none"> <li>• The proposed access bridge road will be built over the wetland and within the floodline. As a result, there will be direct effects which result for disturbances that occur within the wetland coming from filling, grading, removal of vegetation, changes in water levels as well as drainage patterns.</li> <li>• Since the proposed site has a wetland, it may pose a risk of flooding to the residents of a new development and also result in the increased erosion due to artificial storm water generation.</li> </ul>		<p>can also refer to <b>Appendix G</b> for the following specialist studies that was conducted:</p> <ul style="list-style-type: none"> <li>Appendix G2 – Vegetation and Wetland Assessment;</li> <li>Appendix G3 – Red Data Invertebrate and Wetland Mammal Investigation;</li> <li>Appendix G4 – Flora Integrity Scan;</li> <li>Appendix G5 – Fauna Habitat Assessment;</li> <li>Appendix G6 – Flora Survey;</li> <li>Appendix G7 – Wetland delineation;</li> <li>Appendix G8 – Wetland delineation;</li> <li>Appendix G9 – Hydropedology Wetland Impact Assessment;</li> <li>Appendix G10 – Wetland Specialist's input on wetland buffer and stormwater design.</li> </ul> <ul style="list-style-type: none"> <li>• It is correct that a bridge is applied for, that will traverse the wetland in order to provide access to the development. Please refer to <b>page 30</b> for details regarding the proposed bridge as well as information regarding disturbances to the wetland and floodlines.</li> <li>• Please refer to <b>page 4 to 6</b> and <b>page 38 to 40</b> for information regarding the handling of stormwater. Kindly note that numerous meetings were held with GDARD (as well as with DWS and CoT) to discuss the</li> </ul>
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<ul style="list-style-type: none"> <li>Although the specialists studies mentioned below are attached in the DBAR and supported the proposed development to proceed, this Department is still of the view that there is little land that can be developable owing to the fact that majority of land is sensitive.</li> </ul>		<p>implementation of stormwater measures on site.</p> <ul style="list-style-type: none"> <li>This comment is valid however seeing that Eskom's powerlines traverses the northern side of the site it is not possible to develop this area and Eskom was not willing to negotiate moving the powerlines to a different location on the site. The site also contains a wetland area which requires a buffer zone (according to the wetland specialist a 15 meter buffer should be sufficient and adequate). The wetland area furthermore also takes up a large area of the site. Therefore the only available area for development on the site is the area currently applied for. IT can be seen from the alternative layouts that the current layout is the best suitable option for the site. The largest portion of the site (approximately 78%) of the site will remain vacant and open space. IT is also regarded that the proposed development will actually create an area that is protected and looked after as rehabilitation will be required for the wetland area as the current state is severely degraded and the site is currently used as a dumping and recreational area for four wheelers and motorbikes etc.</li> <li>Please refer to <b>page 35</b> for the geotechnical section as well as</li> </ul>
<ul style="list-style-type: none"> <li>It is, however, advisable for the applicant to address the</li> </ul>		

<p>issues of sensitivity and geotechnical constraints in the FBAR.</p> <p><b>A. Specialist Studies</b></p> <p>Specialist studies undertaken and attached to the DBAR are as follows:</p> <ul style="list-style-type: none"> <li>• Cultural Heritage Resource Impact Assessment dated May 2007.</li> <li>• Vegetation and Wetland Assessment dated March 2008.</li> <li>• Faunal specialists incorporated by Dewald Kamffer (Ecocheck).</li> <li>• Determination of whether the grassland on the proposed Rooihuiskraal North Extension 29 Development site is primary grassland dated 2010 by Scientific Aquatic Services.</li> <li>• Fauna Habitat Assessment dated March 2017 by Bokamoso Landscape Architects and Environmental Consultants.</li> <li>• Vegetation Survey dated March 2017 by Bokamoso.</li> <li>• Hydroponology Wetland Impact Assessment and Management Report dated September 2014 by J.H. van der Waals.</li> </ul>		<p><b>Appendix G12</b> for the Engineering Geological and Geotechnical Report as well as <b>Appendix G9</b> for the Hydroponology Wetland Impact Assessment.</p> <p>Kindly also refer to the fauna and flora section on <b>Page 36 to 40</b> for discussions regarding the sensitivity of the site.</p> <ul style="list-style-type: none"> <li>• This information is correct.</li> <li>• Correct.</li> <li>• Correct.</li> <li>• Correct.</li> <li>• Correct.</li> <li>• Correct.</li> <li>• Kindly note that a Wetland Delineation report was conducted by SAS (Scientific Aquatic Services CC) during March 2009 and May 2010. Please refer to <b>Appendix G7</b> and <b>Appendix G8</b>. The Hydroponology Wetland Impact Assessment referred to is correct and is under <b>Appendix G9</b>.</li> <li>• Correct.</li> </ul>
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<ul style="list-style-type: none"> <li>Wetland Specialist's input on Wetland buffer and stormwater design dated June 2017 by Terrasoil Science.</li> <li>Traffic Impact Assessment dated June 2014 by Dhubecon Consulting Engineers.</li> <li>Engineering Geological and Geotechnical Report dated Jan 2017 by Dolomite Technology (Pty) Ltd.</li> </ul> <p>It is important that the comprehensive storm water management plan as agreed in a series of meetings be submitted to show how storm water will be managed on the site before flowing into the stream/wetland.</p>	<ul style="list-style-type: none"> <li>Correct.</li> <li>Correct.</li> </ul> <p>Kindly note that the following specialist reports are also included as part of the report and can be found under the following Appendices:</p> <ul style="list-style-type: none"> <li>Appendix G13 – Civil Engineering Services Report;</li> <li>Appendix G14 – Electrical Services;</li> <li>Appendix G15 – Noise Study;</li> <li>Appendix G16 – Integrated Water Quality and Quantity Management and Monitoring plan; and</li> <li>Appendix G 17 – Rehabilitation Plan.</li> </ul> <ul style="list-style-type: none"> <li>Kindly refer to the stormwater plan – <b>Appendix A</b> and <b>Appendix iii</b>. You can also refer to the <b>Civil Engineering Services report (Appendix G13)</b> as well as the <b>Wetland Specialist's input on the wetland buffer and stormwater design (Appendix G10)</b>. From these reports it can be noted that both the Engineer and Wetland/ Soil specialist is in agreement with the stormwater concept.</li> </ul> <p>Kindly note that the alternatives as part of</p>
<p><b>3. Alternatives</b></p>	



<p>An assessment of alternatives is not included in the DBAR. It required that a comparative assessment of alternative location of activity components on the site be included in the DBAR.</p> <p>It is mentioned that during the previous environmental processes three other alternative layouts were considered and investigated and were similar in nature to the proposed alternative. The only differences were that it consisted of 6 erven for Residential and the access road crossing over the bridge along with one of the erven encroaching into the 30 metre buffer line.</p> <p><b>4. Public Participation Process</b></p> <p>There are objections from Interested and Affected Parties are objection to the project as there is a spruit and a wetland on site.</p>		<p>the previous processes are now also included and discussed in the report. Please refer to <u>page 28</u> for the alternative layouts as well as <u>Appendix A</u> – site plans.</p> <p>Please refer to <u>page 28</u> for the discussion regarding the alternative layouts.</p> <p>Kindly refer to <u>page 53 to 57</u> for <b>Section E – Public Participation</b> of the report. All issues raised by I&amp;APs have been addressed. Kindly also refer to <u>Appendix Eiv – Comments and Issues Register</u>.</p>
<p>I have scrutinized the report and have no objections to the proposed development. The wetland can be used for both private- and public open space as stipulated in the report.</p>	<p>Marlise Taljaard  <a href="mailto:marlise@caliber.co.za">marlise@caliber.co.za</a>  11 July 2017</p>	<p>Thank you for your response, Bokamoso Environmental noted your comments on our Issues and Comments Register.</p> <p>Please note that the Project Consultant will respond to your comments as soon as possible.</p> <p>It is felt that private open space is the best option for this site as the houses will face the watercourse and open space area. At this stage the site is public open space and it is severely neglected. It is therefore the desire of the developer at this stage to earmark this area as Private Open Space due to the fact that the</p>

<p>Can you give us guidelines on how the public open space can be utilized to form an integral part of community life within the boundaries of activities allowed in the wetland area/powerline servitude?</p> <p>It can also be offered to neighbouring complexes as a facility with a small monthly levy. A lot off the neighbouring complexes have limited green area/commercial facilities.</p> <p>There is a substantial part of the property north of the wetland bordering Nentabos Road that can be utilized for P.O.S.</p> <p>We would like your input in this regard please?</p>		<p>Body Corporate will be responsible to maintain these areas.</p> <p>At this stage no development or activities will be allowed to take place within the open space area or within the powerline servitude. Authorization in terms of an Amendment Application should be sought after at a later stage should the developer wish to do so.</p> <p>At this stage as part of this application it will not be possible to utilize the open space area for the neighbouring complexes. Should this be desired after the Environmental Authorization is granted an Amendment Application shall need to be submitted to apply for such authorization.</p>
<p>Who is the project consultant? I have not yet been contacted? I would like to set up a telecom with her/him re the project?</p> <p>Please let me know?</p>	<p>28 July 2017</p>	<p>Thank you for your response, please note that the Project Consultant is Anè Agenbacht and she will contact you as soon as possible regarding your queries.</p> <p>My apologies for only replying now, I was on leave.</p> <p>A telecom was held and all queries regarding the open space area, wetland and buffer zone and ecological status of the site were discussed. No further questions were discussed.</p>



# Appendix Ev

Communication to and from  
I&AP

**From:** juanita@bokamoso.net  
**Sent:** 12 June 2017 03:16 PM  
**To:** 'jgrobler@geoscience.org.za'; 'asalomon@sahra.org.za'; 'nndobochani@sahra.org.za'; 'maphata.ramphele@gauteng.gov.za'; 'justicem@dwaf.gov.za'; 'keetm@dwaf.gov.za'; 'Siwelane Lilian (GAU)'; 'tshifaror@dwa.gov.za'; 'mathebet@dwa.gov.za'; 'central@eskom.co.za'; 'paia@eskom.co.za'; schmidk; kumen govender; mmpshe; nkoneigh; RudzaniM; daniel.ramokone@transnet.net; 'loveous.tampane@transnet.net'; 'ward48.da@gmail.com'; 'emerciat@tshwane.gov.za'; 'PA2@fitzanne.co.za'; 'nadinecelliers@gmail.com'; 'Andre.Buys@khwelapower.co.za'; 'lungi.dlulane@gmail.com'; 'frieda@visionprop.co.za'; 'luthanya@gmail.com'; 'ronaldoretief@gmail.com'; 'marlise@caliber.co.za'; 'office@amberfield-valley.co.za'; 'management@amberfield-valley.co.za'  
**Subject:** Rooihuiskraal X29 - DBAR Review Notice  
**Attachments:** image001.jpg; Rooihuiskraal X29 - Review Notice.pdf

Dear Interested and/or Affected Parties,

Please refer to the attached Review Notice for the Draft Basic Assessment Report regarding the proposed **Rooihuiskraal X29** Project.

A period of 30 days will be allowed for review and comments on the Draft Basic Assessment Report for the proposed Rooihuiskraal X29 from **12 June 2017 – 13 July 2017**.

Your comments should be sent directly to our office at Bokamoso. Attention: Anè Agenbacht or Juanita De Beer ([reception@bokamoso.net](mailto:reception@bokamoso.net) or fax: 086 570 5659).

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161



## GAUTENG PROVINCE

AGRICULTURE AND RURAL DEVELOPMENT  
REPUBLIC OF SOUTH AFRICA

Umnotho House, 56 Eloff Street, Johannesburg  
P.O. Box 8769, Johannesburg, 2000

Telephone: (011) 240-2500

Fax: (011) 240-2700

Website: <http://www.gdard.gpg.gov.za>

### FAX COVER SHEET

Receiver's Details		Sender's Details	
To:	Anè Agenbacht	From:	Dan Motaung
Company:	Bokamoso Landscape Architects & Environmental Consultants CC		Impact Management
Email address	reception@bokamoso.net	Floor:	28 <sup>th</sup> Floor Umnotho House
Fax no.	086 570 5659	Tel:	012 346 3810
Date:	2017	Pages:	3 including cover page
SUBJECT:	GAUT: 002/17-18/E0037 COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT (DBAR) FOR THE PROPOSED RESIDENTIAL 3 AND SECURITY COMPLEX ON A PART OF THE REMAINDER OF PORTION 9 AND A PART OF PORTION 145 OF THE FARM BRAKFRONTEIN 399 JR, CITY OF TSHWANE METROPOLITAN MUNICIPALITY		

CC

Lezmin 1066 BK

Attention: Johan Lewis  
Email: [jarch@mweb.co.za](mailto:jarch@mweb.co.za)  
Cell No: 082 413 6125

City of Tshwane Metropolitan Municipality

Attention: Rudzani Mukheli  
Fax No: 012 358 8934  
Tel No: 012 358 8731



## GAUTENG PROVINCE

AGRICULTURE AND RURAL DEVELOPMENT  
REPUBLIC OF SOUTH AFRICA

**Reference:** Gaut 002/17-18/E0037  
**Enquiries:** Dan Motaung  
**Telephone:** 011 240 2574  
**Email:** Dan.Motaung@gauteng.gov.za

**Bokamoso Landscape Architects & Environmental Consultants CC**  
P.O. Box 11375  
Maroelana  
0161

Email: reception@bokamoso.net  
Tel No: 012 346 3810  
Fax No: 086 570 5659

### **COMMENTS ON THE DRAFT BASIC ASSESSMENT REPORT (DBAR) FOR THE PROPOSED RESIDENTIAL 3 AND SECURITY COMPLEX ON A PART OF THE REMAINDER OF PORTION 9 AND A PART OF PORTION 145 OF THE FARM BRAKFRONTEIN 399 JR, CITY OF TSHWANE METROPOLITAN MUNICIPALITY**

The Draft Basic Assessment Report (DBAR) regarding the above-mentioned activity received by the Department on 26 May 2017 has reference.

This proposed development triggers Activities 12, 19 and 27 listed under Listing Notice 1 of GN. R983 and Activities 4, 12 and 14 listed under Listing Notice 3 of GN. R985.

#### **1. Alignment of the activity with applicable legislations and policies considered**

- Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).
- National Environmental Management Act, 1998 (Act No.107 of 1998 as amended).
- National Environmental Management Waste Act, 2008 (Act No. 59 of 2008).
- National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004).
- National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).
- Gauteng Provincial Environmental Management Framework, 2015.
- The Gauteng Red Data Policy.
- The Gauteng Ridges Policy.

#### **2. Guidelines GDARD requirements considered**

The proposed establishment of a Residential 3 and Security Complex will be evaluated using GDARD's Provincial Conservation Plan (C-Plan Version 3.3).

The Department's comments regarding the proposed activity are as follows:

- The C-Plan Version 3.3 identifies the site as falling within the Critical Biodiversity Area, Important Area and as a habitat for mammals and having a Non-Perennial River, Wetland and Primary Vegetation.
- The proposed access bridge road will be built over the wetland and within the floodline. As a result, there will be direct effects which result from disturbances that occur within the wetland coming from filling, grading, removal of vegetation, changes in water levels as well as drainage patterns.
- Since the proposed site has a wetland, it may pose a risks of flooding to the residents of a new development and also result in the increased erosion due to artificial storm water generation.

- Although the specialists studies mentioned below are attached in the DBAR and supported the proposed development to proceed, this Department is still of the view that there is little land that can be developable owing to the fact that majority of land is sensitive.
- It is, however, advisable for the applicant to address the issues of sensitivity and geotechnical constraints in the FBAR.

#### A. Specialist Studies

Specialist studies undertaken and attached to the DBAR are as follows:

- Cultural Heritage Resource Impact Assessment dated May 2007.
- Vegetation and Wetland Assessment dated March 2008.
- Faunal specialists incorporated by Dewald Kamffer (Ecocheck).
- Determination of whether the grassland on the proposed Rooihuiskraal North Extension 29 Development site is primary grassland dated 2010 by Scientific Aquatic Services.
- Fauna Habitat Assessment dated March 2017 by Bokamoso Landscape and Architects and Environmental Consults.
- Vegetation Survey dated March 2017 by Bokamoso.
- Hydropedology Wetland Impact Assessment and Management Report dated September 2014 by J. H. van der Waals.
- Wetland Specialist's input on Wetand buffer and stormwater design dated June 2017 by Terrasoil Science.
- Traffic Impact Assessment dated June 2014 by Dhubecon Consulting Engineers.
- Engineering Geological and Geotechnical Report dated Jan 2017 by Dolomite Technology (Pty) Ltd.

It is important that the comprehensive storm water management plan as agreed in a series of meetings be submitted to show how storm water will be managed on the site before flowing into the stream / wetland.

#### 3. Alternatives

An assessment of alternatives is not included in the DBAR. It required that a comparative assessment of alternative location of activity components on the site be included in the DBAR.

It is mentioned that during the previous environmental processes three other alternative layouts were considered and investigated and were similar in nature to the proposed alternative. The only differences were that it consisted of 6 erven for Residential and the access road crossing over the bridge along with one of the erven encroaching into the 30 metre buffer line.

#### 4. Public participation process

There are objections from Interested and Affected Parties are objecting to the project as there is a spruit and a wetland on site.

If you have any queries regarding the contents of this letter, contact the official at details indicated above.

Yours faithfully



Mr. D. Motaung  
Acting Director: Impact Management  
Date: 05/07/2017.

**From:** info@bokamoso.net  
**Sent:** 27 February 2017 11:07 AM  
**To:** ronaldoretief@gmail.com  
**Cc:** Lizelle Gregory; juanita@bokamoso.net  
**Subject:** FW: Rooihuiskraal North X29 Registration as tenant & I&AP  
**Attachments:** image001.jpg

Dear Ronaldo Retief,

Thank you for your response and valuable inputs regarding the Rooihuiskraal North x 29 project.

To follow now is answers to your questions below:

- There is a fully functional wetland which forms part of the Rietspruit catchment flowing right through the proposed development. No mention to the tenants nor the public were made that there is a need for a water use license application for this proposed development.
- Thank you for your concern and comment regarding the wetland/ watercourse. Please note that this project has some history and that an Environmental Authorization Process was previously undertaken for this project. There is in fact a Water Use License Application in the process and the application was already submitted to the DWS a long time ago, however certain amendments to the application will be made. Once these amendments are made we will be in a position to make this information available to you. Therefore the WULA was advertised simultaneously with the previous Basic Assessment Process.
- The complex I stay in is situated on the border of the 1:100 year floodline and I have seen how terrible this wetland and river system can get with vast amounts of water and rain as was the case this week. Undertaking a development within these conditions will have a catastrophic impact to the environment and to the general society in general especially the owners of the new proposed development.
- Thank you for your inputs in this regard, however as explained we have already considered these factors as part of the previous environmental process and had numerous interventions (site visits and meetings) with GDARD and the relevant specialists due to the fact that the 1:100 year floodline was regarded as a concern during the previous process. More information and detail will be made available in the Draft Basic Assessment Report.
- From an ecological point of view, this wetland sustains a vast number of species in terms of wildlife and plants and development within this 1:100 year floodline zone will not only have a negative impact on the social scale, but also on the environment itself.
- Your comment is relevant and valued. Please note once the Environmental Authorization is approved the watercourse/ wetland area will be earmarked as Private Open Space which means that the Body Corporate will take care of this area in order to ensure maintenance and protection of this area. It is furthermore planned to keep the area as natural as possible and also enhance the ecological status of the site specifically to keep the current bird and animal life as far as possible. It is also planned to have the units facing towards the wetland area and therefore this area will be conserved as far as possible.

During the previous site visits it was noted that a lot of rubble are dumped on the site especially over weekends. Carcasses of animals were also dumped at the site and evidence of this is



available. Therefore considering this it is also a huge concern that should the site remain in its current status that the litter is entering into the watercourse/ wetland which is not ideal for the animals or ecological status of this wetland/ watercourse.

- Access and traffic on Netabos, Kraalnaboom Avenue and Capensis is already a disaster. Kraalnaboom Avenue is so narrow, and this is currently the only access to Lenchen Road and Rooihuiskraal Road. The number of units and tenants of the proposed development will have a major impact on the existing road infrastructure.
- As Bokamoso is not a specialist in this field we are busy obtaining inputs from the Traffic Engineer and their feedback regarding your question above will be forwarded to you as soon as we are in receipt of this.

It is expected that the Application form and Draft Basic Assessment Report will be submitted to GDARD within the next month. This report will then also be made available to all registered I&APs for perusal.

You are more than welcome to supply us with any other questions, inputs or objections regarding this project.

We will keep you updated and informed of the progress made with this project.

Trust you find the above in order.

Kind regards,

*Ane Agenbacht*

*Senior Environmental Assessment Practitioner / Manager*

Tel: 012-346 3810

Cell: 083 533 0420

Email: [info@bokamoso.net](mailto:info@bokamoso.net)



**Landscape Architects &  
Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [lizelle@mweb.co.za](mailto:lizelle@mweb.co.za) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Leombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

**From:** Ronaldo Retief [<mailto:ronaldoretief@gmail.com>]

**Sent:** 23 February 2017 07:27 PM

**To:** [reception@bokamoso.net](mailto:reception@bokamoso.net); [admin@bokamoso.net](mailto:admin@bokamoso.net); [info@bokamoso.net](mailto:info@bokamoso.net)

**Subject:** Rooihuiskraal North X29 Registration as tenant & I&AP

Dear Ane / Juanita / Liselle

I am a tenant from the complex Swiss le Grande no 4

I moved into the complex in September 2012 and I oppose the proposed Rooihuiskraal North X29 development.

I am registered as a Professional Natural Scientist (400134/10) in the fields of zoological and environmental sciences. I myself am an environmental assessment practitioner with 10 years work experience specializing in ecological and wetlands.

I will furnish Bokamoso with a more detailed explanation when the draft basic assessment report is available for public review, however some items that is not mentioned in your letter are:

- There is a fully functional wetland which forms part of the Rietspruit catchment flowing right through the proposed development. No mention to the tenants nor the public were made that there is a need for a water use license application for this proposed development.
- The complex I stay in is situated on the border of the 1:100 year floodline and I have seen how terrible this wetland and river system can get with vast amounts of water and rain as was the case this week. Undertaking a development within these conditions will have a catastrophic impact to the environment and to the general society in general especially the owners of the new proposed development.
- From an ecological point of view, this wetland sustains a vast number of species in terms of wildlife and plants and development within this 1:100 year floodline zone will not only have a negative impact on the social scale, but also on the environment itself.
- Access and traffic on Netabos, Kraalnaboom Avenue and Capensis is already a disaster. Kraalnaboom Avenue is so narrow, and this is currently the only access to Lenchen Road and Rooihuiskraal Road. The number of units and tenants of the proposed development will have a major impact on the existing road infrastructure.

These are a few of a vast number of comments I have. I will provide you with a full list of questions, concerns and requests once a public meeting was held and when the draft report is circulated.

My contact details are as follows:

Ronaldo Retief Pr.Sci.Nat  
4 Swiss le Grande  
33 Kraalnaboom Avenue  
Rooihuiskraal Noord  
Centurion  
0157

PO Box 11816  
Wierdapark South  
0057

[ronaldoretief@gmail.com](mailto:ronaldoretief@gmail.com)  
072 66 66 348

Prims Environmental Management Services cc  
2 Coldstream Street  
Unit 4 Coldstream Office Park  
Little Falls  
Roodepoort  
1401

011 475 0210

Regards

Ronaldo Retief Pr.Sci.Nat.  
072 66 66 348

**From:** juanita@bokamoso.net  
**Sent:** 13 June 2017 03:35 PM  
**To:** tiaan.appelgryn@za.pwc.com  
**Subject:** FW: Rooihuiskraal X29 - DBAR Review Notice (Attention: Anè Agenbacht or Juanita De Beer)  
**Attachments:** image001.jpg; image002.jpg; image003.jpg

Dear Tiaan Appelgryn,

Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental Consultants are appointed to undertake the Basic Assessment Process for the proposed residential development for Rooihuiskraal North x 29. In short the proposed development entails a Residential 3, security complex consisting of 100 units per hectare (maximum 350 units) with associated services and infrastructure. This is a high density development with 30% coverage and a FSR of 0.6. The height of the buildings are 3 storeys on the 18,0200 hectare site. Due to the wetland/ watercourse as well as the Eskom overhead power line situated on the site approximately 3,4 hectares out of the 18 hectares can be developed.

Please note that the Basic Assessment Report is currently available for perusal and comments on our website ([www.bokamoso.net](http://www.bokamoso.net)). Please have a look at the report as many specialists studies are also attached to the report.

Bokamoso Environmental will keep you updated regarding the process in the future.

Should you have any other questions in this regard please do not hesitate to phone our office.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

**From:** tiaan.appelgryn@za.pwc.com [mailto:[tiaan.appelgryn@za.pwc.com](mailto:tiaan.appelgryn@za.pwc.com)]  
**Sent:** 13 June 2017 02:56 PM  
**To:** [reception@bokamoso.net](mailto:reception@bokamoso.net)  
**Cc:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net)  
**Subject:** Rooihuiskraal X29 - DBAR Review Notice (Attention: Anè Agenbacht or Juanita De Beer)

Dear Ane and Juanita

Can you please provide clarity on your email below - What have you / or will you be assessing at Rooihuiskraal x29?

Kind regards

**Tiaan Appelgryn**

PwC | Manager  
Office: +27 (12) 429 0095 | Mobile: +27 (83) 601 3394 | Fax: +27 (11) 209 8095  
Email: [tiaan.appelgryn@za.pwc.com](mailto:tiaan.appelgryn@za.pwc.com)  
PricewaterhouseCoopers  
2 Eglin Road, Sunninghill, 2157  
<http://www.pwc.com/za>

[https://twitter.com/pwc\\_za](https://twitter.com/pwc_za) <https://www.linkedin.com/company/pwc-south-africa>

----- Forwarded by Tiaan Appelgryn/ZA/ABAS/PwC on 13/06/2017 02:53 PM -----

From: PRETOR - No Reply <[pretormail1@pretor.co.za](mailto:pretormail1@pretor.co.za)>  
To: Undisclosed recipients;  
Date: 13/06/2017 02:27 PM  
Subject: AMBERFIELD VALLEY HOA // BASIC ASSESSMENT REPORT ROOIHUISKRAAL X29 PROJECT



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Dear Owners

I trust that this email finds you well.

I confirm that I act under instruction of the abovementioned Home Owners Association, and kindly refer you to the attached base plan regarding the proposed Rooihuiskraal x29 Project for your urgent attention.

Regards,

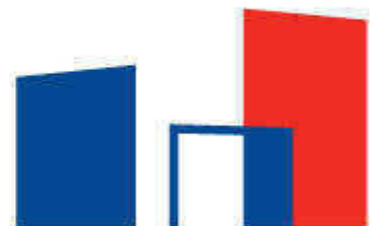
**Jolene Janse van Rensburg**  
Portfolio Assistant

Switchboard 012 001 9000  
Fax2Email 086 502 5207  
Email [JoleneJ@pretor.co.za](mailto:JoleneJ@pretor.co.za)  
Web [www.pretor.co.za](http://www.pretor.co.za)



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**From:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) [<mailto:juanita@bokamoso.net>]  
**Sent:** Monday, 12 June 2017 15:16

**Subject:** Rooihuiskraal X29 - DBAR Review Notice

Dear Interested and/or Affected Parties,

Please refer to the attached Review Notice for the Draft Basic Assessment Report regarding the proposed **Rooihuiskraal X29** Project.

A period of 30 days will be allowed for review and comments on the Draft Basic Assessment Report for the proposed Rooihuiskraal X29 fr

Your comments should be sent directly to our office at Bokamoso. Attention: Anè Agenbacht or Juanita De Beer ([reception@bokamoso.net](mailto:reception@bokamoso.net))

**Kind Regards/Vriendelike Groete**

**Juanita De Beer**

**Senior Public Participation Consultant & EAP in training**



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

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----- End of message text -----

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**From:** juanita@bokamoso.net  
**Sent:** 13 June 2017 02:38 PM  
**To:** evelynmuilwijk@gmail.com  
**Subject:** RE: development project Rooihuiskraal X29  
**Attachments:** image002.jpg; image003.jpg

Dear Evelyn Muilwijk,

Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed **Rooihuiskraal X29** Project.

Bokamoso Environmental noted your comments on our Issues and Comments Register and will keep you updated regarding the process in the future.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

**T:** (+27)12 346 3810 | **F:** (+27) 86 570 5659 | **E:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
**36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161**

---

**From:** Evelyn Muilwijk [mailto:[evelynmuilwijk@gmail.com](mailto:evelynmuilwijk@gmail.com)]  
**Sent:** 13 June 2017 02:21 PM  
**To:** [reception@bokamoso.net](mailto:reception@bokamoso.net)  
**Cc:** 'Lisa Fabian'; 'Rob Muilwijk'; 'Moni PSE'  
**Subject:** development project Rooihuiskraal X29  
**Importance:** High

Attention: Ane Agenbacht, Juanita De Beer,

Good day,

I have received your report through our body corporate VISION PROPERTIES. I own a unit in the Swiss le Grande complex.

After reading the report, I want to inform you that I am against this development.

I feel that a development like this with 3 storey flats will disturb our peaceful complex and most of all will destroy the wildlife's habitat.

The owner of the area clearly has no feelings for wildlife as the deterioration of the wetland should be of major concern.

Besides recharging groundwater supplies and trapping floodwaters, wetlands serve a variety of important ecological functions.

I feel that the wetland is neglected on purpose, so people will think that anything better as the current situation will be a better choice.

I do not agree with this. I think there are more suitable places to build new housing. Why not clean up the land and give something back to nature.

And as in a lot of other cities, the infrastructure in Rooihuiskraal is not really suited for all the traffic going through every morning and evening.

This should also be considered when agreeing to a new development.

What can/must I do to stop this development?

Kind regards,

Evelyn Muilwijk  
Swiss Le Grande – Unit 5

---

**From:** Lisa Van Heerden [<mailto:lisa@visionprop.co.za>]  
**Sent:** Tuesday, June 13, 2017 12:02 PM  
**To:** Dear Client <[lisa@visionprop.co.za](mailto:lisa@visionprop.co.za)>  
**Cc:** 'Frieda Kotze' <[frieda@visionprop.co.za](mailto:frieda@visionprop.co.za)>  
**Subject:** SWISS LE GRANDE - URGENT NOTICE

Dear Owner,

Please find notice for your attention.

**Kind regards / Vriendelike groete,**

**Lisa Van Heerden**  
Portfolio Assistant



- **Tel** +27(0) 12 846 3128
- **Fax2Mail** +27(0) 12 804 2158
- **Address** PEC Business Park | 128 Siersteen Road | Silvertondale | Pretoria
- **Postal** PO Box 11645 | Queenswood | 0121
- **Email** [lisa@visionprop.co.za](mailto:lisa@visionprop.co.za)
- **Web** [www.visionprop.co.za](http://www.visionprop.co.za)

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**From:** juanita@bokamoso.net  
**Sent:** 23 February 2017 03:21 PM  
**To:** office@amberfield-valley.co.za  
**Subject:** RE: Proposed Development:Rooihuiskraal Noord X29  
**Attachments:** Rooihuiskraal X29 - Public Notice.pdf; Rooihuiskraal X29 - Landowner Tenants Letter.pdf; Aerial Map.jpg; image001.jpg; image003.jpg

Dear Marcel Beetge,

Thank you for your response, please refer to the attached Map, Public Notice and Landowner & Tenant Letter regarding the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental will appreciate your assistance to distribute the attached documents to all the residents (tenants and landowners) of Amberfield Valley Estate.

Thank you.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

---

**From:** Marcel Beetge [<mailto:office@amberfield-valley.co.za>]  
**Sent:** 23 February 2017 03:03 PM  
**To:** reception@bokamoso.net  
**Subject:** FW: Proposed Development:Rooihuiskraal Noord X29

---

**From:** Marcel Beetge [<mailto:office@amberfield-valley.co.za>]  
**Sent:** Thursday, 23 February 2017 14:57  
**To:** 'reception@bokamoso.net'  
**Subject:** Proposed Development:Rooihuiskraal Noord X29

Hi Juanita De Beer, Telephone conversation regarding above development, refers.

Could you please forward me a map of the new development site. The new site will be known as ROOIHUISKRAAL Noord x29.

Have a nice day.

Kind Regards,

**Marcel Beetge**

*Estate Manager*

Tel: 060 9935 874

E-Mail: [office@amberfield-valley.co.za](mailto:office@amberfield-valley.co.za)

Web: [www.amberfield-valley.co.za](http://www.amberfield-valley.co.za)

---



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**juanita@bokamoso.net**

---

**From:** juanita@bokamoso.net  
**Sent:** 09 March 2017 09:16 AM  
**To:** office@amberfield-valley.co.za  
**Cc:** paul.montlhabaki@sita.co.za; management@amberfield-valley.co.za  
**Subject:** RE: Proposed Development:Rooihuiskraal Noord X29  
**Attachments:** image001.jpg; image002.jpg

Dear Marcel Beetge,

Thank you for your response, Bokamoso Environmental registered Amberfield Valley Estate as an Interested and/or Affected Party for the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental will keep you updated regarding the process in the future.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

---

**From:** Marcel Beetge [mailto:office@amberfield-valley.co.za]  
**Sent:** 09 March 2017 08:58 AM  
**To:** reception@bokamoso.net  
**Cc:** paul.montlhabaki@sita.co.za; management@amberfield-valley.co.za  
**Subject:** Proposed Development:Rooihuiskraal Noord X29

Hi Juanita, As discussed, please keep this Estate, Amberfield Valley Estate, Rooihuiskraal Noord X24, on your e-mail list, for progress reports

on the proposed development.

Have a nice day,

Marcel ( Estate Manager)



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**From:** juanita@bokamoso.net  
**Sent:** 05 July 2017 08:58 AM  
**To:** 1napoleonm@gmail.com  
**Subject:** RE: Request to be registered as interest and affected party\_Rooihuskraal x 29  
**Attachments:** image002.jpg; image003.png

Dear Madau Napoleon,

Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed **Rooihuskraal X29** Project.

Please note that the Project Consultant will respond to your comments as soon as possible.

Bokamoso Environmental will keep you updated regarding the process in the future.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

**T:** (+27)12 346 3810 | **F:** (+27) 86 570 5659 | **E:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
**36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161**

**From:** Napoleon Mudau Madzinge [mailto:1napoleonm@gmail.com]  
**Sent:** 04 July 2017 04:21 PM  
**To:** info@bokamoso.net; JoleneJ@pretor.co.za  
**Subject:** Request to be registered as interest and affected party\_Rooihuskraal x 29

Good day Ane and Jolenej@pretor

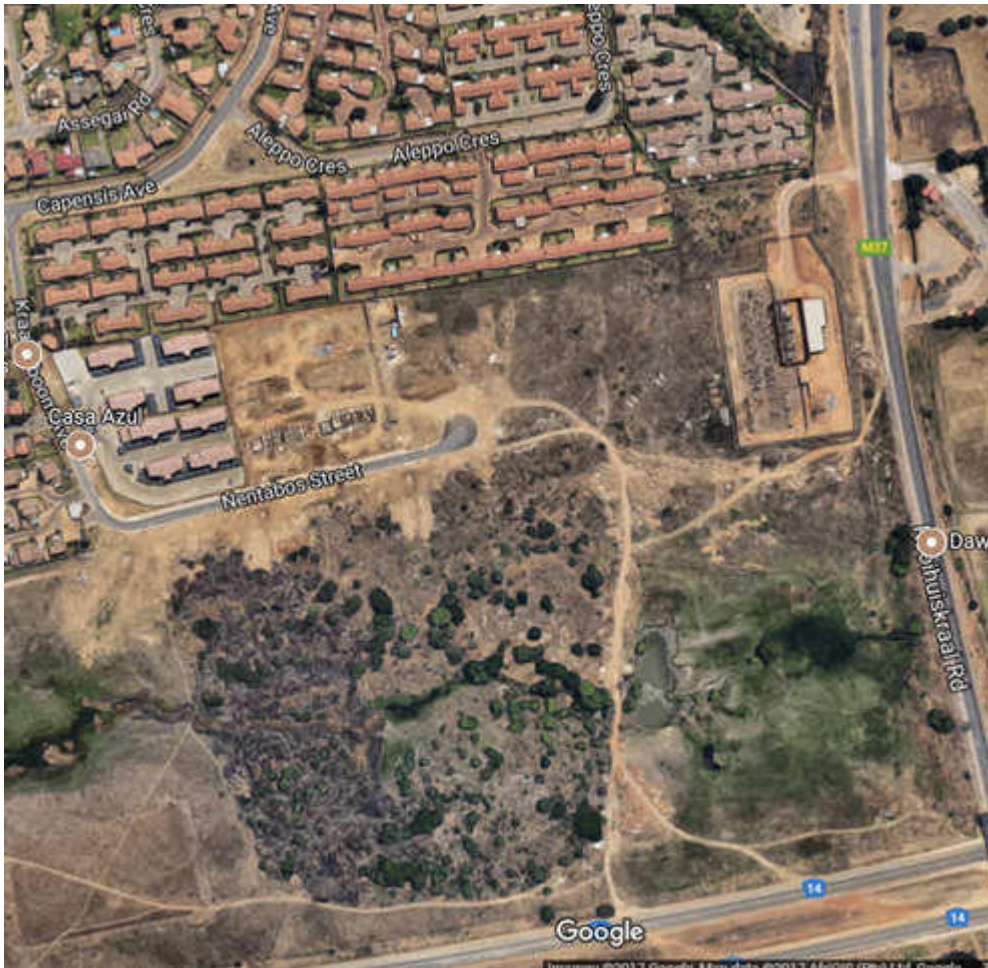
I would like to register as interest and affected part for the proposed development residential 3 as indicted on the application document.

I would like to be part of every process that will concern this proposal since this area is in the wetland protected environment and also in the existing residential 3 which was recently developed close to this area. The area is now going to be predominant by residential 3 which will affect the market value of the surrounding estate due to overpopulation and the type of the units to be proposed.

There will have more impact in terms of density population ,considering that the area has only one route to access the main road , rooihuskraal road R37. We have already experiencing the high volume of traffic affecting the surrounding area using Capensis Aven. The resident using Kraal naboom Ave and Capensis are affected. This include residents Amberfiled valley estate.

Hope you find this in order , looking forward to hear from you.

Regards  
Mudau N  
083 766 6230



**From:** info@bokamoso.net  
**Sent:** 05 April 2017 10:09 AM  
**To:** Marlise Taljaard  
**Cc:** lizelle; Jaco Pienaar; Albert Swanepoel; gawie@gfc-holdings.co.za; Mfundo Hadebe; Natasha Hamman; juanita@bokamoso.net; Johan Lewis; habitat2000@mweb.co.za; ben@bokamoso.net; dashentha@bokamoso.net  
**Subject:** RE: Rooihuiskraal Noord Ext 29: public participation registration as per notice 21 Feb 2017-24 March 2017  
**Attachments:** image001.jpg; image002.jpg

Good afternoon Marlise

Your email regarding the above mentioned project refers.

Please receive answers to your questions below:

1. The advertisement period ended on 24 March. Did we have any objections?  
That is correct the Public Participation was from 21 February 2017 to 24 March 2017. Yes, we have received objections however seeing that some of the concerns were related to specialist inputs we will address these concerns within the Basic Assessment Report.
2. If so, how will it be handled?  
Concerns received from the public will be addressed in the Basic Assessment Report which will be released once the application form is submitted to GDARD and the process formally commenced.
3. What is the status of the submission?  
In terms of the Amended NEMA EIA Regulations of 2014 the timeframes pertaining to the project is relatively strict and does not allow for any delays in the process. We await updated specialist reports before we can submit the application to GDARD. We have conducted the Public Participation phase thus far.
4. What are we allowed to do in the wetland? May we use it as green space and recreation? Our sewer line for Rooihuiskraal x40 -42 (municipal sewer) runs along the boundary wall of Rooihuiskraal x28 where it connects way down at the bottom in a manhole. There was no EIA applicable then?  
No development will be allowed within the wetland area. The open space will be private open space and for the Home Owners to maintain depending on the outcome of the Environmental Authorization. At this stage it is foreseen that this area will be aesthetically pleasing due to the fact that the units face in the direction of the wetland area. However this cannot be hold against us as we are not the decision makers in this regard.
5. Does it stretch all the way to the edge of the boundary walls of the adjacent complexes (all in a westernly direction?)  
Please clarify to what specifically you refer. Is it the wetland or the sewer?
6. What type of bridge are we allowed to construct? Do we have to stay clear of the wetland altogether? The red line or the blue line buffer?  
At this stage the bridge is still under discussion as there are various options and GDARD will have to take the final decision. Please provide me with the map you refer to as the blue or red line as its uncertain to what you refer to.
7. Is there a buffer minimum? 32m? what the site specific be for this wetland?  
The wetland specialists recommended a 15m buffer around the wetland area due to the area being severely degraded and polluted. Please do not keep us to this as this is what we recommend but it is no guaranteed that GDARD will approve this buffer. They might enforce a larger buffer.

Trust this answers your questions.

Kind regards,

# *Ane Agenbacht*

Senior Environmental Assessment Practitioner / Manager

Tel: 012-346 3810

Cell: 083 533 0420

Email: [info@bokamoso.net](mailto:info@bokamoso.net)

---



## **Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [lizelle@mweb.co.za](mailto:lizelle@mweb.co.za) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

---

**From:** Marlise Taljaard [<mailto:marlise@caliber.co.za>]

**Sent:** 03 April 2017 01:42 PM

**To:** [info@bokamoso.net](mailto:info@bokamoso.net)

**Cc:** Bokamoso; Jaco Pienaar; Albert Swanepoel; [gawie@gfc-holdings.co.za](mailto:gawie@gfc-holdings.co.za); Mfundo Hadebe; Natasha Hamman

**Subject:** RE: Rooihuiskraal Noord Ext 29: public participation registration as per notice 21 Feb 2017-24 March 2017

**Importance:** High

Hallo Juanita and Ane

We had a project meeting last week with the engineers, GFC Holdings re this project.

We have the followings urgent questions:

1. The advertisement period ended on 24 March. Did we have any objections?
2. If so, how will it be handled?
3. What is the status of the submission?
4. What are we allowed to do in the wetland? May we use it as green space and recreation? Our sewer line for Rooihuiskraal x40 -42 (municipal sewer) runs along the boundary wall of Rooihuiskraal x28 where it connects way down at the bottom in a manhole. There was no EIA applicable then?
5. Does it stretch all the way to the edge of the boundary walls of the adjacent complexes (all in a westernly direction?)
6. What type of bridge are we allowed to construct? Do we have to stay clear of the wetland altogether? The red line or the blue line buffer?
7. Is there a buffer minimum? 32m? what the site specific be for this wetland?

Can you please urgently confirm with me?

Thank you.

Beste Groete/Kind Regards



**MARLIÉ TALJAARD**  
DEVELOPMENT MANAGER

Tel : 012 809 2044 | [marlise@caliber.co.za](mailto:marlise@caliber.co.za)  
Fax : 086 513 5093 | [www.caliber.co.za](http://www.caliber.co.za)  
Mob: 078 632 5019  
EMWIL House, Tjigervallei Office Park,  
Silver Lakes Drive, Silver Lakes, Pta, 0081

An EXTRAORDINARY GOD uses ordinary people!

---

**From:** Marlise Taljaard  
**Sent:** Friday, 03 March 2017 3:53 PM  
**To:** 'info@bokamoso.net' <info@bokamoso.net>  
**Cc:** 'Bokamoso' <reception@bokamoso.net>; Jaco Pienaar <jaco@caliber.co.za>  
**Subject:** Rooihuiskraal Noord Ext 29: public participation registration as per notice 21 Feb 2017-24 March 2017  
**Importance:** High

Hallo Juanita and Ane

We hereby register as interested and affected party for the abovementioned proposed township.

We are owners/developers of Rooihuiskraal Noord ext 40 and 41. We are in the process of establishing a township on Rooihuiskraal x42 which are all to the northern side of Nentabos Road. The owner being Blue Magnolia 673 and others.

Please send all relevant documentation to us for review?

Thank you.

Beste Groete/Kind Regards



**MARLIÉ TALJAARD**  
DEVELOPMENT MANAGER

Tel : 012 809 2044 | [marlise@caliber.co.za](mailto:marlise@caliber.co.za)  
Fax : 086 513 5093 | [www.caliber.co.za](http://www.caliber.co.za)  
Mob: 078 632 5019  
EMWIL House, Tjigervallei Office Park,  
Silver Lakes Drive, Silver Lakes, Pta, 0081

Jesus saves!



**From:** juanita@bokamoso.net  
**Sent:** 06 March 2017 08:17 AM  
**To:** marlise@caliber.co.za  
**Subject:** RE: Rooihuiskraal Noord Ext 29: public participation registration as per notice 21 Feb 2017-24 March 2017  
**Attachments:** image002.jpg; image003.jpg

Dear Marlise Taljaard,

Thank you for your response, Bokamoso Environmental registered Caliber Properties as an Interested and/or Affected Party for the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental noted your comments on our Issues and Comments Register and will keep you updated regarding the process in the future.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

---

**From:** Marlise Taljaard [mailto:marlise@caliber.co.za]  
**Sent:** 03 March 2017 03:55 PM  
**To:** info@bokamoso.net  
**Cc:** Bokamoso; Jaco Pienaar  
**Subject:** Rooihuiskraal Noord Ext 29: public participation registration as per notice 21 Feb 2017-24 March 2017  
**Importance:** High

Hallo Juanita and Ane

We hereby register as interested and affected party for the abovementioned proposed township.

We are owners/developers of Rooihuiskraal Noord ext 40 and 41. We are in the process of establishing a township on Rooihuiskraal x42 which are all to the northern side of Nentabos Road. The owner being Blue Magnolia 673 and others.

Please send all relevant documentation to us for review?

Thank you.

Beste Groete/Kind Regards



**CALIBER**  
PROPERTIES  
THE NEXT LEVEL

[caliber.co.za](http://caliber.co.za)

**MARLIÉ TALJAARD**  
DEVELOPMENT MANAGER

Tel : 012 809 2044 | [marlise@caliber.co.za](mailto:marlise@caliber.co.za)

Fax : 086 513 5093 | [www.caliber.co.za](http://www.caliber.co.za)

Mob: 078 632 5019

EMWIL House, Tjigervallei Office Park,  
Silver Lakes Drive, Silver Lakes, Pta, 0081

Jesus saves!

**juanita@bokamoso.net**

---

**From:** juanita@bokamoso.net  
**Sent:** 24 February 2017 11:03 AM  
**To:** Thabiso Nyamane  
**Subject:** RE: Rooihuiskraal North X29 - Public Participation Process  
**Attachments:** image001.jpg; image002.jpg

Dear Thabiso Nyamane,

Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental will keep you updated regarding the process in the future.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

**T:** (+27)12 346 3810 | **F:** (+27) 86 570 5659 | **E:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
**36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161**

**From:** Thabiso Nyamane [mailto:luthanya@gmail.com]

**Sent:** 24 February 2017 10:46 AM

**To:** juanita@bokamoso.net; info@bakamoso.net

**Subject:** Fwd: Rooihuiskraal North X29 - Public Participation Process

Good Day

I would like to be update on the process of the project and would to get developers information for the properties.

Regards,

Thabiso Nyamane  
072 286 2480  
074 253 1717

----- Forwarded message -----

**From:** Lisa Fabian <[lisa@visionprop.co.za](mailto:lisa@visionprop.co.za)>

**Date:** Thu, Feb 23, 2017 at 5:28 PM

**Subject:** Rooihuiskraal North X29 - Public Participation Process

**To:** Dear Client <[lisa@visionprop.co.za](mailto:lisa@visionprop.co.za)>

**Cc:** Frieda Kotze <[frieda@visionprop.co.za](mailto:frieda@visionprop.co.za)>

Good day all Owners

Please refer to the attached Public Notice & Landowner and Tenant Letter for the proposed ***Rooihuiskraal North X29*** Project for your information.

Thank you

Kind regards

**Lisa Fabian**

Portfolio Assistant



- Tel [+27\(0\) 12 846 3030](tel:+27(0)128463030)
- Fax2Mail [+27\(0\) 12 804 2158](tel:+27(0)128042158)
- Address PEC Business Park | 128 Siersteen Road | Silvertondale | Pretoria
- Postal PO Box 11645 | Queenswood | 0121
- Email [lisa@visionprop.co.za](mailto:lisa@visionprop.co.za)
- Web [www.visionprop.co.za](http://www.visionprop.co.za)

--

**Thabiso Nyamane**  
Director : Luthanya Business Enterprises Cc  
Mob: 072 286 2480  
Fax: 086 610 8468  
Email : [luthanya@gmail.com](mailto:luthanya@gmail.com)

**juanita@bokamoso.net**

---

**From:** juanita@bokamoso.net  
**Sent:** 21 February 2017 03:38 PM  
**To:** DA Ward 48 Cllr Kingsley Wakelin  
**Subject:** RE: Rooihuiskraal North X29 - Public Participation Process  
**Attachments:** Aerial Map.jpg; image001.jpg; image002.png

Dear Cllr Kingsley Wakelin,

Please refer to the attached document as requested.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects &  
Environmental Consultants**

**T:** (+27)12 346 3810 | **F:** (+27) 86 570 5659 | **E:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
**36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161**

**From:** DA Ward 48 Cllr Kingsley Wakelin [<mailto:ward48.da@gmail.com>]

**Sent:** 21 February 2017 03:32 PM

**To:** juanita@bokamoso.net

**Subject:** Re: Rooihuiskraal North X29 - Public Participation Process

Hi Good day

I am unable to open up the format.

Can you possibly send me a pdf?

Regards

Cllr/Rdl Kingsley Wakelin  
Ward/Wyk 48  
City of Tshwane Metropolitan Municipality /  
Stad van Tshwane Metropolitaanse Munisipaliteit  
Cell: 076 3937712  
[ward48.da@gmail.com](mailto:ward48.da@gmail.com)



On Tue, Feb 21, 2017 at 3:26 PM, <[juanita@bokamoso.net](mailto:juanita@bokamoso.net)> wrote:

Dear Cllr Kingsley Wakelin,

Thank you for your response, please refer to the location description below and the attached kml file for easier access to the study area:

- The study area is located to the north of the N14 highway and west of the M27 Rooihuiskraal Road. The site is surrounded by existing residential developments and is situated within the area of jurisdiction of the City of Tshwane Metropolitan Municipality.

The type of development is Residential.

Please do not hesitate to contact our office for further queries.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects &**

**Environmental Consultants**

**T:** [\(+27\)12 346 3810](tel:+27123463810) | **F:** [\(+27\) 86 570 5659](tel:+2712865705659) | **E:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)

**36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161**

**From:** DA Ward 48 Cllr Kingsley Wakelin [mailto:[ward48.da@gmail.com](mailto:ward48.da@gmail.com)]

**Sent:** 21 February 2017 02:57 PM

**To:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net)

**Subject:** Re: Rooihuiskraal North X29 - Public Participation Process

Kan jy my moontlik se waar dit gelee is of n straat adres.

Watter tipe ontwikkeling gaan daaruit voortspruit?

Groete

Cllr/Rd1 Kingsley Wakelin  
Ward/Wyk 48  
City of Tshwane Metropolitan Municipality /  
Stad van Tshwane Metropolitaanse Munisipaliteit  
Cell: 076 3937712  
[ward48.da@gmail.com](mailto:ward48.da@gmail.com)



On Tue, Feb 21, 2017 at 2:42 PM, <[juanita@bokamoso.net](mailto:juanita@bokamoso.net)> wrote:

Dear Interested and/or Affected Parties,

Please refer to the attached Public Notice and Landowner & Tenant Letter regarding the proposed **Rooihuiskraal North X29** Project.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects &**

**Environmental Consultants**

T: [\(+27\)12 346 3810](tel:+27123463810) | F: [\(+27\) 86 570 5659](tel:+27865705659) | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)

36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161



**From:** juanita@bokamoso.net  
**Sent:** 27 February 2017 12:04 PM  
**To:** karenva@nationalletting.co.za  
**Subject:** RE: Rooihuiskraal North X29 - Public Participation Process  
**Attachments:** image001.jpg; image002.jpg; image003.jpg; image004.jpg

Dear Karen van Aswegen,

Thank you for your response, please note the proposed development is for a Residential 3 Development for the establishment of a residential security complex consisting of 100 units per hectare (maximum 350 units) with associated services and infrastructure. This is a high density development with 30% coverage and a FSR of 0.6. The height of the buildings are 3 storeys on the ± 18.0200 hectares site.

The infrastructure associated with the proposed development (i.e. water, storm water, sewer, etc.) will also be addressed as part of this application.

Please confirm if we should register you as an Interested and Affected Party on our databases in order to keep you updated on the progress made on this project.

The Draft Basic Assessment Report will be made available for perusal and comments soon which will have more detailed information regarding the project.

Trust this answers your questions. Please do not hesitate to contact us should you require any other information in this regard.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

**T:** (+27)12 346 3810 | **F:** (+27) 86 570 5659 | **E:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
**36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161**

---

**From:** Karen van Aswegen [mailto:karenva@nationalletting.co.za]  
**Sent:** 24 February 2017 09:41 PM  
**To:** 'Taryn Chantler'; reception@bokamoso.net  
**Subject:** RE: Rooihuiskraal North X29 - Public Participation Process

Good day,

Thank you for the information – can someone please tell us WHAT they plan to do there as the notice doesn't specify? (in an understandable explanation pls?)

Kind regards



<http://www.nationalletting.co.za/>  
<http://www.karenavanawegen.com/>

---

**From:** Taryn Chantler [<mailto:taryn@visionprop.co.za>]  
**Sent:** Friday, February 24, 2017 11:40 AM  
**To:** DEAR CLIENT  
**Cc:** 'Henk Roos'  
**Subject:** Rooihuiskraal North X29 - Public Participation Process  
**Importance:** High

Dear Owner

Kindly find attached hereto a letter and public notice from Bokamoso Landscape Architects and Environmental Consultants CC regarding a planned development on vacant land adjacent to your complex, for your attention.

Kindly also forward this e-mail and attachments to your tenants, should you be letting your property.

Kind regards



**Taryn Chantler**  
Portfolio Assistant



- **Tel** +27(0) 12 846 3030
- **Fax2Mail** +27(12) 804 2158
- **Address** PEC Business Park | 128 Siersteen Road | Silvertondale | Pretoria
- **Postal** PO Box 11645 | Queenswood | 0121
- **Email** [taryn@visionprop.co.za](mailto:taryn@visionprop.co.za)
- **Web** [www.visionprop.co.za](http://www.visionprop.co.za)

**juanita@bokamoso.net**

---

**From:** juanita@bokamoso.net  
**Sent:** 27 February 2017 01:34 PM  
**To:** Karen van Aswegen  
**Subject:** RE: Rooihuiskraal North X29 - Public Participation Process  
**Attachments:** image001.jpg; image002.jpg; image003.jpg; image004.jpg

Dear Karen van Aswegen,

Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental will keep you updated regarding the process in the future.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

---

**From:** Karen van Aswegen [mailto:karenva@nationalletting.co.za]  
**Sent:** 27 February 2017 01:11 PM  
**To:** juanita@bokamoso.net  
**Subject:** RE: Rooihuiskraal North X29 - Public Participation Process

Thank you... ☺  
Yes please register me..

Kind regards



<http://www.nationalletting.co.za/>  
<http://www.karenavanaswegen.com/>

---

**From:** juanita@bokamoso.net [mailto:juanita@bokamoso.net]  
**Sent:** Monday, February 27, 2017 12:04 PM  
**To:** karenva@nationalletting.co.za  
**Subject:** RE: Rooihuiskraal North X29 - Public Participation Process

Dear Karen van Aswegen,

Thank you for your response, please note the proposed development is for a Residential 3 Development for the establishment of a residential security complex consisting of 100 units per hectare (maximum 350 units) with associated services and infrastructure. This is a high density development with 30% coverage and a FSR of 0.6. The height of the buildings are 3 storeys on the ± 18.0200 hectares site.

The infrastructure associated with the proposed development (i.e. water, storm water, sewer, etc.) will also be addressed as part of this application.

Please confirm if we should register you as an Interested and Affected Party on our databases in order to keep you updated on the progress made on this project.

The Draft Basic Assessment Report will be made available for perusal and comments soon which will have more detailed information regarding the project.

Trust this answers your questions. Please do not hesitate to contact us should you require any other information in this regard.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

---

**From:** Karen van Aswegen [mailto:karenva@nationalletting.co.za]  
**Sent:** 24 February 2017 09:41 PM  
**To:** 'Taryn Chantler'; [reception@bokamoso.net](mailto:reception@bokamoso.net)  
**Subject:** RE: Rooihuiskraal North X29 - Public Participation Process

Good day,

Thank you for the information – can someone please tell us WHAT they plan to do there as the notice doesn't specify? (in an understandable explanation pls?)

Kind regards



<http://www.nationalletting.co.za/>  
<http://www.karenavanaswegen.com/>

---

**From:** Taryn Chantler [<mailto:taryn@visionprop.co.za>]  
**Sent:** Friday, February 24, 2017 11:40 AM  
**To:** DEAR CLIENT  
**Cc:** 'Henk Roos'  
**Subject:** Rooihuiskraal North X29 - Public Participation Process  
**Importance:** High

Dear Owner

Kindly find attached hereto a letter and public notice from Bokamoso Landscape Architects and Environmental Consultants CC regarding a planned development on vacant land adjacent to your complex, for your attention.

Kindly also forward this e-mail and attachments to your tenants, should you be letting your property.

Kind regards



**Taryn Chantler**  
Portfolio Assistant



- **Tel** +27(0) 12 846 3030
- **Fax2Mail** +27(12) 804 2158
- **Address** PEC Business Park | 128 Siersteen Road | Silvertondale | Pretoria
- **Postal** PO Box 11645 | Queenswood | 0121
- **Email** [taryn@visionprop.co.za](mailto:taryn@visionprop.co.za)
- **Web** [www.visionprop.co.za](http://www.visionprop.co.za)

**From:** juanita@bokamoso.net  
**Sent:** 24 February 2017 03:19 PM  
**To:** ronaldoretief@gmail.com  
**Subject:** RE: Rooihuiskraal North X29 Registration as tenant & I&AP  
**Attachments:** image001.jpg

Dear Ronaldo Retief,

Thank you for your response, Bokamoso Environmental registered you as an Interested and/or Affected Party for the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental noted your comments on our Issues and Comments Register and will keep you updated regarding the process in the future.

Please note that the Project Consultant will respond to your queries as soon as possible.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

**T:** (+27)12 346 3810 | **F:** (+27) 86 570 5659 | **E:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
**36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161**

**From:** Ronaldo Retief [mailto:ronaldoretief@gmail.com]  
**Sent:** 23 February 2017 07:27 PM  
**To:** reception@bokamoso.net; admin@bokamoso.net; info@bokamoso.net  
**Subject:** Rooihuiskraal North X29 Registration as tenant & I&AP

Dear Ane / Juanita / Liselle

I am a tenant from the complex Swiss le Grande no 4

I moved into the complex in September 2012 and I appose the proposed Rooihuiskraal North X29 development.

I am registered as a Professional Natural Scientist (400134/10) in the fields of zoological and environmental sciences. I myself am an environmental assessment practitioner with 10 years work experience specializing in ecological and wetlands.

I will furbish Bokamoso with a more detailed explanation when the draft basic assessment report is available for public review, however some items that is not mentioned in your letter are:

- There is a fully functional wetland which forms part of the Rietspruit catchment flowing right through the proposed development. No mention to the tenants nor the public were made that there is a need for a water use license application for this proposed development.
- The complex I stay in is situated on the border of the 1:100 year floodline and I have seen how terrible this wetland and river system can get with vast amounts of water and rain as was the case this week. Undertaking a development within these conditions will have a catastrophic impact to the environment and to the general society in general especially the owners of the new proposed development.
- From an ecological point of view, this wetland sustains a vast number of species in terms of wildlife and plants and development within this 1:100 year floodline zone will not only have a negative impact on the social scale, but also on the environment itself.
- Access and traffic on Netabos, Kraalnaboom Avenue and Capensis is already a disaster. Kraalnaboom Avenue is so narrow, and this is currently the only access to Lenchen Road and Rooihuiskraal Road. The number of units and tenants of the proposed development will have a major impact on the existing road infrastructure.

These are a few of a vast number of comments I have. I will provide you with a full list of questions, concerns and requests once a public meeting was held and when the draft report is circulated.

My contact details are as follows:

Ronaldo Retief Pr.Sci.Nat  
 4 Swiss le Grande  
 33 Kraalnaboom Avenue  
 Rooihuiskraal Noord  
 Centurion  
 0157

PO Box 11816  
 Wierdapark South  
 0057

[ronaldoretief@gmail.com](mailto:ronaldoretief@gmail.com)  
 072 66 66 348

Prims Environmental Management Services cc  
 2 Coldstream Street  
 Unit 4 Coldstream Office Park  
 Little Falls  
 Roodepoort  
 1401

011 475 0210

Regards

Ronaldo Retief Pr.Sci.Nat.  
 072 66 66 348

**From:** juanita@bokamoso.net  
**Sent:** 13 July 2017 10:20 AM  
**To:** Marlise Taljaard  
**Cc:** Jaco Pienaar  
**Subject:** RE: Rooihuiskraal X29 - DBAR Review Notice  
**Attachments:** image002.jpg; image003.jpg

Dear Marlise Taljaard,

Thank you for your response, Bokamoso Environmental noted your comments on our Issues and Comments Register.

Please note that the Project Consultant will respond to your comments as soon as possible.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

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**From:** Marlise Taljaard [mailto:marlise@caliber.co.za]  
**Sent:** 11 July 2017 04:15 PM  
**To:** juanita@bokamoso.net  
**Cc:** Jaco Pienaar  
**Subject:** RE: Rooihuiskraal X29 - DBAR Review Notice  
**Importance:** High

Hallo Juanita

I have scrutinized the report and have no objections to the proposed development.

The wetland can be used for both private- and public open space as stipulated in the report.

Can you give us guidelines on how the public open space can be utilized to form an integral part of community life within the boundaries of activities allowed in the wetland area/powerline servitude?

It can also be offered to neighbouring complexes as a facility with a small monthly levy. A lot of the neighbouring complexes have limited green area/communal facilities.

There is a substantial part of the property north of the wetland bordering Nentabos Road that can be utilized for P.O.S.

We would like your input in this regard please?



Thank you.

Beste Groete/Kind Regards



Our God is the Lion of Juda, every knee will bow and every tongue confess that ONLY HE is Lord!

---

**From:** juanita@bokamoso.net [mailto:juanita@bokamoso.net]

**Sent:** Monday, 12 June 2017 3:16 PM

**To:** jgrobler@geoscience.org.za; asalomon@sahra.org.za; nndobochani@sahra.org.za; maphata.ramphele@gauteng.gov.za; justicem@dwaf.gov.za; keetm@dwaf.gov.za; 'Siwelane Lilian (GAU)' <Siwelanel@dwf.gov.za>; tshifaror@dwa.gov.za; mathebet@dwa.gov.za; central@eskom.co.za; paia@eskom.co.za; schmidk <schmidk@nra.co.za>; kumen govender <kumen.govender@gauteng.gov.za>; mmpshe <mmpshe@randwater.co.za>; nkoneigh <nkoneigh@randwater.co.za>; RudzaniM <RudzaniM@tshwane.gov.za>; daniel.ramokone@transnet.net; loveous.tampane@transnet.net; ward48.da@gmail.com; emergiat@tshwane.gov.za; PA2@fitzanne.co.za; nadinecelliers@gmail.com; Andre.Buys@khwelapower.co.za; lungi.dlulane@gmail.com; frieda@visionprop.co.za; luthanya@gmail.com; ronaldoretief@gmail.com; Marlise Taljaard <marlise@caliber.co.za>; office@amberfield-valley.co.za; management@amberfield-valley.co.za

**Subject:** Rooihuiskraal X29 - DBAR Review Notice

Dear Interested and/or Affected Parties,

Please refer to the attached Review Notice for the Draft Basic Assessment Report regarding the proposed **Rooihuiskraal X29** Project.

A period of 30 days will be allowed for review and comments on the Draft Basic Assessment Report for the proposed Rooihuiskraal X29 from **12 June 2017 – 13 July 2017**.

Your comments should be sent directly to our office at Bokamoso. Attention: Anè Agenbacht or Juanita De Beer ([reception@bokamoso.net](mailto:reception@bokamoso.net) or fax: 086 570 5659).

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

**juanita@bokamoso.net**

---

**From:** juanita@bokamoso.net  
**Sent:** 01 August 2017 08:39 AM  
**To:** Marlise Taljaard  
**Cc:** Jaco Pienaar  
**Subject:** RE: Rooihuiskraal X29 - DBAR Review Notice  
**Attachments:** image001.jpg; image002.jpg; image003.jpg

Dear Marlise Taljaard,

Thank you for your response, please note that the Project Consultant is Anè Agenbacht and she will contact you as soon as possible regarding your queries.

My apologies for only replying now, I was on leave.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

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**From:** Marlise Taljaard [mailto:[marlise@caliber.co.za](mailto:marlise@caliber.co.za)]  
**Sent:** 28 July 2017 02:38 PM  
**To:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net)  
**Cc:** Jaco Pienaar  
**Subject:** RE: Rooihuiskraal X29 - DBAR Review Notice  
**Importance:** High

Hallo Juanita

Who is the project consultant? I have not yet been contacted? I would like to set up a telecon with her/him re the project?

Please let me know?

Thank you.

Beste Groete/Kind Regards



**MARLIÉ TALJAARD**  
DEVELOPMENT MANAGER

Tel : 012 809 2044 | [marlise@caliber.co.za](mailto:marlise@caliber.co.za)  
Fax : 086 513 5093 | [www.caliber.co.za](http://www.caliber.co.za)  
Mob: 078 632 5019  
EMWIL House, Tjigervallei Office Park,  
Silver Lakes Drive, Silver Lakes, Pta, 0081

Our God is the Lion of Juda, every knee will bow and every tongue confess that ONLY HE is Lord!

---

**From:** juanita@bokamoso.net [mailto:juanita@bokamoso.net]  
**Sent:** Thursday, 13 July 2017 10:20 AM  
**To:** Marlise Taljaard <marlise@caliber.co.za>  
**Cc:** Jaco Pienaar <jaco@caliber.co.za>  
**Subject:** RE: Rooihuiskraal X29 - DBAR Review Notice

Dear Marlise Taljaard,

Thank you for your response, Bokamoso Environmental noted your comments on our Issues and Comments Register.

Please note that the Project Consultant will respond to your comments as soon as possible.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Leombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

---

**From:** Marlise Taljaard [mailto:marlise@caliber.co.za]  
**Sent:** 11 July 2017 04:15 PM  
**To:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net)  
**Cc:** Jaco Pienaar  
**Subject:** RE: Rooihuiskraal X29 - DBAR Review Notice  
**Importance:** High

Hallo Juanita

I have scrutinized the report and have no objections to the proposed development.

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Can you give us guidelines on how the public open space can be utilized to form an integral part of community life within the boundaries of activities allowed in the wetland area/powerline servitude?

It can also be offered to neighbouring complexes as a facility with a small monthly levy. A lot of the neighbouring complexes have limited green area/communal facilities.

There is a substantial part of the property north of the wetland bordering Nentabos Road that can be utilized for P.O.S.

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Thank you.

Beste Groete/Kind Regards



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---

**From:** [juanita@bokamoso.net](mailto:juanita@bokamoso.net) [<mailto:juanita@bokamoso.net>]

**Sent:** Monday, 12 June 2017 3:16 PM

**To:** [jgrobler@geoscience.org.za](mailto:jgrobler@geoscience.org.za); [asalomon@sahra.org.za](mailto:asalomon@sahra.org.za); [ndobochani@sahra.org.za](mailto:ndobochani@sahra.org.za); [maphata.ramphele@gauteng.gov.za](mailto:maphata.ramphele@gauteng.gov.za); [justicem@dwaf.gov.za](mailto:justicem@dwaf.gov.za); [keetm@dwaf.gov.za](mailto:keetm@dwaf.gov.za); 'Siwelane Lilian (GAU)' <[SiwelaneL@dws.gov.za](mailto:SiwelaneL@dws.gov.za)>; [tshifaror@dwa.gov.za](mailto:tshifaror@dwa.gov.za); [mathebet@dwa.gov.za](mailto:mathebet@dwa.gov.za); [central@eskom.co.za](mailto:central@eskom.co.za); [paia@eskom.co.za](mailto:paia@eskom.co.za); [schmidk@nra.co.za](mailto:schmidk@nra.co.za); kumen govender <[kumen.govender@gauteng.gov.za](mailto:kumen.govender@gauteng.gov.za)>; mmpshe <[mmpshe@randwater.co.za](mailto:mmpshe@randwater.co.za)>; nkoneigh <[nkoneigh@randwater.co.za](mailto:nkoneigh@randwater.co.za)>; RudzaniM <[RudzaniM@tshwane.gov.za](mailto:RudzaniM@tshwane.gov.za)>; [daniel.ramokone@transnet.net](mailto:daniel.ramokone@transnet.net); [loveous.tampene@transnet.net](mailto:loveous.tampene@transnet.net); [ward48.da@gmail.com](mailto:ward48.da@gmail.com); [emerciat@tshwane.gov.za](mailto:emerciat@tshwane.gov.za); [PA2@fitzanne.co.za](mailto:PA2@fitzanne.co.za); [nadinecelliers@gmail.com](mailto:nadinecelliers@gmail.com); [Andre.Buys@khwelapower.co.za](mailto:Andre.Buys@khwelapower.co.za); [lungi.dlulane@gmail.com](mailto:lungi.dlulane@gmail.com); [frieda@visionprop.co.za](mailto:frieda@visionprop.co.za); [luthanya@gmail.com](mailto:luthanya@gmail.com); [ronaldoretief@gmail.com](mailto:ronaldoretief@gmail.com); Marlise Taljaard <[marlise@caliber.co.za](mailto:marlise@caliber.co.za)>; [office@amberfield-valley.co.za](mailto:office@amberfield-valley.co.za); [management@amberfield-valley.co.za](mailto:management@amberfield-valley.co.za)

**Subject:** Rooihuiskraal X29 - DBAR Review Notice

Dear Interested and/or Affected Parties,

Please refer to the attached Review Notice for the Draft Basic Assessment Report regarding the proposed **Rooihuiskraal X29** Project.

A period of 30 days will be allowed for review and comments on the Draft Basic Assessment Report for the proposed Rooihuiskraal X29 from **12 June 2017 – 13 July 2017**.

Your comments should be sent directly to our office at Bokamoso. Attention: Anè Agenbacht or Juanita De Beer ([reception@bokamoso.net](mailto:reception@bokamoso.net) or fax: 086 570 5659).

Kind Regards/Vriendelike Groete

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

**From:** juanita@bokamoso.net  
**Sent:** 21 February 2017 02:43 PM  
**To:** 'jgrobler@geoscience.org.za'; 'asalomon@sahra.org.za'; 'nndobochani@sahra.org.za'; 'maphata.ramphele@gauteng.gov.za'; 'justicem@dwaf.gov.za'; 'keetm@dwaf.gov.za'; 'Siwelane Lilian (GAU)'; 'tshifaror@dwa.gov.za'; 'mathebet@dwa.gov.za'; 'central@eskom.co.za'; 'paia@eskom.co.za'; schmidk; kumen govender; mmpshe; nkoneigh; RudzaniM; daniel.ramokone@transnet.net; 'loveous.tampane@transnet.net'; 'ward48.da@gmail.com'; 'emerciat@tshwane.gov.za'; 'PA2@fitzanne.co.za'; 'nadinecelliers@gmail.com'; 'Andre.Buys@khwelapower.co.za'; 'lungi.dlulane@gmail.com'  
**Subject:** Rooihuiskraal North X29 - Public Participation Process  
**Attachments:** Rooihuiskraal X29 - Public Notice.pdf; Rooihuiskraal X29 - Landowner Tenants Letter.pdf; image001.jpg

Dear Interested and/or Affected Parties,

Please refer to the attached Public Notice and Landowner & Tenant Letter regarding the proposed **Rooihuiskraal North X29** Project.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects &  
Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

**From:** juanita@bokamoso.net  
**Sent:** 23 February 2017 10:54 AM  
**To:** 'frieda@visionprop.co.za'  
**Subject:** Rooihuiskraal North X29 - Public Participation Process  
**Attachments:** Rooihuiskraal X29 - Public Notice.pdf; Rooihuiskraal X29 - Landowner Tenants Letter.pdf; image001.jpg

Dear Frieda,

Our telephonic conversation refers.

Please refer to the attached Public Notice & Landowner and Tenant Letter for the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental will appreciate your assistance to distribute the attached notice and letter to all the residents (tenants and landowners) in Swiss Le Grande Estate.

Thank you so much for your assistance.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161



**From:** juanita@bokamoso.net  
**Sent:** 24 February 2017 10:30 AM  
**To:** 'judie.nudor@icon.co.za'  
**Subject:** Rooihuiskraal North X29 - Public Participation Process  
**Attachments:** Rooihuiskraal X29 - Public Notice.pdf; Rooihuiskraal X29 - Landowner Tenants Letter.pdf; image001.jpg

Dear Judie,

Our telephonic conversation refers.

Please refer to the attached Public Notice and Landowner & Tenant Letter regarding the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental will appreciate if you can distribute the attached documents to all the Residents (Tenants & Landowners) of Sparrow View Estate.

Thank you so much for your assistance.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
36 Lebombo Street, Ashlea Gardens, Pretoria | P.O. Box 11375 Maroelana 0161

**From:** juanita@bokamoso.net  
**Sent:** 24 February 2017 10:33 AM  
**To:** 'georgegobey@gmail.com'  
**Subject:** Rooihuiskraal North X29 - Public Participation Process  
**Attachments:** Rooihuiskraal X29 - Public Notice.pdf; Rooihuiskraal X29 - Landowner Tenants Letter.pdf; image001.jpg

Dear George Gobey,

Our telephonic conversation refers.

Please refer to the attached Public Notice and Landowner & Tenant Letter regarding the proposed **Rooihuiskraal North X29** Project.

Bokamoso Environmental will appreciate if you can distribute the attached document to all the Residents (Tenants and Landowners) of Jayden Estate.

Thank you so much for your assistance.

**Kind Regards/Vriendelike Groete**

*Juanita De Beer*

*Senior Public Participation Consultant & EAP in training*



**Landscape Architects & Environmental Consultants**

T: (+27)12 346 3810 | F: (+27) 86 570 5659 | E: [juanita@bokamoso.net](mailto:juanita@bokamoso.net) | [www.bokamoso.net](http://www.bokamoso.net)  
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an agency of the  
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za  
South African Heritage Resources Agency | 111 Harrington Street | Cape Town  
P.O. Box 4637 | Cape Town | 8001  
www.sahra.org.za

Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: asalomon@sahra.org.za  
CaseID: 10694

Date: Wednesday February 22, 2017  
Page No: 1

## Letter

### In terms of Section 38 of the National Heritage Resources Act (Act 25 of 1999)

Attention: Lezmin 1066 BK

**A part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR.**

Thank you for your notification regarding this development.

In terms of the National Heritage Resources Act, no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that prior to development it is incumbent on the developer to ensure that a **Heritage Impact Assessment** is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.

The quickest process to follow for the archaeological component is to contract an accredited specialist (see the web site of the Association of Southern African Professional Archaeologists [www.asapa.org.za](http://www.asapa.org.za)) to provide a Phase 1 Archaeological Impact Assessment Report. This must be done before any large development takes place.

The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38) about the process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites.

Where bedrock is to be affected, or where there are coastal sediments, or marine or river terraces and in potentially fossiliferous superficial deposits, a Palaeontological Desk Top study must be undertaken to assess whether or not the development will impact upon palaeontological resources - or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. **Please note that a nationwide fossil sensitivity map is available on SAHRIS to assist with determining the fossil sensitivity of a study area .**

Our Ref: 10694



an agency of the  
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za  
South African Heritage Resources Agency | 111 Harrington Street | Cape Town  
P.O. Box 4637 | Cape Town | 8001  
www.sahra.org.za

Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: asalomon@sahra.org.za  
CaseID: 10694

Date: Wednesday February 22, 2017  
Page No: 2

If the property is very small or disturbed and there is no significant site the heritage specialist may choose to send a letter to the heritage authority motivating for exemption from having to undertake further heritage assessments.

Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewsapes must also be assessed.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

---

Andrew Salomon  
Heritage Officer: Archaeology  
South African Heritage Resources Agency

---

John Gribble  
Manager: Maritime and Underwater Cultural Heritage Unit / Acting Manager: Archaeology, Palaeontology and Meteorites Unit  
South African Heritage Resources Agency

**ADMIN:**

Direct URL to case: <http://www.sahra.org.za/node/387031>  
(GDARD, Ref: )



# Appendix Evi

List of Interested and Affected Parties

Nr	Registered Parties	Contact details	Address
<b>Stakeholders</b>			
1	Council Geo-Science	<a href="mailto:jgrobler@geoscience.org.za">jgrobler@geoscience.org.za</a>	
2	SAHRA Gauteng	<a href="mailto:asalomon@sahra.org.za">asalomon@sahra.org.za</a> <a href="mailto:nndobochani@sahra.org.za">nndobochani@sahra.org.za</a>	
3	PHRAG	<a href="mailto:maphata.ramphele@gauteng.gov.za">maphata.ramphele@gauteng.gov.za</a>	
4	DWS	<a href="mailto:justicem@dwaf.gov.za">justicem@dwaf.gov.za</a> <a href="mailto:keetm@dwaf.gov.za">keetm@dwaf.gov.za</a> <a href="mailto:siwelanel@dwa.gov.za">siwelanel@dwa.gov.za</a> <a href="mailto:tshifaror@dwa.gov.za">tshifaror@dwa.gov.za</a> <a href="mailto:mathebet@dwa.gov.za">mathebet@dwa.gov.za</a>	
5	Eskom	<a href="mailto:central@eskom.co.za">central@eskom.co.za</a> <a href="mailto:paia@eskom.co.za">paia@eskom.co.za</a>	
6	SANRAL	<a href="mailto:schmidk@nra.co.za">schmidk@nra.co.za</a>	
7	Gautrans	<a href="mailto:kumen.govender@gauteng.gov.za">kumen.govender@gauteng.gov.za</a>	
8	Randwater	<a href="mailto:mmpshe@randwater.co.za">mmpshe@randwater.co.za</a> <a href="mailto:nkoneigh@randwater.co.za">nkoneigh@randwater.co.za</a>	
9	City Of Tshwane	<a href="mailto:RudzaniM@tshwane.gov.za">RudzaniM@tshwane.gov.za</a>	
10	Transnet	<a href="mailto:daniel.ramokone@transnet.net">daniel.ramokone@transnet.net</a> <a href="mailto:loveous.tampane@transnet.net">loveous.tampane@transnet.net</a>	
12	<b>Ward councillor Ward 48, City of Tshwane</b>	<a href="mailto:ward48.da@gmail.com">ward48.da@gmail.com</a>	
	Kingsley Wakelin	Cell: 0763937712	
	<b>Rooihuiskraal Historical Terrain</b>	<a href="mailto:emergiat@tshwane.gov.za">emergiat@tshwane.gov.za</a>	
	Emercia	Tel: 012 358 1825 Tel: 076 519 4717	
<b>Interested and Affected Parties</b>			
1	Petro Olivier	<a href="mailto:PA2@fitzanne.co.za">PA2@fitzanne.co.za</a>	
	<b>Property Portfolio Assistant</b>	Tel: 012 342 3710	
	<b>Fitzanne Estates (Pty) Ltd</b>		





# Appendix F

Water use license(s)  
authorisation, SAHRA  
information, service letters from  
municipalities, water supply  
information





an agency of the  
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za  
South African Heritage Resources Agency | 111 Harrington Street | Cape Town  
P.O. Box 4637 | Cape Town | 8001  
www.sahra.org.za

Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: asalomon@sahra.org.za  
CaseID: 10694

Date: Wednesday February 22, 2017  
Page No: 1

## Letter

### In terms of Section 38 of the National Heritage Resources Act (Act 25 of 1999)

Attention: Lezmin 1066 BK

**A part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR.**

Thank you for your notification regarding this development.

In terms of the National Heritage Resources Act, no 25 of 1999, heritage resources, including archaeological or palaeontological sites over 100 years old, graves older than 60 years, structures older than 60 years are protected. They may not be disturbed without a permit from the relevant heritage resources authority. This means that prior to development it is incumbent on the developer to ensure that a **Heritage Impact Assessment** is done. This must include the archaeological component (Phase 1) and any other applicable heritage components. Appropriate (Phase 2) mitigation, which involves recording, sampling and dating sites that are to be destroyed, must be done as required.

The quickest process to follow for the archaeological component is to contract an accredited specialist (see the web site of the Association of Southern African Professional Archaeologists [www.asapa.org.za](http://www.asapa.org.za)) to provide a Phase 1 Archaeological Impact Assessment Report. This must be done before any large development takes place.

The Phase 1 Impact Assessment Report will identify the archaeological sites and assess their significance. It should also make recommendations (as indicated in section 38) about the process to be followed. For example, there may need to be a mitigation phase (Phase 2) where the specialist will collect or excavate material and date the site. At the end of the process the heritage authority may give permission for destruction of the sites.

Where bedrock is to be affected, or where there are coastal sediments, or marine or river terraces and in potentially fossiliferous superficial deposits, a Palaeontological Desk Top study must be undertaken to assess whether or not the development will impact upon palaeontological resources - or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary. If the area is deemed sensitive, a full Phase 1 Palaeontological Impact Assessment will be required and if necessary a Phase 2 rescue operation might be necessary. **Please note that a nationwide fossil sensitivity map is available on SAHRIS to assist with determining the fossil sensitivity of a study area .**

Our Ref: 10694



an agency of the  
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za  
South African Heritage Resources Agency | 111 Harrington Street | Cape Town  
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www.sahra.org.za

Enquiries: Andrew Salomon  
Tel: 021 462 4502  
Email: asalomon@sahra.org.za  
CaseID: 10694

Date: Wednesday February 22, 2017  
Page No: 2

If the property is very small or disturbed and there is no significant site the heritage specialist may choose to send a letter to the heritage authority motivating for exemption from having to undertake further heritage assessments.

Any other heritage resources that may be impacted such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

---

Andrew Salomon  
Heritage Officer: Archaeology  
South African Heritage Resources Agency

---

John Gribble  
Manager: Maritime and Underwater Cultural Heritage Unit / Acting Manager: Archaeology, Palaeontology and Meteorites Unit  
South African Heritage Resources Agency

**ADMIN:**

Direct URL to case: <http://www.sahra.org.za/node/387031>  
(GDARD, Ref: )



# Appendix G

Specialist Reports



# **Appendix G1**

Cultural Heritage Resources  
Impact Assessment



# AFRICAN HERITAGE CONSULTANTS CC

2001/077745/23

**DR. UDO S KÜSEL**

Tel/fax: (012) 567 6046

Cell: 082 498 0673

E-mail: udo.heritage@absamail.co.za

P.O. Box 652

Magalieskruin

0150

---

8 May 2007

## **CULTURAL HERITAGE RESOURCES IMPACT ASSESSMENT OF THE REMAINDER OF PORTION ONE OF THE FARM BRAK FONTEIN 399 JR, ROOIHUISKRAAL TSHWANE MUNICIPALITY, GAUTENG PROVINCE**

### **1. DEFINITION**

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

### **2. PROTECTED SITES IN TERMS OF THE NATIONAL HERITAGE ACT, Act. NO. 25 OF 1999**

The following are the most important sites and objects protected by the National Heritage Act:

- Structures or parts of structures older than 60 years
- Archaeological sites and objects
- Palaeontological sites
- Meteorites
- Ship wrecks
- Burial grounds

- Graves of victims of conflict
- Public monuments and memorials
- Structures, places and objects protected through the publication of notices in the Gazette and Provincial Gazette
- Any other places or object which are considered to be of interest or of historical or cultural significance
- Geological sites of scientific or cultural importance
- Sites of significance relating to the history of slavery in South Africa
- Objects to which oral traditions are attached
- Sites of cultural significance or other value to a community or pattern of South African history

### **3. METHODOLOGY**

The site was visited and inspected on foot. All appropriate documents on the area were studied.

### **4. RESULTS**

The proposed development site has typical Highveld vegetation. The site slopes towards the west and has a small stream running through it. No archaeological artefacts or sites could be found. The only structures present are two soil dam walls of which one has been partially washed away. These dam walls are relatively modern and fall outside the jurisdiction of Act 25 of 1999. There are also no graves present on the proposed development area.

### **5. CONCLUSION**

There are no important visible cultural heritage resources present on the proposed development area.

### **6. RECOMMENDATIONS**

There is no objection to the development from a cultural heritage resources point of view.

### **7. SITE INFORMATION**

Owners contact details:  
 Lezmin 1066 CC, James Douglas Tel: 012-653-3620 Fax: 012-653-3627  
 Email: hab2000@mweb.co.za

<p>Developers contact details:  Lezmin 1066 CC, James Douglas Tel: 012-653-3620 Fax: 012-653-3627  Email: hab2000@mweb.co.za</p>
<p>Consultants contact details:  EkoInfo CC Environmental and Wildlife Management Consultants, Willem de Frey  Tel: 012-365-2546X4 Fax: 012-365-3217 Email: wdefrey@ekoinfo.co.za</p>
<p>Type of development (e.g. low cost housing project, mining etc.)  Cluster development</p>
<p>Whether rezoning and/or subdivision of land is involved:  Rezoning from vacant to residential</p>
<p>Full location of Province, Magisterial District/Local Authority, property (e.g. farm, erf name and number):  Remainder of portion one of the farm Brakfontein 399 JR, Tshwane Municipality, Gauteng Province</p>
<p>Location map must have the polygon of the area to be surveyed on it and full geographical coordinates for all relevant points and where applicable indication of the area to be developed (footprint):</p>
<p>If possible an aerial photograph of the specific area showing the location of all site.</p>

# MAPS

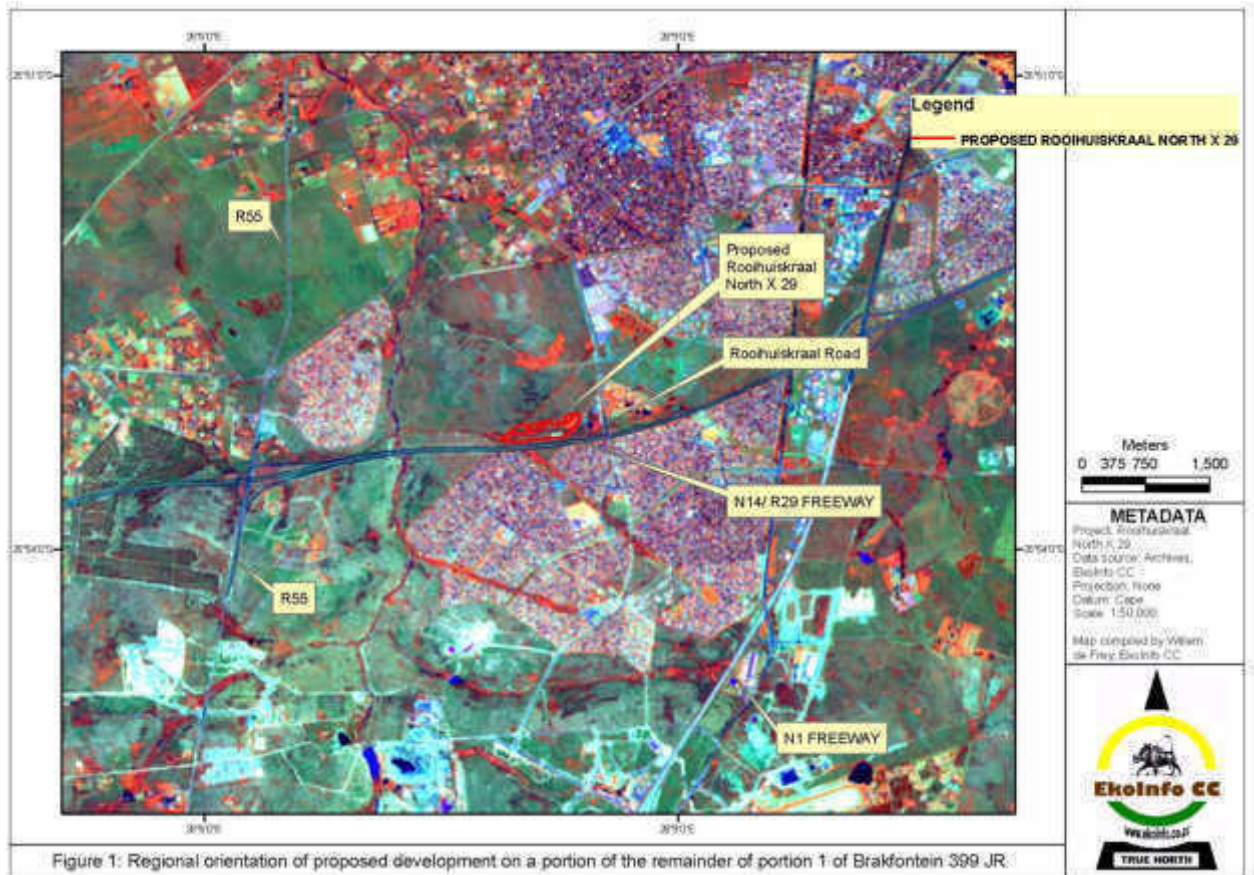


Figure 1: Regional orientation of proposed development on a portion of the remainder of portion 1 of Brakfontein 399 JR.



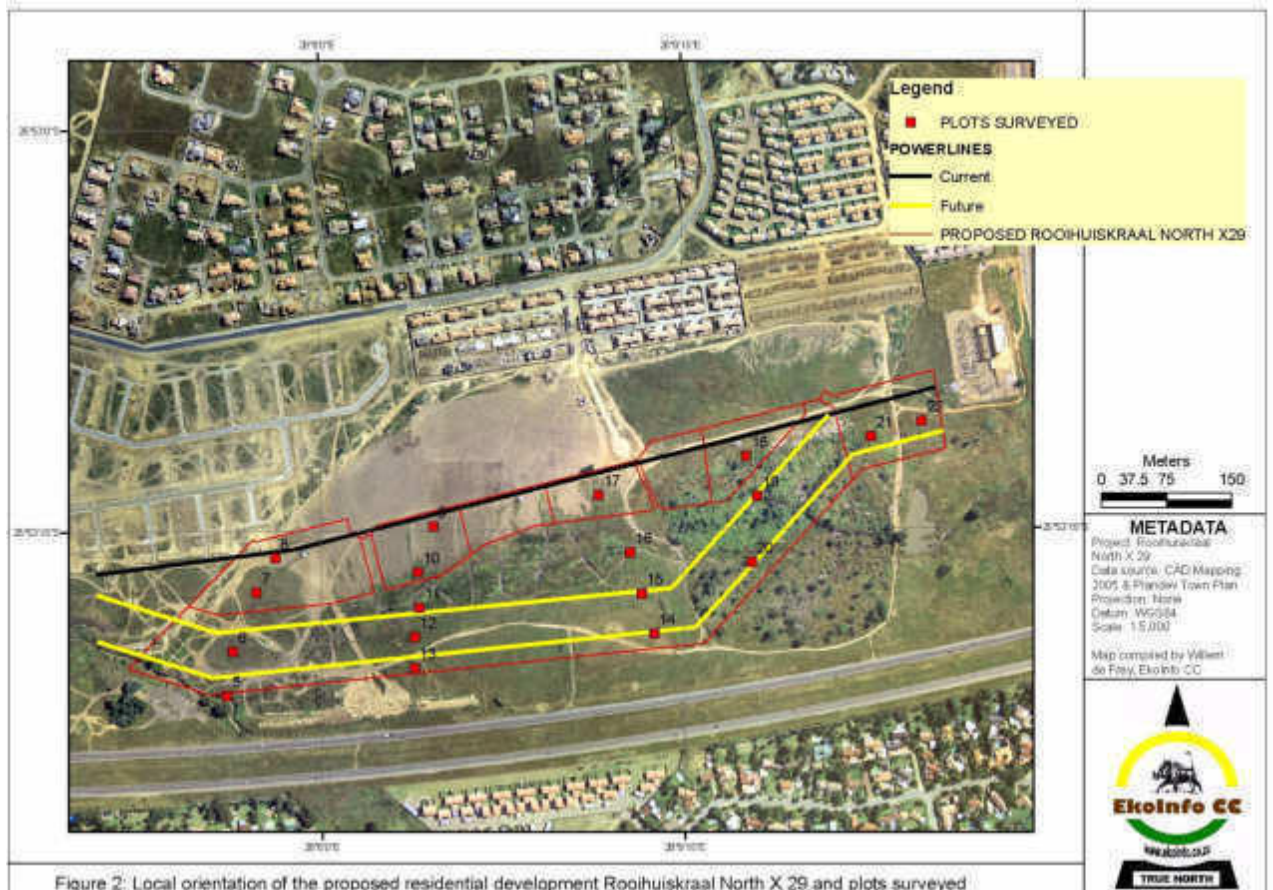


Figure 2: Local orientation of the proposed residential development Rooihuiskraal North X 29 and plots surveyed



# Appendix G2

Vegetation and Wetland  
Assessment

**SPECIALIST REPORT: VEGETATION AND WETLAND  
ASSESSMENT ON A PORTION OF THE REMAINDER OF  
PORTION 1 of BRAKFRONTEIN 399JR -  
ROOIHUISKRAAL NORTH X29**

Commissioned by

**Lezmin 1066 BK**

Compiled by

**Ekoinfo cc**

**Environmental & Wildlife Management  
Consultancy**

W.H. de Frey

March 2008

**Ekoinfo cc**

P.O. Box 1277  
Garfontein  
0042  
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Tel/Fax: 012-993-2962  
Email: [wdefrey@ekoinfo.co.za](mailto:wdefrey@ekoinfo.co.za)



## EXECUTIVE SUMMARY

This vegetation and wetland assessment forms part of a Basic Assessment Process (Gaut ref 002/06-07/N0311), during which a request to EIAADMIN indicated that the following biodiversity studies are required:

- "Invertebrates, with specific reference to *Galeosoma pilosum* and *Galeosoma robertsi*
- Wetlands. All wetland habitat must be surveyed for the following species: *Aonyx capensis*, *Atilax paludinosus*, *Chrysospalax villosus*, *Dasymys incomtus*, *Lutra maculicollis*, *Otomys angoniensis*, *Otomys irroratus*.
- Vegetation"

This report concerns itself with the vegetation component of the biodiversity studies; a separate report deals with the fauna component. These reports are completed in compliance with GDACE's Biodiversity Requirements.

On a regional scale, the property is located north of the R28/N14 freeway between the R55 and Rooihuiskraal roads within Gauteng Province. On a local scale, the proposed development is bordered by existing and planned developments to the north and west, while vacant land occurs to the east and south. Extensive development is planned and is taking place on the remaining vacant land in the area. The extent of the property is 15 ha.

According to the 1995 Land Cover Classification based on satellite imagery, five land cover categories occur within quaternary catchment A21B, of which the proposed development is located within the Build Up category. **This implies that the proposed development does not contribute to:**

- > urban sprawl or
- > an increase in the percentage land transformed to build up on quaternary catchment scale

To alter 1% of the total land use within quaternary catchment A21B, one would need to alter 526.5 ha of land, the proposed development represents 15 ha or 0.0003% of quaternary catchment A21B and 0.0008% of the remaining vacant land.

The desktop study confirmed that the study area is located within the Egoli Granite Grassland; furthermore it is located within what GDACE's Directorate Nature Conservation indicates to be primary grassland. Therefore the purpose of the fieldwork was to confirm the validity of the available information, in terms of whether the study area is actually located within primary (untransformed, climax) grassland or within secondary (recovered, transformed) grassland. The National Biodiversity Assessment indicated that the Egoli Granite Grassland is one of the highly vulnerable regional vegetation units due to fragmentation and expected pressure from population increase. This vegetation due to its historical and current land use patterns represents a mosaic of primary and secondary grassland variations. GDACE's Directorate Conservation considers remaining primary grassland as sensitive.

Of the 18 plots surveyed, all plots except one were covered with vegetation. A TWINSpan analysis and subsequent refinement of the clusters indicated the presence of three broad vegetation units:

1. Transformed areas (4.560 ha or 32% coverage)
2. Riparian wetland (5.291 ha or 37% coverage)
3. Primary grassland (4.612 ha or 32% coverage)

Based on the results of the TWINSpan analysis, it is concluded that the following factors contribute to the distribution and extent of the natural vegetation within the area:

1. Human influences eg transformed or untransformed
2. Topography eg midslope, footslope and valley bottom
3. Soil conditions eg depth and percentage clay content.

The primary grassland occurs on the midslopes and upper footslopes associated with moderately deep sandy soils, while the riparian wetland is associated with deep clayey soils.

The following orange listed species were recorded within the untransformed communities, *Hypoxis hemerocallidea* and *Eucomis autumnalis subsp. clavata*. Population of these species are considered to be declining in the wild (natural areas) due to habitat loss. It should be noted that all species from the genus *Eucomis* are protected. Nineteen species with medicinal properties were recorded across the three communities. At least eight declared weed and alien invasive species were recorded across the three communities.

A minimum of 137 species were recorded within the study area. As would be expected the lowest number of species were recorded within the transformed areas, while the most species had been recorded within the Primary Grassland community. The recorded values can be adjusted/ increased with 25% due to:

1. the nature of the method which records only 95% of the species present (weight: 5%)
2. the number of plots surveyed (weight: 5%)
3. the effect of current and historical disturbances
  - a. Historic over utilisation (weight: 5)
  - b. off road vehicles (weight: 10%)
  - c. current construction activities eg rubble dumping and vagrants (weight: 5%)

The table below provides an overview of the property's significance with regards to runoff across it and its contribution to larger catchments.

Catchment	Surface area (ha)	Percentage cover					
		% Cover	Internal	Local	Runoff area	Study area	Area to be build up
Quaternary: A21B	52651	100.00%					
Internal	3016	5.73%	100.00%				
Local	155	0.29%	5.14%	100.00%			
Runoff area	72	0.14%	2.39%	46.45%	100.00%		
Study area	15	0.03%	0.50%	9.68%	20.83%	100.00%	
Area to be build up	5	0.01%	0.17%	3.23%	6.94%	33.33%	100.00%

From the table it is clear that transformation of this property will not significantly effect the larger catchment in which it occurs, while the actual area to be build up only represents 33% of the property, implying that 66% will be conserved. A conservation/ open space area based on GDACE's criteria for wetland will result in a smaller area available for conservation compared to the proposed town planning layout to accommodate development on the land. Furthermore a GDACE based conservation area could result in the wetland having to be crossed, which will increase transformation and alter the wetland further.

In spite of the low significance of the transformation, storm water control is still consider a priority, as failure to do so, will result in:

1. Excessive runoff entering the wetland areas
2. Increased sediment loads
3. Deepening of the channel
4. Siltation of the tributaries down stream.

This will be a contravention of the National Environmental Management Act and its principles, which requires environmental, social and economic sustainable development, which implies that developments should have no or limited negative impacts on or beyond its legal boundaries.

It is therefore concluded that the most significant area within the property to conserve and manage is the wetland and as much as possible adjacent grassland that is practical or that will not lead to additional impacts on the wetland.

PLEASE NOTE THIS DOCUMENT REMAINS A DRAFT UNTIL SIGNED BY THE RELEVANT SPECIALIST

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

	Person	Qualifications	Professional Registration - SACNASP	Report Status
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Peer reviewed by	Willem de Frey	MSc Wildlife Management – UP, 1999	Botany & Ecology (400100/02)	Version
File route	C:\GIS\Projekte\Rooihuiskraal\28_ph3_X29_Lezmini\Reports\TX\EkoInfo Grassland_Wetland EvaluationV1_2.doc			1.5
Member: Willem de Frey Registration no: CC1995/34111/23				

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## Introduction

This vegetation and wetland assessment forms part of a Basic Assessment Process (Gaut ref 002/06-07/N0311), during which a request to EIAADMIN indicated that the following biodiversity studies are required:

- \*\* Invertebrates, with specific reference to *Galeosoma pilosum* and *Galeosoma robertsi*
- Wetlands. All wetland habitat must be surveyed for the following species: *Aonyx capensis*, *Atilax paludinosus*, *Chrysospalax villosus*, *Dasymys incomtus*, *Lutra maculicollis*, *Otomys angoniensis*, *Otomys irroratus*.
- Vegetation"

This report concerns itself with the vegetation component of the biodiversity studies; a separate report deals with the fauna component.

These reports are completed in compliance with GDACE's Biodiversity Requirements

## STUDY AREA

### Property location

On a regional scale, the property is located north of the R28/N14 freeway between the R55 and Rooihuiskraal roads (Figure 1) within Gauteng Province.

On a local scale, the proposed development is bordered by existing and planned developments to the north and west, while vacant land occurs to the east and south (Figure 2). Extensive development is planned and is taking place on the remaining vacant land in the area.

### Site plan

Detailed layout plan from the town planner is attached in (Appendix A).

## METHODOLOGY

### Vegetation

GDACE's minimum requirements for biodiversity studies related to vegetation:

1. A vegetation survey must be undertaken by a suitably qualified specialist (at least a BSc.(Hons) in Plant Ecology/Botany).
2. Survey must take place during the summer season.
3. A general Red List plant survey must be undertaken. Lists of potential species can be obtained from Lorraine Mills (Lorraine.Mills@gauteng.gov.za).
4. The location and extent of all plant communities on the study site must be mapped. The area (in hectares) and ecological sensitivity of each plant community must be indicated. All good condition natural vegetation must be designated as ecologically sensitive.



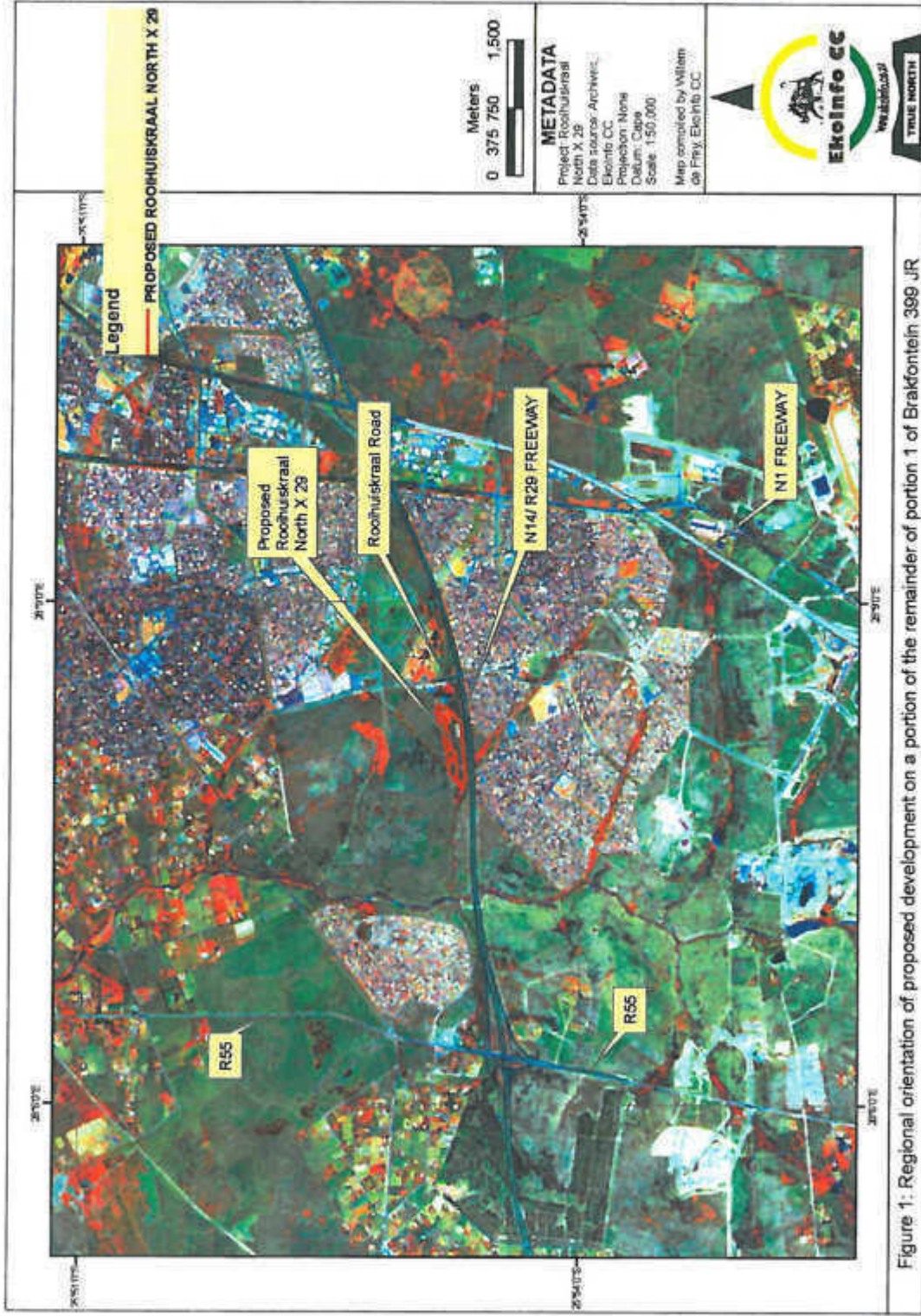


Figure 1: Regional orientation of proposed development on a portion of the remainder of portion 1 of Brakfontein 399 JR

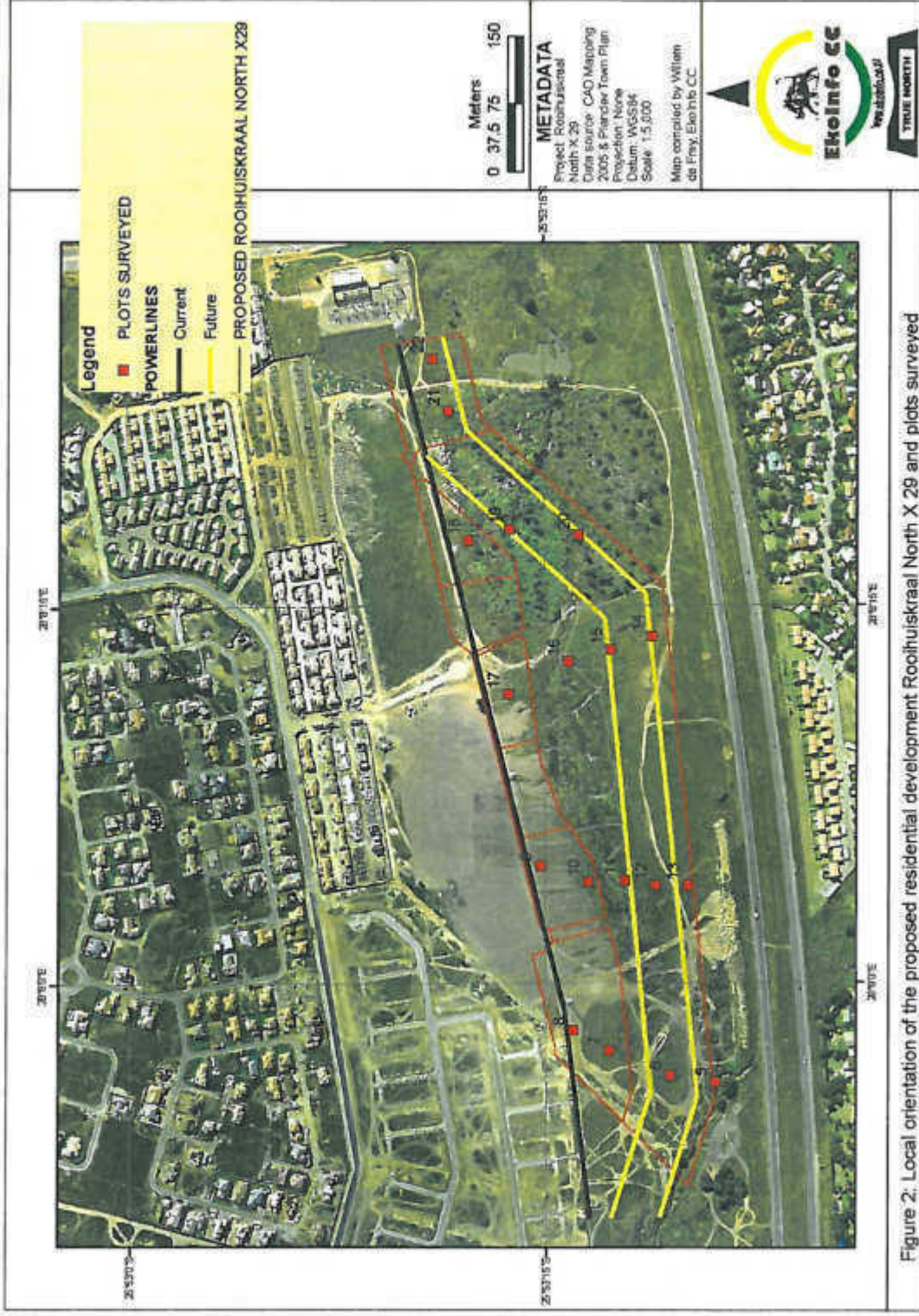


Figure 2: Local orientation of the proposed residential development Rooihuiskraal North X 29 and plots surveyed

5. A plant species list must be provided for each plant community with medicinal and invasive/exotic species indicated. The number of forb/herb, grass, shrub and tree species must be indicated for each plant community.
6. The condition of any grassland on site must be assessed and the location and extent of primary grassland mapped. All primary grassland must be designated as ecologically sensitive.
7. Results must be incorporated into a sensitivity map.

### **Wetlands**

GDACE's minimum requirements for biodiversity studies related to wetlands:

1. Wetland assessments must be undertaken by a qualified wetland specialist. This person should have a minimum of a diploma or degree in the natural sciences, hydrology or agriculture. Further, they should have attended a basic introductory course on wetland functioning and values and have had, at the very least, three weeks experience in the field assessment of wetlands. The person must have undertaken at least one wetland assessment and must also be (but not restricted to) a member of SWAG (South African Wetland Action Group).
2. A delineation procedure must identify the outer edge of the temporary zone of the wetland, which marks the boundary between the wetland and adjacent terrestrial areas and is that part of the wetland that remains flooded or saturated close to the soil surface for only a few weeks in the year, but long enough to develop anaerobic conditions and determine the nature of the plants growing in the soil.
3. Locating the outer edge of the temporary zone must make use of four specific indicators including the terrain unit indicator, the soil form indicator, the soil wetness indicator and the vegetative indicator.
4. The wetland and a protective buffer zone, beginning from the outer edge of the wetland temporary zone, must be designated as sensitive in a sensitivity map.
5. The edge of the wetland must be clearly demarcated in the field with poles, sticks, or any solid structure that will last for the duration of the development, colour-coded as follows:
  - a. RED – Indicating the edge of the wetland (Note: This includes the permanent, seasonal and temporal wetlands, or parts thereof; and no vehicles or building materials are allowed in this zone) [These should be put along the entire length of the property/site.],
  - b. ORANGE – Indicating the edge of the buffer zone (30m for areas within the urban edge and 50m outside the urban edge). However, allowance must be made for sensitive species that require larger areas; e.g. Grass Owl, Giant Bullfrog, etc.
  - c. GREEN – Should indicate where the first structure(s) will be built (e.g. stands/ plots, building, paving, 'wall fencing', etc.). [Only when such info is available.]

Although not required within the current minimum requirements as set out above, the Department of Water Affairs and Forestry's "A practical field procedure for identification and delineation of wetlands and riparian areas" (DWAf 2003) was applied as part of the fieldwork and report compilation.

### **Braun-Blanquet Approach**

Ecologists (Behr & Bredenkamp 1988, Bezuidenhout 1988, Bredenkamp 1982, Burgoyne 1995, Coetzee 1993a, Coetzee 1993c, Echardt 1993, Fuls 1993, Kooij 1990, Matthews 1991, Myburgh 1993, Smit 1992) had and are using the Braun-Blanquet approach to describe and map the vegetation of South Africa on a regional and local level, inclusive of the wetlands (Coetzee 1993b, De Frey 1999). This method record both abiotic and vegetation characteristics of an area when applied correctly (Barbour, Burk & Pitts 1980, Daubenmire 1974, Kent & Coker 1992), thus enabling the ecologist to distinguish between terrestrial and aquatic systems and within aquatic systems between permanent and temporarily saturated areas.

Plots are placed in a random stratified manner within perceived homogenous units based on physiographic (variation in landform/ terrain units, variation in slope/ aspect) and physiognomic (grassland – short/ tall, woodland – open/ closed) difference within the landscape (study area). Due to the nature of the development along an existing drainage line, plots were placed across the extent of the drainage line to determine the extent of the permanent and temporarily inundated areas (Figure 2).

The data from the fieldwork is then verified and analysed using field guides, herbaria and the following software MSAccess, Turboveg and Juice.

The evaluation of the current status of the primary grassland within the vicinity of the proposed development was based on:

1. historical and current remote sensing data
2. actual field survey during January 2007

Due to the relevant small extent of the proposed development namely 15 ha and the presence of a drainage line, 17 plots (Table 1) were sampled perpendicular to the drainage line, to record and identify the different zones of wetness along the drainage line.

Both environmental and species data was collected during the survey using the Braun-Blanquet approach. Estimated cover abundance values were given to each species recorded within a plot. Digital photographs were taken of the plots and surrounding areas.

Aerial photography and satellite imagery formed part of the remote sensing assessment to determine historical and current land use patterns within the area.

Therefore the evaluation of the status of the primary grassland and riparian wetland within the vicinity of the proposed development was based on both temporal and biophysical criteria.

**Table 1: Derived sampling sizes based on expected number of terrain units and aspects within a study area taking in consideration the size of the study area (Source: Willem de Frey, EkolInfo CC - Copyright Protected)**

Size range	Plot range	Research level	EIA Information level	Scale
Less than 5 ha	Walk through	Census/ high density sampling	Detail	1000
5 - 10 ha	5 - 15			2500
10 - 20 ha	15 - 25			5000
20 - 100 ha/ One land type	25 -45	Moderate density sampling	Detail/ Scoping	10000
100 - 1000 ha +/- 2- 4 land types	45 - 105			50000
One soil pattern/ 4 + land types	85 - 205			250000
Quaternary catchment/ 2 + soil patterns	205 - 405	Low density sampling	Strategic	500000

## ENVIRONMENTAL OVERVIEW

This environmental overview provides small-scale background information regarding the proposed development area and surrounding areas.

It is based on National Department of Environmental Affairs and Tourism (DEAT)'s Environmental Potential Atlas (ENPAT) series released in 2001/2002.

The extent of quaternary catchment A21B within the Limpopo primary catchment was used as a boundary for the surrounding areas. The quaternary catchment is used as a reference unit because water is a scarce resource in South Africa and water management is a primary concern within South Africa. The extent to which natural vegetation is transformed within catchment areas has a pronounced influence on runoff and infiltration and groundwater recharge.

The proposed development is located towards the centre of the quaternary catchment, the two dominant lithological units in the catchment is dolomite and gneiss (Figure 3.A), with the proposed development located within the gneiss area. Most of the catchment is associated with plains and hills (Figure 3.B). Plains are associated with areas of which the slope is less than 5° or 8%. The soils reflect the influence of the dominant geology; with soil pattern Ab soils associated with the dolomite areas and soil pattern Bb soils associated with the gneiss areas. The proposed development is located within the soil pattern Bb, with the dominant soils being Hutton (20%) Glenrosa (25%) and Avalon (26%) (Figure 3.C). Hutton soils are associated with fertile, arable land, Glenrosa with pockets of deep and shallow soils and Avalon with soils with a fluctuating water table within 1.5 m of the surface.

Quaternary catchment A21B is located within the regional vegetation unit Egoli Granite Grassland of the Grassland Biome, the proposed development occurs within the *Hyparrhenia hirta* Grassland vegetation community of the regional vegetation unit (Figure 4.A). The Grassland Biome is under pressure from mining, agriculture and urbanisation. The National Biodiversity Assessment<sup>1</sup> indicated that the Egoli Granite Grassland is one of the highly vulnerable regional vegetation units due to fragmentation and expected pressure from population increase. This vegetation due to its historical and current land use patterns represents a mosaic of primary and secondary grassland variations. GDACE's Directorate Conservation considers remaining primary grassland as sensitive.

According to the 1995 Land Cover Classification (Figure 4.B) based on satellite imagery (Figure 4.B), five land cover categories occur within quaternary catchment A21B, of which the proposed development is located within the Build Up category.

**This implies that the proposed development does not contribute to:**

- urban sprawl or
- an increase in the percentage land transformed to build up on quaternary catchment scale (Table 2).

<sup>1</sup> Volume 1: Terrestrial Component

Rouget, M., Reyers, B., Jonas, Z., Desmet, P., Driver, A., Maze, K., Egoh, B. & Cowling, R.M. 2004. South African National Spatial Biodiversity Assessment 2004: Technical Report. Volume 1: Terrestrial Component. Pretoria: South African National Biodiversity Institute.

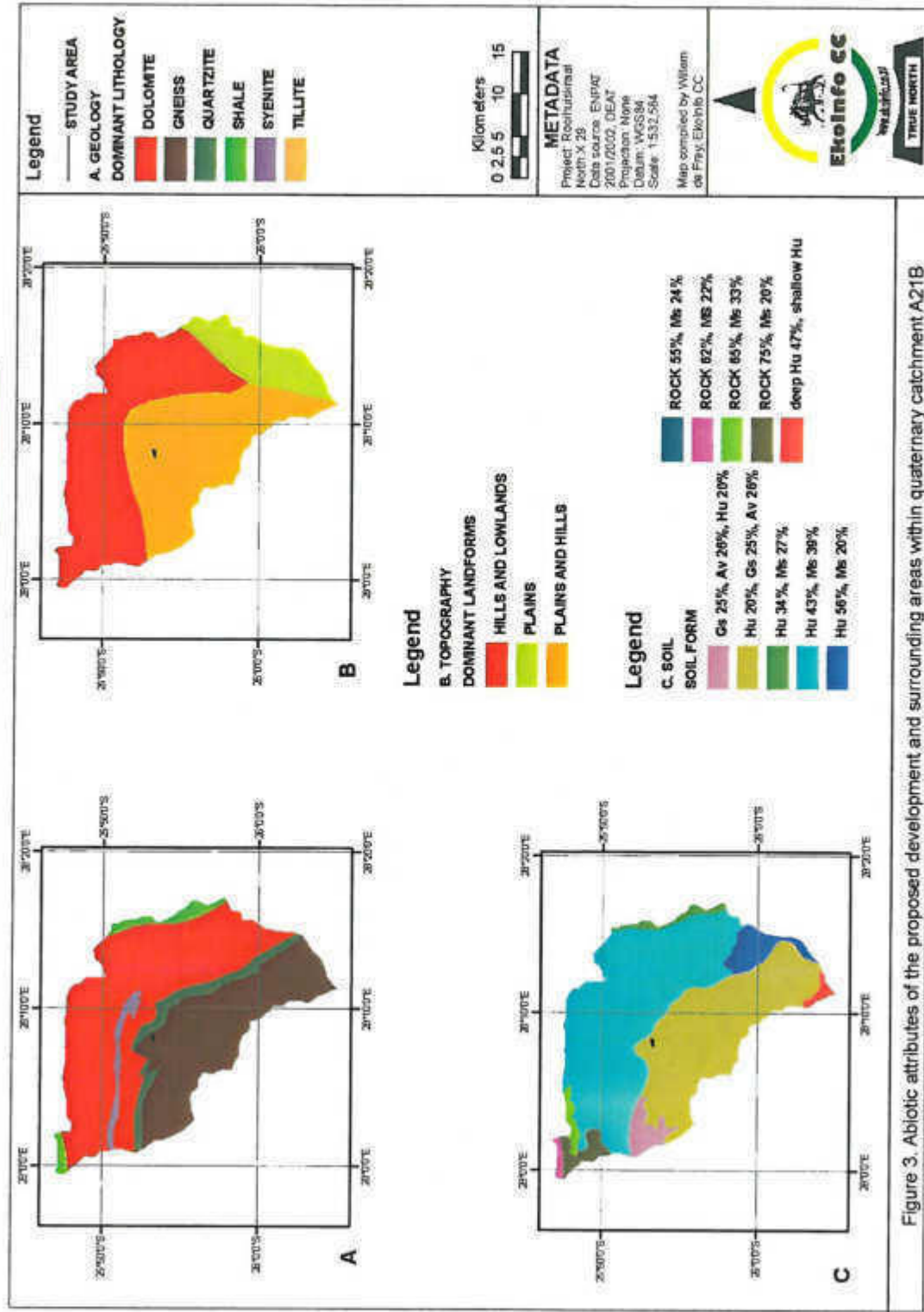


Figure 3. Abiotic attributes of the proposed development and surrounding areas within quaternary catchment A21B

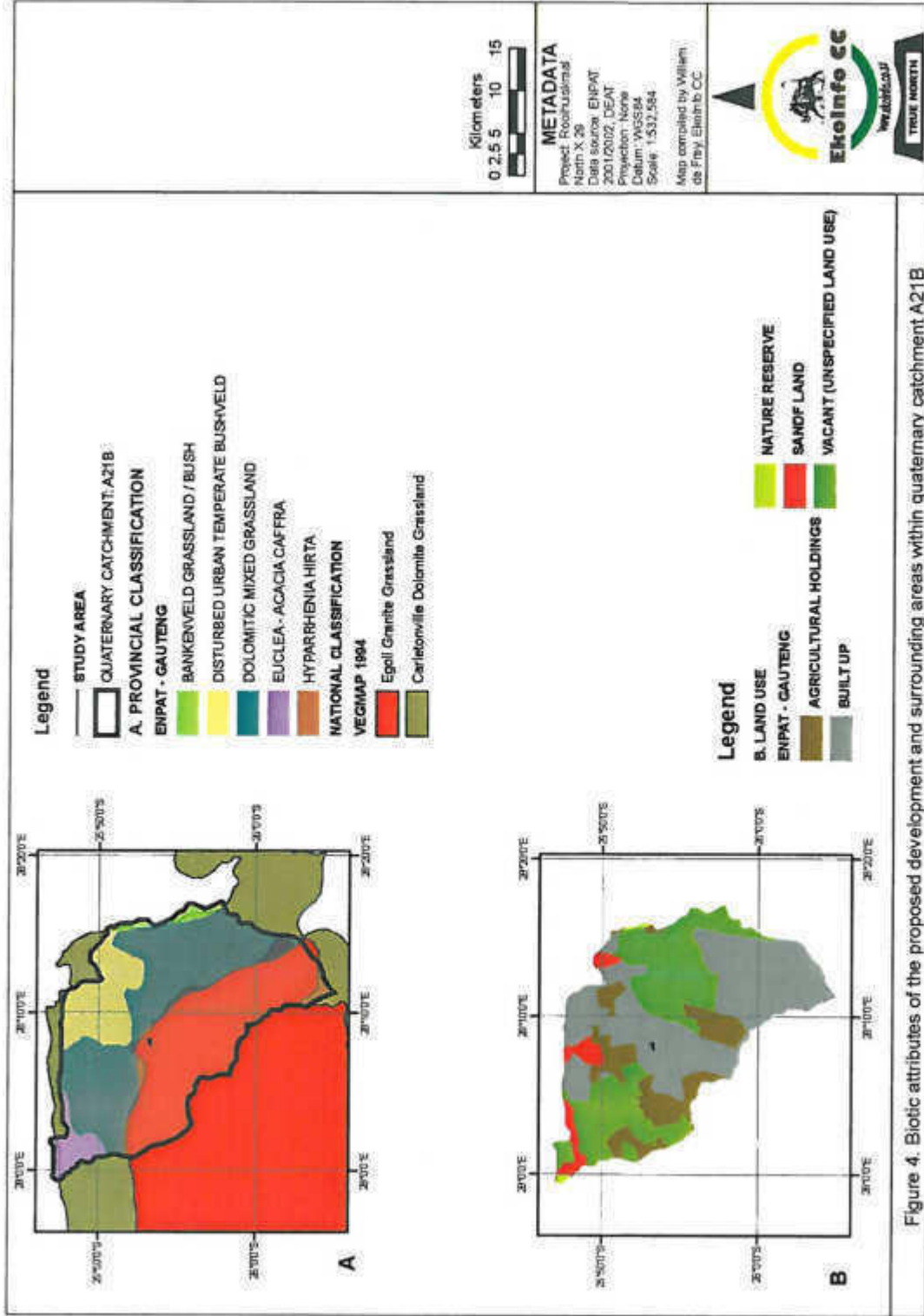


Figure 4. Biotic attributes of the proposed development and surrounding areas within quaternary catchment A21B

**Table 2: Land cover within quaternary catchment A21B and percentage extent of each land cover category.**

Land Use Category	Hectares	% of A21B
Agricultural Holdings	8143	15.5
Built Up	24056	45.7
Nature Reserve	198	0.4
SANDF Land	2252	4.3
Vacant (Unspecified Land Use)	18001	34.2
Totals	52651	100.0

To alter 1% of the total land use within quaternary catchment A21B, one would need to alter 526.5 ha of land, the proposed development represents 15 ha or 0.0003% of quaternary catchment A21B and 0.0008% of the remaining vacant land.

## RESULTS

### Vegetation component

#### *Remote sensing*

The remote sensing component was the equivalent of a desktop study using GIS software. The desktop study confirmed that the study area is located within the Egoli Granite Grassland; furthermore it is located within what GDACE's Directorate Nature Conservation indicates to be primary grassland (Figure 5).

Therefore the purpose of the fieldwork was to confirm the validity of the available information, in terms of whether the study area is actually located within primary (untransformed, climax) grassland or within secondary (recovered, transformed) grassland.

An overview of historical to current remote sensing information ranging from aerial photographs to satellite imagery indicated that the majority of the area in the vicinity of the study area had not been transformed (Figure 6 & 7). But the situation had changed dramatically from 2003 to 2006, with all of the areas to the north and west being developed (Figure 8).

#### *Vegetation communities*

Of the 18 plots surveyed, all plots except plot 8 were covered with vegetation (Figure 9). A TWINSpan analysis (Figure 10) and subsequent refinement of the clusters indicated the presence of three broad vegetation units (Figure 9):

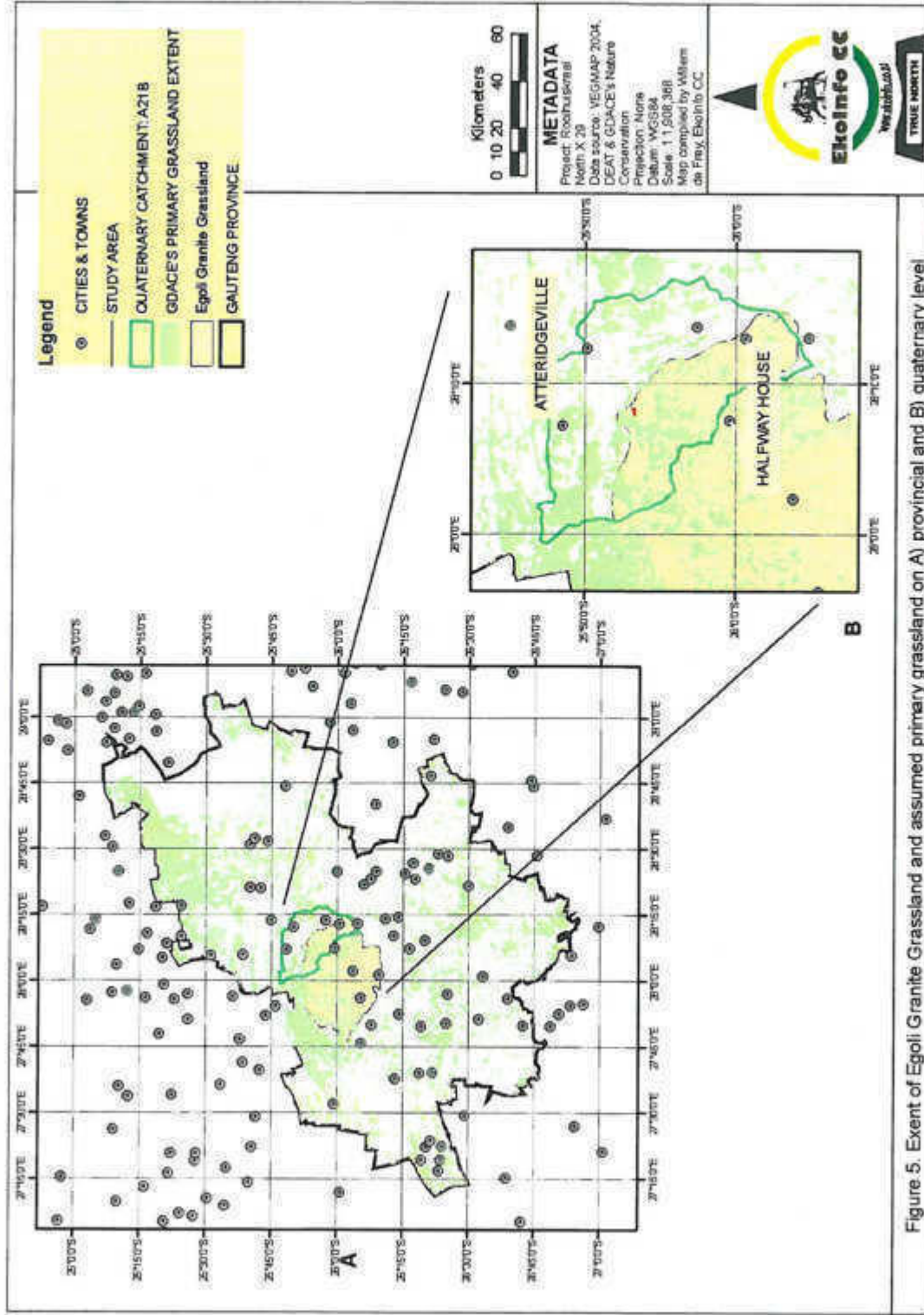
1. Transformed areas
2. Riparian wetland
3. Primary grassland

Based on the results of the TWINSpan analysis, it is concluded that the following factors contribute to the distribution and extent of the natural vegetation within the area:

1. Human influences eg transformed or untransformed
2. Topography eg midslope, footslope and valley bottom
3. Soil conditions eg depth and percentage clay content.

The primary grassland occurs on the midslopes and upper footslopes associated with moderately deep sandy soils, while the riparian wetland is associated with deep clayey soils (Table 3).





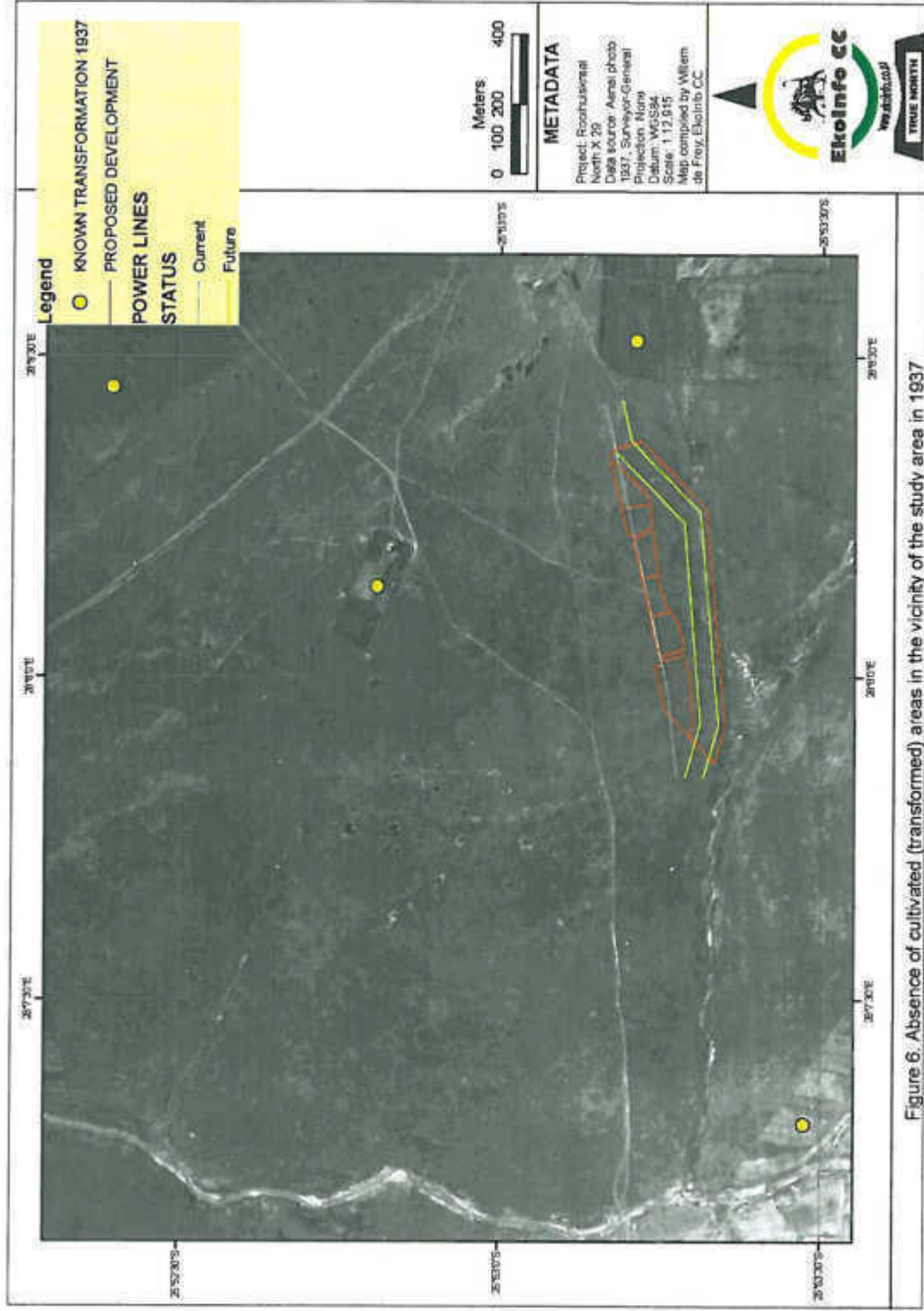


Figure 6. Absence of cultivated (transformed) areas in the vicinity of the study area in 1937

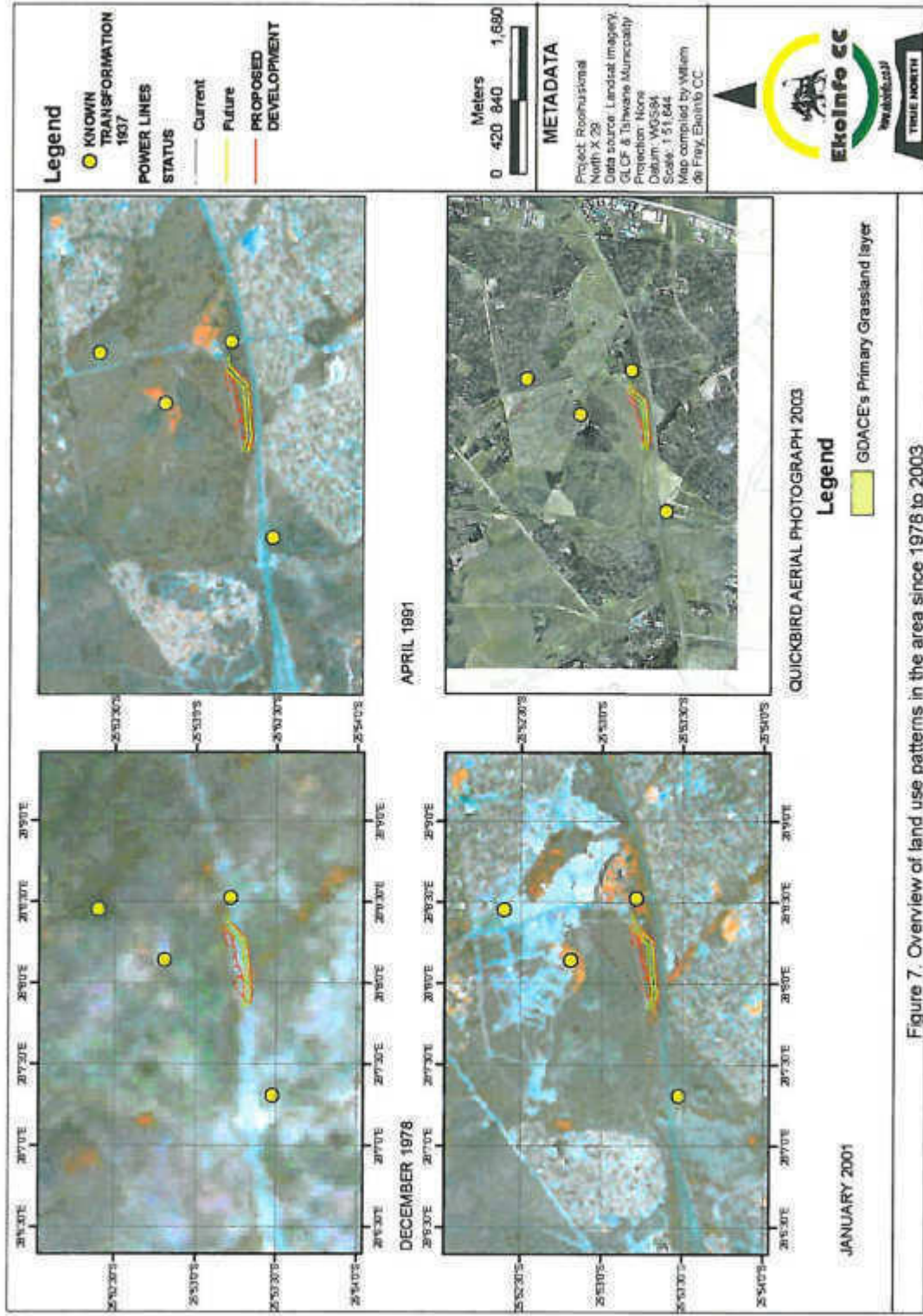


Figure 7. Overview of land use patterns in the area since 1976 to 2003

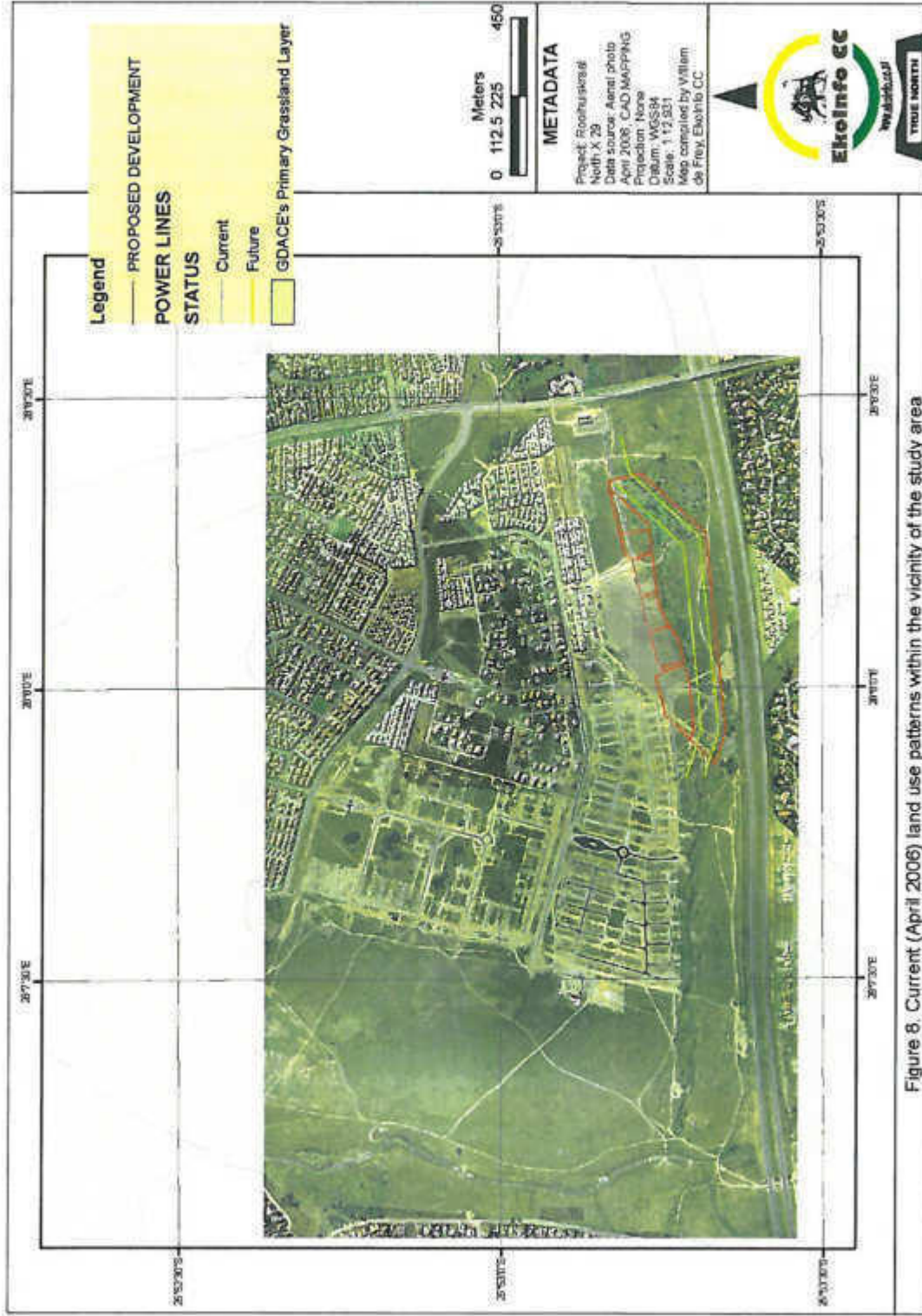


Figure 8. Current (April 2006) land use patterns within the vicinity of the study area

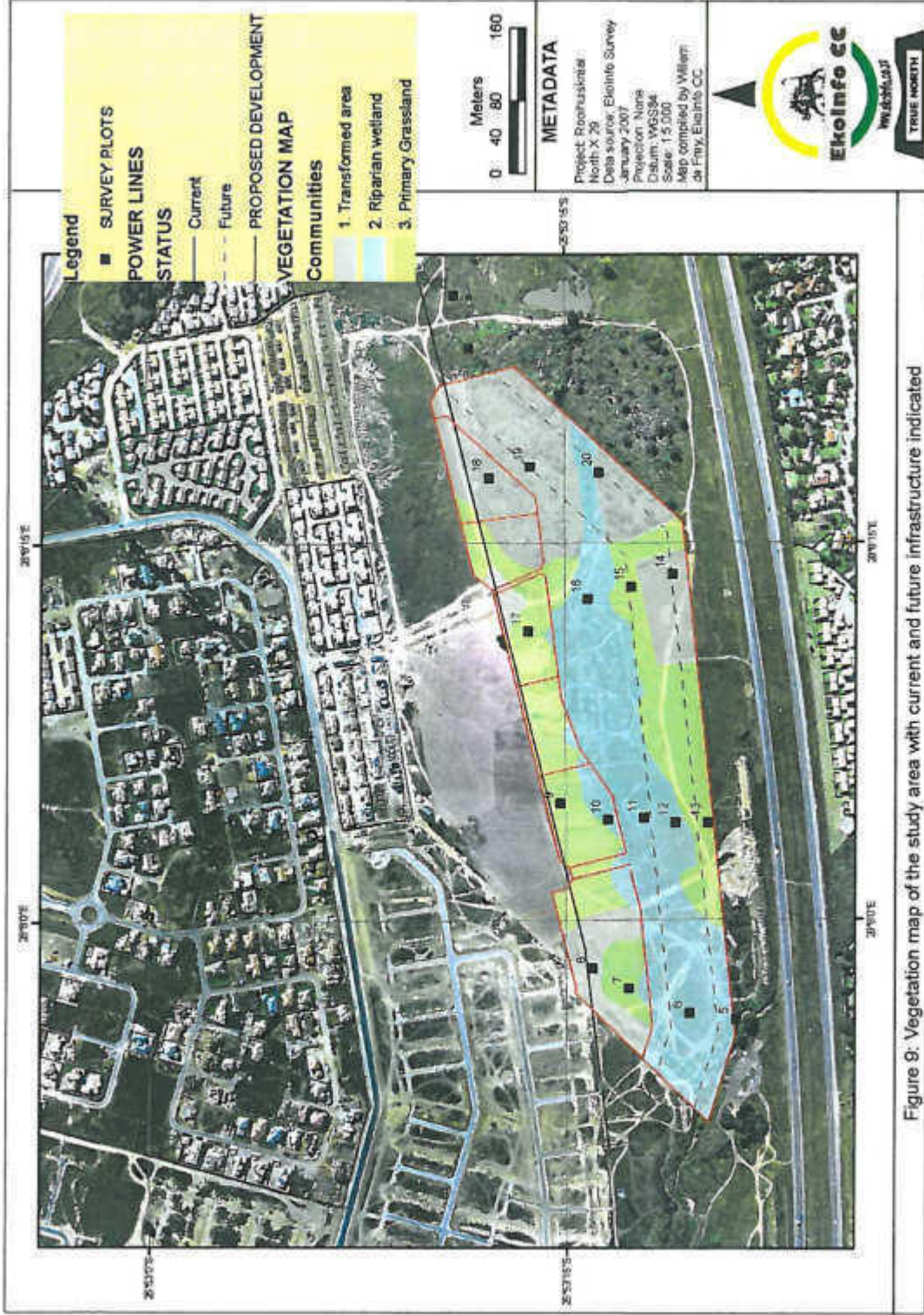


Figure 9: Vegetation map of the study area with current and future infrastructure indicated

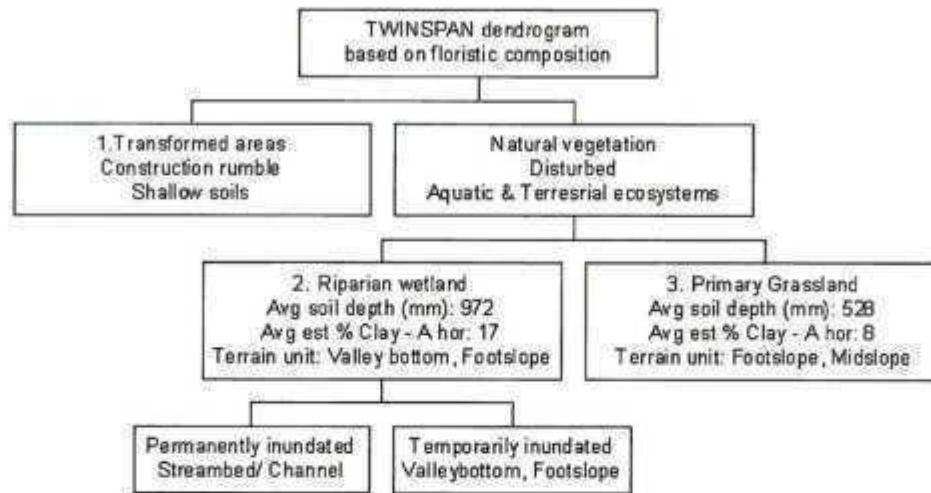


Figure 10: TWINSpan dendrogram based on the floristic composition of 17 plots

**Table 3: Summary of the vegetation communities' abiotic attributes**

Community	No of plots	Average values		Average estimated values				Average estimated cover values			
		Altitude (m):	Soil depth (mm):	Slope (%): % Clay (A-horizon):		Gravel	Small stones	Medium stones	Large stones	Rock:	Bare rock (%)
1. Transformed areas	4	1466	195	1	12	0	0	0	0	0	0
2. Riparian wetland	5	1454	972	2	17	0	0	0	0	2	0
3. Primary Grassland	8	1461	528	3	8	11	6	0	0	0	0

**Table 4: Overview of the environmental factors present within the study area**

Community	No of plots	Average estimated percentage cover values						Average estimated height						
		total (%)	tree layer (%)	shrub layer (%)	herb layer (%)	grass layer (%)	forbs layer (%)	(highest) trees (m):	lowest trees (m):	(highest) shrubs (m):	lowest shrubs (m):	(high) herbs (cm):	lowest herbs (cm):	Maximum height (cm):
1. Transformed areas	4	85	5	6	74	60	15	7	4	5	2	81	26	138
2. Riparian wetland	5	72	1	2	69	49	20	2	1	0	0	54	23	140
3. Primary Grassland	8	76	0	4	72	46	26	0	0	1	0	48	9	131

1. Transformed areas

Phytosociological name: *Jatropha multifida* - *Tagetes minuta* transformed areas

Although this area does not represent natural vegetation, vegetation did occur in the historically transformed areas (Table 3, 5 & 5). It represents both historically and recently transformed areas. The transformation was the result of rubble dumping (Photo 1), topsoil removal (Photo 2) and current

Although this area does not represent natural vegetation, vegetation did occur in the historically transformed areas (Table 3, 5 & 5). It represents both historically and recently transformed areas. The transformation was the result of rubble dumping (Photo 1), topsoil removal (Photo 2) and current construction activities in the area (Photo 3). This community (area) covers 4.560 ha or 32% of the study area (Table 6).

The following species were recorded in this area, where vegetation cover occurred:

**HERBACEOUS SPECIES**

<b>Botanical name</b>	<b>Growth form</b>
<i>Arundo donax</i> L.	Graminoid
<i>Berkheya radula</i> (Harv.) De Wild.	Herb
<i>Berula erecta</i> (Huds.) Coville subsp. <i>erecta</i>	Herb
<i>Bidens pilosa</i> L.	Herb
<i>Chironia purpurascens</i> (E.Mey.) Benth. & Hook.f. subsp. <i>purpurascens</i>	Herb
<i>Chloris virgata</i> Sw.	Graminoid
<i>Cirsium vulgare</i> (Savi) Ten.	Herb
<i>Commelina africana</i> L. var. <i>africana</i>	Herb
<i>Conyza podocephala</i> DC.	Herb
<i>Cynodon dactylon</i> (L.) Pers.	Graminoid
<i>Cyperus congestus</i> Vahl	CyperoidHelophyteHerb
<i>Cyperus eragrostis</i> Lam.	CyperoidHelophyteHerb
<i>Cyperus esculentus</i> L. var. <i>esculentus</i>	CyperoidGeophyteHerbMesophyte
<i>Datura stramonium</i> L.	HerbShrub
<i>Digitaria eriantha</i> Steud.	Graminoid
<i>Eragrostis curvula</i> (Schrud.) Nees	Graminoid
<i>Heteropogon contortus</i> (L.) Roem. & Schult.	Graminoid
<i>Hyparrhenia dregeana</i> (Nees) Stapf ex Stent	Graminoid
<i>Hyparrhenia hirta</i> (L.) Stapf	Graminoid
<i>Imperata cylindrica</i> (L.) Raeusch.	Graminoid
<i>Ipomoea purpurea</i> (L.) Roth	ClimberHerb
<i>Juncus lomatophyllus</i> Spreng.	HerbHydrophyte
<i>Melinis repens</i> (Willd.) Zizka subsp. <i>repens</i>	Graminoid
<i>Miscanthus junceus</i> (Stapf) Pilg.	Graminoid
<i>Panicum maximum</i> Jacq.	Graminoid
<i>Paspalum scrobiculatum</i> L.	Graminoid
<i>Pennisetum clandestinum</i> Hochst. ex Chiov.	Graminoid
<i>Persicaria lapathifolia</i> (L.) Gray	HelophyteHerbHydrophyte
<i>Schoenoplectus corymbosus</i> (Roth ex Roem. & Schult.) J.Raynal	CyperoidEmergent hydrophyteHelophyteHerb
<i>Setaria sphacelata</i> (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss var. <i>sphacelata</i>	Graminoid
<i>Sphenostylis angustifolia</i> Sond.	Dwarf shrubHerb
<i>Tagetes minuta</i> L.	Herb
<i>Themeda triandra</i> Forssk.	Graminoid



Typha capensis (Rohrb.) N.E.Br.	HerbHydrophyte
Verbena bonariensis L.	Herb
Zinnia peruviana (L.) L.	Herb

WOODY SPECIES

Botanical name	Growth form
Acacia karroo Hayne	ShrubTree
Agave sisalana Perrine	ShrubSucculent
Ehretia rigida (Thunb.) Druce subsp. rigida	ShrubTree
Jatropha multifida L.	Shrub
Leonotis leonurus (L.) R.Br.	Shrub
Lippia rehmannii H.Pearson	Shrub
Melia azedarach L.	Tree
Morus alba L. var. alba	Tree
Robinia pseudoacacia L.	ShrubTree

The following species are considered characteristic of this area: *Jatropha multifida*, *Acacia karroo*, *Melia azedarach*, *Pennisetum clandestinum*, *Arundo donax*, *Bidens pilosa*, *Datura stramonium*, *Leonotis leonurus* and *Panicum maximum* (Appendix B – Species Group A).

**Table 5: Overview of the qualitative environmental attribute associated with the vegetation communities**

Community	Terrain unit	Aspect (Bearing):	Soil form	Erosion categories	Surface crusting:
1. Transformed areas	Footslope		Witbank		FALSE
1. Transformed areas	Footslope	S	Witbank		FALSE
1. Transformed areas	Footslope	S	Witbank		FALSE
1. Transformed areas	Valley bottom	W	Rensburg		FALSE
2. Riparian wetland	Footslope	S	Westleigh		FALSE
2. Riparian wetland	Valley bottom	N	Willowbrook		FALSE
2. Riparian wetland	Valley bottom	NW	Willowbrook		FALSE
2. Riparian wetland	Valley bottom	S	Willowbrook		FALSE
2. Riparian wetland	Valley bottom	W	Westleigh		FALSE
3. Primary Grassland	Midslope	N	Clovelly	Sheet	TRUE
3. Primary Grassland	Midslope	SW	Avalon	Sheet	TRUE
3. Primary Grassland	Footslope	N	Witbank	Sheet	FALSE
3. Primary Grassland	Footslope	NE	Westleigh	Sheet	TRUE
3. Primary Grassland	Footslope	S	Avalon	Sheet	TRUE
3. Primary Grassland	Footslope	S	Longlands	Sheet	TRUE
3. Primary Grassland	Footslope	S	Dreshden	Sheet	TRUE
3. Primary Grassland	Footslope	W	Avalon	Sheet	TRUE

**Table 6: Surface cover of the vegetation communities**

Vegetation community	Surface (ha)	% Cover	Ecological Status		Ecosystem	
			Disturbed	Transformed	Terrestrial	Aquatic
1. Transformed area	4.560	32%		4.560	4.560	
2. Riparian wetland	5.291	37%	5.291			5.291
3. Primary Grassland	4.612	32%	4.612		4.612	
<b>TOTALS</b>	<b>14.463</b>	<b>100%</b>	<b>9.903</b>	<b>4.560</b>	<b>9.172</b>	<b>5.291</b>
			<b>68%</b>	<b>32%</b>	<b>63%</b>	<b>37%</b>



Photo 1



Photo 2



Photo 3

**Photo 1: Plot 18 towards the south (Figure 9)**

**Photo 2: Plot 14 towards the north (Figure 9)**

**Photo 3: Plot 8 towards the south (Figure 9)**

2. Riparian wetland

Phytosociological name: *Typha capensis* - *Setaria sphacelata* reed dominated riparian wetland

This community is associated with the lower lying areas within the study area, with deep clayey soils and limited rock (Table 3). It represents the aquatic ecosystem within the study area. It consists of two wetland types: floodplain vleis and riparian fringe. The riparian fringe is poorly developed (Photo 4) and occurs towards the western end with limited tree and shrub cover (Table 4). The floodplain vlei represents the largest component, which consist of a mosaic of reed (Photo 5) and grass (Photo 6) dominated areas. Overall the average total cover is lower than for the terrestrial areas due to the presence of open water within this community in association with the streambed/ channel. The average estimated height of the vegetation associated with the herbaceous layer (grasses and forbs) is higher compared to the terrestrial areas (Table 4). This is attributed to the availability of nutrients and soil moisture, which supports taller growth within the valley bottoms (Table 5). This community covers 5.291 ha or 37% of the study area (Table 6).

The following species were recorded in this area, where vegetation cover occurred:

**HERBACEOUS SPECIES**

<b>Botanical name</b>	<b>Growth form</b>
Amaranthus hybridus L. subsp. hybridus var. hybridus	Herb
Asclepias fruticosa L.	Herb
Berkheya radula (Harv.) De Wild.	Herb
Berula erecta (Huds.) Coville subsp. erecta	Herb
Bidens pilosa L.	Herb
Campuloclinium macrocephalum (Less.) DC.	Herb
Chloris gayana Kunth	Graminoid
Conyza bonariensis (L.) Cronquist	Herb
Conyza podocephala DC.	Herb
Cynodon dactylon (L.) Pers.	Graminoid
Cyperus congestus Vahl	CyperoidHelophyteHerb
Cyperus eragrostis Lam.	CyperoidHelophyteHerb
Dipcadi viride (L.) Moench	Geophyte
Eleocharis dregeana Steud.	CyperoidHelophyteHerb
Eragrostis chloromelas Steud.	Graminoid
Eragrostis plana Nees	Graminoid
Eucomis autumnalis (Mill.) Chitt. subsp. autumnalis	Geophyte
Haplocarpha lyrata Harv.	Herb
Helichrysum nudifolium (L.) Less. var. nudifolium	Herb
Hemarthria altissima (Poir.) Stapf & C.E.Hubb.	Graminoid
Hyparrhenia hirta (L.) Stapf	Graminoid
Hypoxis hemerocallidea Fisch. & Avé-Lall.	Geophyte
Imperata cylindrica (L.) Raeusch.	Graminoid
Ipomoea purpurea (L.) Roth	ClimberHerb
Juncus lomatophyllus Spreng.	HerbHydrophyte
Kyllinga alba Nees	CyperoidHerbMesophyte
Leersia hexandra Sw.	Graminoid
Miscanthus junceus (Stapf) Pilg.	Graminoid
Monopsis decipiens (Sond.) Thullin	Herb
Nidorelia anomala Steetz	Herb
Oenothera rosea L'Hér. ex Aiton	Herb
Paspalum dilatatum Poir.	Graminoid
Paspalum urvillei Steud.	Graminoid

**Botanical name**

Persicaria lapathifolia (L.) Gray  
 Plantago lanceolata L.  
 Polygala hottentotta C.Presl  
 Rumex crispus L.  
 Salvia runcinata L.f.  
 Scabiosa columbaria L.  
 Schoenoplectus brachyceras (Hochst. ex A.Rich.) Lye.  
 Senecio inornatus DC.  
 Setaria sphacelata (Schumach.) Stapf & C.E.Hubb.  
 ex M.B.Moss var. sphacelata  
 Tagetes minuta L.  
 Themeda triandra Forssk.  
 Typha capensis (Rohrb.) N.E.Br.  
 Verbena bonariensis L.  
 Xysmalobium undulatum (L.) Aiton f. var. undulatum

**Growth form**

HelophyteHerbHydrophyte  
 Herb  
 Dwarf shrubHerb  
 Herb  
 Herb  
 Herb  
 CyperoidEmergent hydrophyteHelophyteHerb  
 Herb  
 Graminoid  
 Herb  
 Graminoid  
 HerbHydrophyte  
 Herb  
 Herb

**WOODY SPECIES**

**Botanical name**

Celtis africana Burm.f.  
 Melia azedarach L.  
 Salix babylonica L. var. babylonica  
 Stoebe vulgaris Levyns

**Growth form**

ShrubTree  
 Tree  
 Tree  
 Dwarf shrubShrub

The following species are considered characteristic of this community: *Typha capensis*, *Imperata cylindrica*, *Oenothera rosea*, *Verbena bonariensis*, *Berkheya radula*, *Conyza podocephala*, *Cyperus eragrostis*, *Miscanthus junceus*, *Paspalum urvillei*, *Persicaria lapathifolia* and *Schoenoplectus brachyceras* (Appendix B – Species Group B).

The hydrology and functionality of this wetland system is discussed in more detailed within the section of the report, which deals with wetlands.



Photo 4



Photo 5



Photo 6

**Photo 4: Plot 5 towards the south (Figure 9)**

**Photo 5: Plot 11 towards the north (Figure 9)**

**Photo 6: Plot 16 towards the north (Figure 9)**

### 3. Primary Grassland

Phytosociological name: *Helichrysum nudifolium* - *Hyparrhenia hirta* over utilised grassland

This community is associated with moderately deep sandy soils slightly higher up in the landscape (Table 3). Shrubs were the only representatives of the woody layer within this community (Table 4). The average estimated cover of the shrubs was less than 5%, confirming this community's association with grassland. The overall average height of the herbaceous layer was lower and less dense (Table 4), this is attributed to the coarse textured soil on which this community occurs, which results a lower availability of nutrients and soil moisture. The finer material is leached from the soil because it occurs higher up in the landscape in association with midslopes (Table 5). This community covers 4.612 ha or 32% of the study area (Table 6).

The following species were recorded in this area, where vegetation cover occurred:

#### HERBACEOUS SPECIES

Botanical name	Growth form
<i>Andropogon appendiculatus</i> Nees	Graminoid
<i>Anthericum cooperi</i> Baker	Herb
<i>Aristida congesta</i> Roem. & Schult. subsp. <i>congesta</i>	Graminoid
<i>Becium obovatum</i> (E.Mey. ex Benth.) N.E.Br. subsp. <i>obovatum</i> var. <i>obovatum</i>	Herb
<i>Berkheya radula</i> (Harv.) De Wild.	Herb
<i>Bulbostylis burchellii</i> (Ficalho & Hiern) C.B. Clarke	CyperoidHerbMesophyte
<i>Campuloclinium macrocephalum</i> (Less.) DC.	Herb
<i>Chaetacanthus costatus</i> Nees	Dwarf shrubHerb
<i>Chamaecrista comosa</i> E.Mey. var. <i>comosa</i>	Herb
<i>Chenopodium album</i> L.	Herb
<i>Cleome monophylla</i> L.	Herb
<i>Commelina erecta</i> L.	Herb
<i>Conyza bonariensis</i> (L.) Cronquist	Herb
<i>Conyza podocephala</i> DC.	Herb
<i>Cyanotis speciosa</i> (L.f.) Hassk.	Herb
<i>Cymbopogon excavatus</i> (Hochst.) Stapf ex Burt Davy	Graminoid
<i>Cynodon dactylon</i> (L.) Pers.	Graminoid
<i>Cyperus esculentus</i> L. var. <i>esculentus</i>	CyperoidGeophyteHerbMesophyte
<i>Cyperus obtusiflorus</i> Vahl var. <i>obtusiflorus</i>	CyperoidHerbMesophyte
<i>Cyperus rupestris</i> Kunth var. <i>rupestris</i>	CyperoidHerbMesophyte
<i>Cyphia stenopetala</i> Diels	ClimberHerb
<i>Datura stramonium</i> L.	HerbShrub
<i>Dipcadi viride</i> (L.) Moench	Geophyte
<i>Elionurus muticus</i> (Spreng.) Kunth	Graminoid
<i>Eragrostis capensis</i> (Thunb.) Trin.	Graminoid
<i>Eragrostis chloromelas</i> Steud.	Graminoid
<i>Eragrostis curvula</i> (Schrud.) Nees	Graminoid
<i>Eragrostis gummiflua</i> Nees	Graminoid
<i>Eragrostis plana</i> Nees	Graminoid
<i>Eragrostis racemosa</i> (Thunb.) Steud.	Graminoid
<i>Eragrostis trichophora</i> Coss. & Durieu	Graminoid
<i>Eucomis autumnalis</i> (Mill.) Chitt. subsp. <i>autumnalis</i>	Geophyte
<i>Geigeria burkei</i> Harv. subsp. <i>burkei</i> var. <i>burkei</i>	Herb
<i>Haplocarpha lyrata</i> Harv.	Herb
<i>Helichrysum aureonitens</i> Sch.Bip.	Herb

**Botanical name**

Helichrysum melanacme DC.  
 Helichrysum nudifolium (L.) Less. var. nudifolium  
 Helichrysum rugulosum Less.  
 Helictotrichon turgidulum (Stapf) Schweick.  
 Hermannia depressa N.E.Br.  
 Heteropogon contortus (L.) Roem. & Schult.  
 Hibiscus microcarpus Garcke  
 Hyparrhenia hirta (L.) Stapf  
 Hypoxis hemerocallidea Fisch. & Avé-Lall.  
 Hypoxis obtusa Burch.  
 Hypoxis obtusa Burch. ex Ker Gawl.  
 Hypoxis rigidula Baker var. rigidula  
 Justicia anagalloides (Nees) T.Anderson  
 Kohautia virgata (Willd.) Bremek.  
 Kyllinga alba Nees  
 Ledebouria cooperi (Hook.f.) Jessop  
 Melinis repens (Willd.) Zizka subsp. repens  
 Monopsis decipiens (Sond.) Thulin  
 Monsonia angustifolia E.Mey. ex A.Rich.  
 Nidorella anomala Steetz  
 Nidorella hottentotica DC.  
 Oenothera rosea L'Hér. ex Aiton  
 Oxalis obliquifolia Steud. ex A.Rich.  
 Pelargonium luridum (Andrews) Sweet  
 Pogonarthria squarrosa (Roem. & Schult.) Pilg.  
 Polygala hottentotta C.Presl  
 Pseudognaphalium luteo-album (L.) Hilliard & B.L.Burt  
 Rorippa nudiuscula Thell.  
 Scabiosa columbaria L.  
 Schkuhria pinnata (Lam.) Cabrera  
 Setaria incrassata (Hochst.) Hack.  
 Setaria sphacelata (Schumach.) Stapf & C.E.Hubb.  
 ex M.B.Moss var. sphacelata  
 Striga asiatica (L.) Kuntze  
 Sutura aurantiaca (Burch.) Hiern  
 Tagetes minuta L.  
 Teucrium trifidum Retz.  
 Themeda triandra Forssk.  
 Tribulus zeyheri Sond. subsp. zeyheri  
 Trichoneura grandiglumis (Nees) Ekman  
 Urochloa mosambicensis (Hack.) Dandy  
 Vahlia capensis (L.f.) Thunb. subsp. capensis  
 Verbena bonariensis L.  
 Vernonia oligocephala (DC.) Sch.Bip. ex Walp.  
 Wahlenbergia undulata (L.f.) A.DC.  
 Xysmalobium undulatum (L.) Aiton f. var. undulatum

**Growth form**

Dwarf shrubHerb  
 Herb  
 Herb  
 Graminoid  
 Herb  
 Graminoid  
 Herb  
 Graminoid  
 Geophyte  
 Geophyte  
 Geophyte  
 GeophyteHerb  
 Herb  
 Herb  
 CyperoidHerbMesophyte  
 Geophyte  
 Graminoid  
 Herb  
 Herb  
 Herb  
 Herb  
 Herb  
 Geophyte  
 Geophyte  
 Graminoid  
 Dwarf shrubHerb  
 Herb  
 Herb  
 Herb  
 Herb  
 Graminoid  
 Graminoid  
 HerbParasite  
 Herb  
 Herb  
 Herb  
 Graminoid  
 Dwarf shrubHerb  
 Graminoid  
 Graminoid  
 Herb  
 Herb  
 Herb  
 Herb  
 Herb

**WOODY SPECIES**

**Botanical name**

Acacia karroo Hayne  
 Anthospermum rigidum Eckl. & Zeyh. subsp. rigidum

**Growth form**

ShrubTree  
 Dwarf shrub

**Botanical name**

Athrixia elata Sond.  
 Bergia decumbens Planch. ex Harv.  
 Felicia muricata (Thunb.) Nees subsp. muricata  
 Nesaea schinzii Koehne  
 Protasparagus laricinus (Burch.) Oberm.  
 Rhus pyroides Burch. var. pyroides  
 Stoebe vulgaris Levyns  
 Ziziphus zeyheriana Sond.

**Growth form**

Dwarf shrub  
 Dwarf shrub  
 Shrub  
 Dwarf shrub  
 Shrub  
 ShrubTree  
 Dwarf shrubShrub  
 Dwarf shrub

The following species are considered characteristic of this community: *Geigeria burkei* subsp. *burkei* var. *burkei*, *Helichrysum nudifolium* var. *nudifolium*, *Kohautia virgata*, *Oxalis obliquifolia*, *Wahlenbergia undulata*, *Cynodon dactylon*, *Elyonurus muticus*, *Eragrostis gummiflua*, *Helichrysum rugulosum*, *Hibiscus microcarpus*, *Justicia anagalloides*, *Pelargonium luridum*, *Sutera aurantiaca*, *Vernonia oligocephala*, *Chamaecrista comosa* var. *comosa*, *Eragrostis chloromelas*, *Eragrostis racemosa*, *Heteropogon contortus*, *Hypoxis obtusa*, *Scabiosa columbaria* and *Stoebe vulgaris* (Appendix B – Species Group C).

Photos 7, 8 and 9 provide an overview of the community, which is considered to be, untransformed due the presence of the geophyte *Hypoxis hemerocallidea* (Appendix B – Species Group D). This statement is further supported by the presence of the following geophytes *Hypoxis obtusa* (Appendix B – Species Group C) and *Hypoxis rigidula* var. *rigidula* (Appendix B – Species Group F) as well as the other species recorded in Species Group F are associated with climax, untransformed areas (Appendix B).

The presence of three species associated with disturbance out of four species occurring generally in the area (Appendix B – Species Group E) indicates that the area has historically and is currently being subject to activities which leads to disturbance. Potential sources of disturbance are:

1. historical overutilisation by livestock
2. current off-road and construction activities in the area.

The number of species in Species Group G, species associated with disturbed areas, supports this statement (Appendix B).

Species Groups H to I (Appendix B) list species associated with rockiness, coarse textured soils and moist or wet conditions, supporting the results of the recorded environmental factors.





Photo 7



Photo 8



Photo 9

**Photo 7: Plot 17 towards to south (Figure 9)**

**Photo 8: Plot 13 towards the north (Figure 9)**

**Photo 9: Plot 7 towards the east (Figure 9)**

**Red data, protected, medicinal and alien species**Red Data flora

No Red Data flora species were expected to occur within this area, however the following orange listed species were recorded within the untransformed communities, *Hypoxis hemerocallidea* and *Eucomis autumnalis* subsp. *clavata*. Population of these species are considered to be declining in the wild (natural areas) due to habitat loss.

Protected species

All species belonging to the genus *Eucomis* are protected in Gauteng province in terms of the Gauteng Conservation Ordinance.

No critical endangered, endangered, vulnerable or protected species in terms of the National Environmental Management Act (10 of 2004) were recorded within the study area.

Medicinal plants

The following species with medicinal properties were recorded in the study area:

Community	Scientific name
1. Transformed areas	<i>Acacia karroo</i> Hayne
	<i>Berula erecta</i> (Huds.) Coville
	<i>Datura stramonium</i> L.
	<i>Leonotis leonurus</i> (L.) R.Br.
	<i>Typha capensis</i> (Rohrb.) N.E.Br.
2. Riparian wetland	<i>Berula erecta</i> (Huds.) Coville
	<i>Eucomis autumnalis</i>
	<i>Helichrysum</i> species
	<i>Hypoxis hemerocallidea</i> Fisch. & C.A.Mey.
	<i>Salix mucronata</i>
	<i>Scabiosa columbaria</i> L.
	<i>Typha capensis</i> (Rohrb.) N.E.Br.
<i>Xysmalobium undulatum</i> (L.) Aiton f.	
3. Primary Grassland	<i>Acacia karroo</i> Hayne
	<i>Datura stramonium</i> L.
	<i>Eucomis autumnalis</i>
	<i>Helichrysum</i> species
	<i>Hypoxis hemerocallidea</i> Fisch. & C.A.Mey.
	<i>Pelargonium luridum</i> (Andrews) Sweet
	<i>Rhus undulata</i> Jacq.
	<i>Scabiosa columbaria</i> L.
	<i>Vernonia oligocephala</i> (DC.) Sch.Bip. ex Walp.
	<i>Xysmalobium undulatum</i> (L.) Aiton f.
<i>Ziziphus mucronata</i>	

It should be noted that all of the *Helichrysum* species recorded within the study area, is considered to have medicinal properties.

Alien species

The following alien species were recorded within the study area:

Community	Botanical name	Common name	Description
1. Transformed areas	Cirsium vulgare (Savi) Ten. (=C. lanceolatum Scop.)	Scotch thistle, Spear thistle	Category 1 plants are weeds and serve no useful economic purpose and possess characteristics that are harmful to humans, animals or the environment.
	Datura stramonium L.	Common thorn apple	
	Agave sisalana Perrine	Sisal hemp, Sisal	Category 2 plants are plants that are useful for commercial plant production purposes but are proven plant invaders under uncontrolled conditions outside demarcated areas.
	Arundo donax L.	Giant reed, Spanish reed	
	Ipomoea purpurea (L.) Roth	Morning glory	Category 3 plants are mainly used for ornamental purposes in demarcated areas but are proven plant invaders under uncontrolled conditions outside demarcated areas.
	Melia azedarach L.	"Syringa", Persian lilac	
	Robinia pseudoacacia L.	Black locust	Category 1 plants are weeds and serve no useful economic purpose and possess characteristics that are harmful to humans, animals or the environment.
2. Riparian wetland	Campuloclinium macrocephalum (Less.) DC. (=Eupatorium macrocephalum Less.)	Pom-Pom	Category 3 plants are mainly used for ornamental purposes in demarcated areas but are proven plant invaders under uncontrolled conditions outside demarcated areas.
	Ipomoea purpurea (L.) Roth	Morning glory	
	Melia azedarach L.	"Syringa", Persian lilac	Category 1 plants are weeds and serve no useful economic purpose and possess characteristics that are harmful to humans, animals or the environment.
3. Primary Grassland	Campuloclinium macrocephalum (Less.) DC. (=Eupatorium macrocephalum Less.)	Pom-Pom	Category 1 plants are weeds and serve no useful economic purpose and possess characteristics that are harmful to humans, animals or the environment.
	Datura stramonium L.	Common thorn apple	

Category 1 species have to be removed and controlled, authorisation is required to maintain category 2 and 3 species, failure to do so constitute a contravention of the Conservation of Agricultural Resources Act (43 of 1983).

**Diversity overview**

A minimum of 137 species were recorded within the study area (Table 7). As would be expected the lowest number of species were recorded within the transformed areas (Table 7), while the most species had been recorded within the Primary Grassland community. The recorded values can be adjusted/ increased with 25% due to:

1. the nature of the method which records only 95% of the species present (weight: 5%)
2. the number of plots surveyed (weight: 5%)
3. the effect of current and historical disturbances
  - a. Historic over utilisation (weight: 5)
  - b. off road vehicles (weight: 10%)
  - c. current construction activities eg rubble dumping and vagrants (weight: 5%)

**Table 7: Overview of species richness as a parameter of diversity**

Alpha diversity	Beta diversity		
	1. Transformed areas	2. Riparian wetland	3. Primary Grassland
137	45	51	90
Species recorded per releve (100 m <sup>2</sup> )			
Minimum	6	12	19
Average	17	18	27
Maximum	29	26	35
<i>Adjusted values (plus 25%)</i>			
Alpha diversity			
171	56	64	113
Species recorded per releve (100 m <sup>2</sup> )			
Minimum	8	15	24
Average	21	23	34
Maximum	36	33	44

### **Wetland component**

The reed dominated floodplain vlei riparian wetland, which occurs within the study area, is associated with a non-perennial drainage line, which flows into the Rietspruit (Figure 11). This section of the perennial Rietspruit drains an internal catchment with an extent of 3016 ha or 5.73% of the quaternary catchment A21B (Table 8). The study area represents 0.03% of quaternary catchment A21B and 5.14% of the internal catchment.

More specifically the study area occurs within a local catchment (Figure 12) with an extent of 155 ha, which represents 0.29% of quaternary catchment A21B and 5.14% of the internal catchment (Table 8). The study area covers 0.05% of the internal catchment and 9.68% of the local catchment.

In 2003 (Figure 13), hardly any developments or hard surfaces are present within the area associated with the runoff across the study area in the local catchment. This runoff area covers 72 ha or 46.45% of the local catchment (Table 8). The study area represents 20.83% of the runoff area.

In 2006 (Figure 14), the situation has changed dramatically with almost half of the runoff area affected by development or transformation. The proposed development will contribute 5 ha to transformation, which represents 33.33% of the study area, 6.94% of the runoff area, 3.23% of the local catchment, 0.17% of the internal catchment and 0.01% of quaternary catchment.

It is therefore concluded that the proposed development will not add significantly to the runoff currently reaching the drainage line, but provision will have to be made for the influence of the combined stormwater runoff from the developments to the north across its boundaries to prevent channelling of the drainage line on the property and further downstream towards the Rietspruit.

Channelling will result in a drop in groundwater levels and an increase in sediment loads downstream. The drop in groundwater levels will destroy the remaining wetland habitat on the property, while the added sediment load will result in the siltation of the perennial Rietspruit during periods of low flow and additional channelling during periods of high flow.

Thus poor stormwater management from the development and surrounding developments will have a domino effect on the Rietspruit. This is typical the type of scenario that environmental management wants to prevent and responsible landowners needs to mitigate.

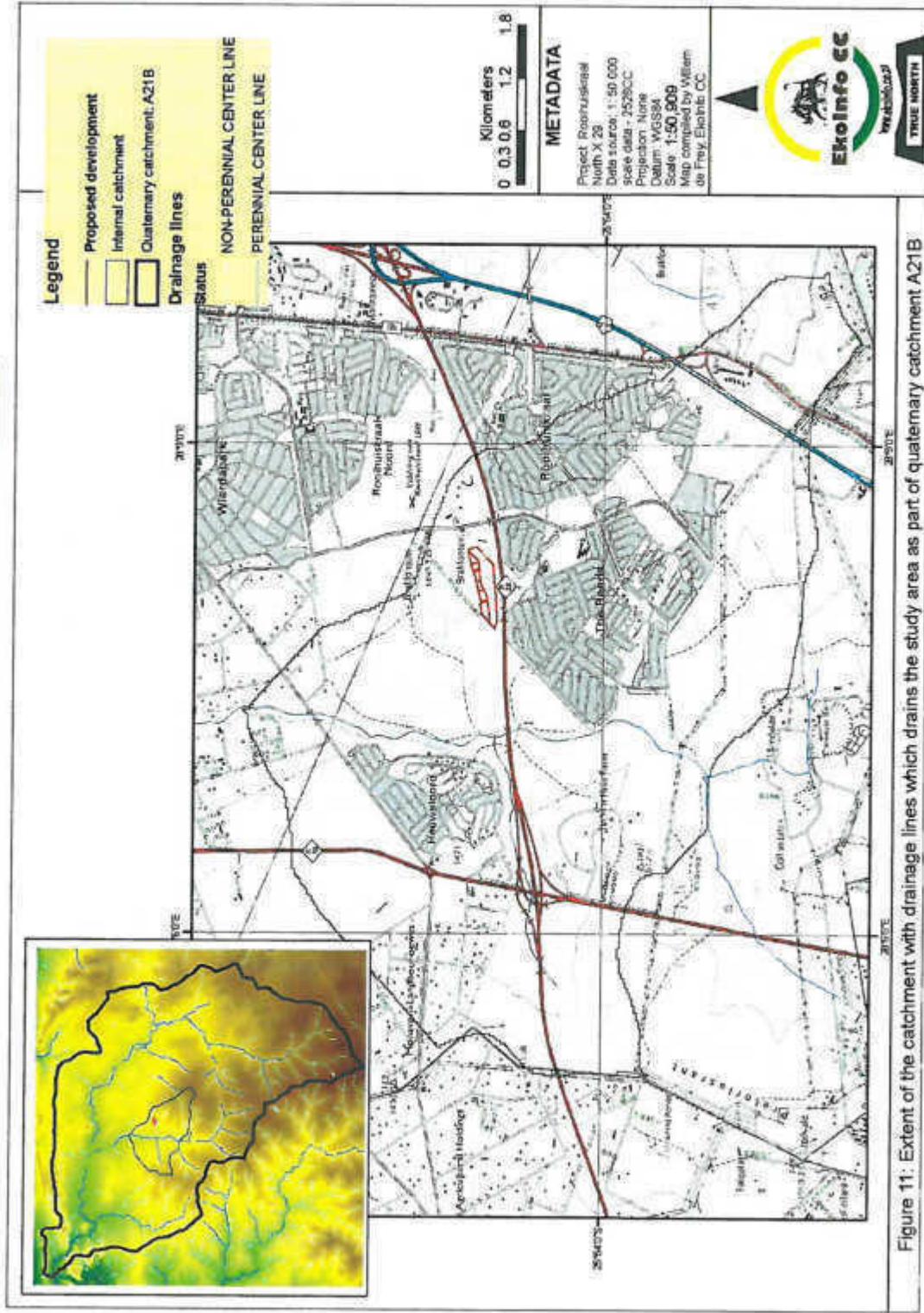


Figure 11: Extent of the catchment with drainage lines which drains the study area as part of quaternary catchment A21B

**Table 8: Overview of the extent and percentage cover of the catchments in which the study area occurs**

Catchment	Surface area (ha)	Percentage cover					
		Quaternary: A21B	Internal	Local	Runoff area	Study area	Area to be build up
Quaternary: A21B	52651	100.00%					
Internal	3016	5.73%	100.00%				
Local	155	0.29%	5.14%	100.00%			
Runoff area	72	0.14%	2.39%	46.45%	100.00%		
Study area	15	0.03%	0.50%	9.68%	20.83%	100.00%	
Area to be build up	5	0.01%	0.17%	3.23%	6.94%	33.33%	100.00%

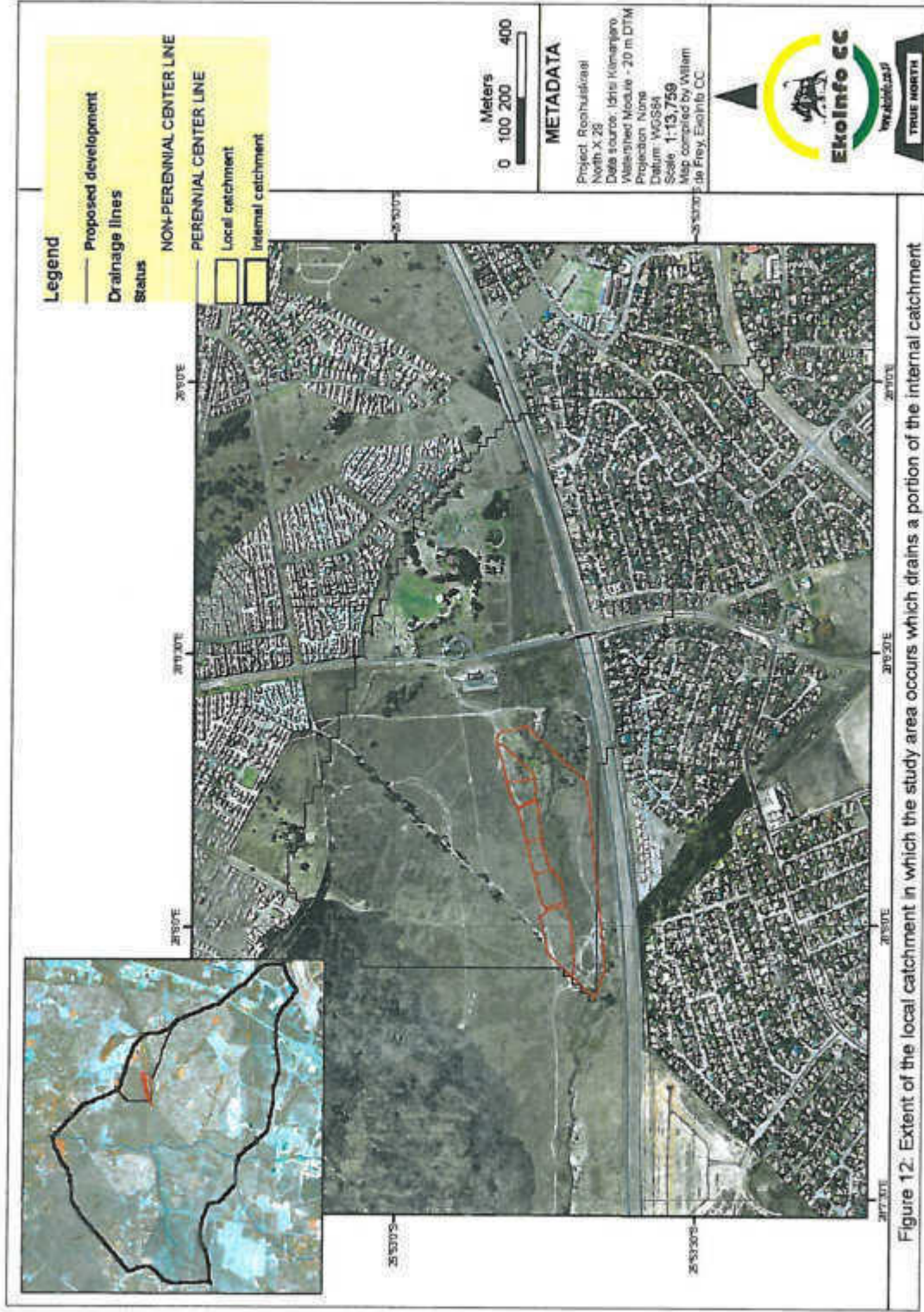


Figure 12: Extent of the local catchment in which the study area occurs which drains a portion of the internal catchment



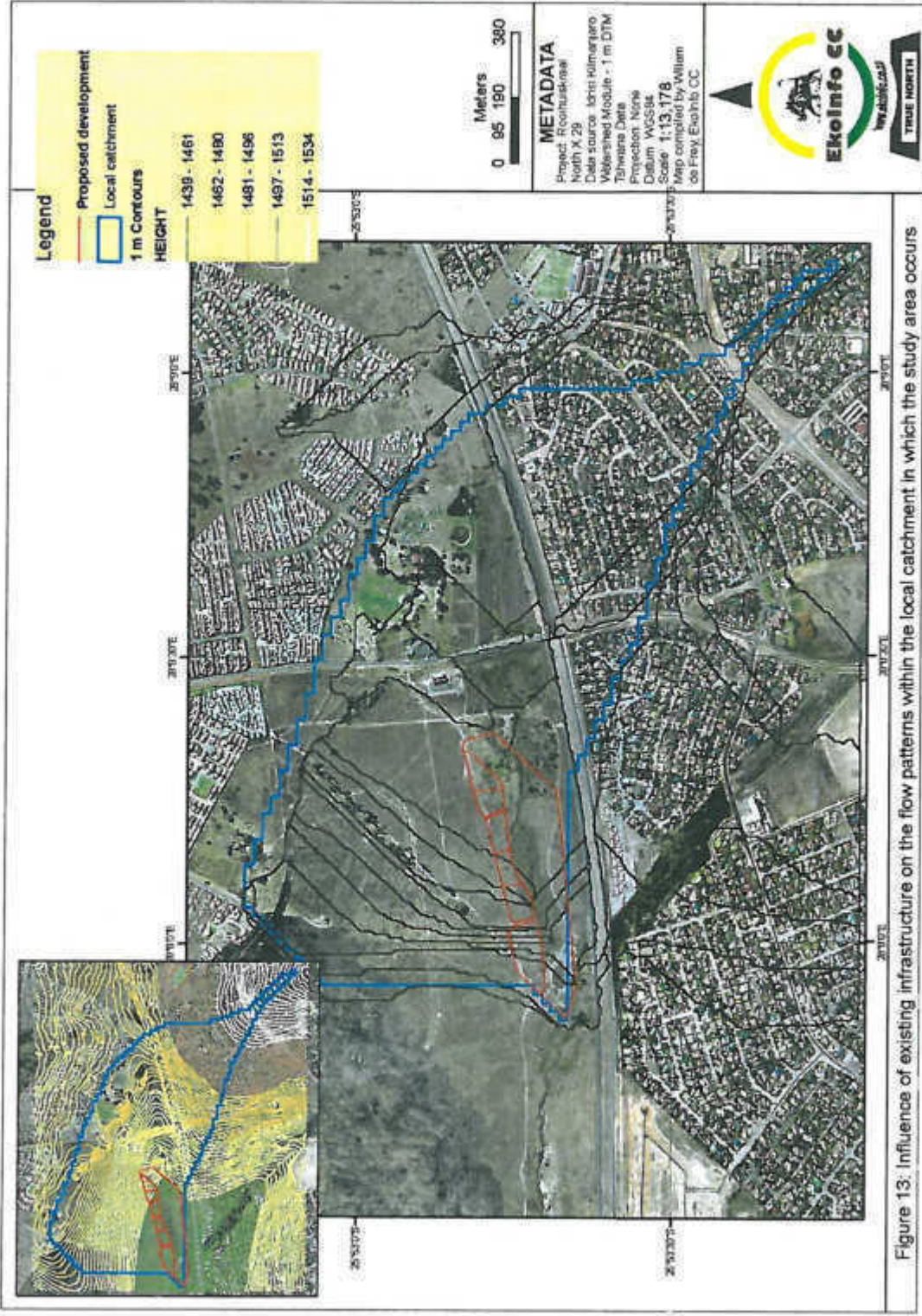


Figure 13: Influence of existing infrastructure on the flow patterns within the local catchment in which the study area occurs



Figure 14: Current and future infrastructure and related activities which influence runoff across the study area

## Sensitivity mapping and conservation issues

The extent and distribution of the wetland complies with DWAF's criteria for wetland delineation which use the following criteria:

1. Landscape attributes – landform eg. valleybottom
2. Soil attributes – soil form eg. Katspruit (Figure 15)
3. Vegetation – species composition eg. species adapted to wet conditions (Appendix B)

In addition spectral analysis was used to indicate the extent of wetland vegetation based on vegetation vigour (Figure 15).

The wetland forms the basis of the sensitivity mapping (Figure 16) because the remaining primary grassland within the area is:

1. Disturbed
2. Less than 6 ha (Table 6)
3. Isolated from the remaining primary Egoli Granite Grassland to the west (de Frey 2006)

Furthermore the wetland has a significant function (Cowan 1995, Denny 1985) with regards to:

1. Flood attenuation
2. Sediment load
3. Facilitate water quality and quantity;

within the local, internal and quaternary catchment, especially when considering the rate of development in the area. Development increases the rate of runoff due to the loss of infiltration in the absence of vegetation and an increase in hard surface eg roads, paving and roofs. Thus main aim of a stormwater management plan will be to facilitate and mimic runoff in the area to that similar or better than before the development. **No pipes should be allowed into the system, the stormwater design should include attenuation dam or other related design which would ensure a SLOW release of water into the wetland and surrounding areas.**

A GDACE based conservation/ open space area (Figure 17.A) covers 9.255 ha (62%) (Table 9), while the town planning based conservation/ open space area (Figure 17.B) covers 9.797 ha (65%). In both cases approximately 5 ha (33%) will be used for development, but the GDACE based approach will result in:

1. The need for a bridge across the drainage line to access available land next to the N14 freeway
2. The fragmentation of vacant land along the freeway and the drainage area
3. An decrease in conservation/ open space due to an increase in development (residential area, linking road and bridge)

**Table 9: Overview of the extent of potential conservation areas based on wetland sensitivity and the town planning layout**

Mapping criteria	Sensitivity Mapping		Town Planning Layout	
	Property extent	Buffered wetland extent	Development extent	Open space extent
Surface (ha)	15	9.254824	4.664964	9.797966
% cover		62%	31%	65%

Although the proposed development area will affect portions of the field capacity to saturated area (temporal zone) of the wetland (Figure 18), it would avoid the permanent zone (saturated to over saturated area) and not lead to the further fragmentation of the remaining vacant land next to the N14 freeway.

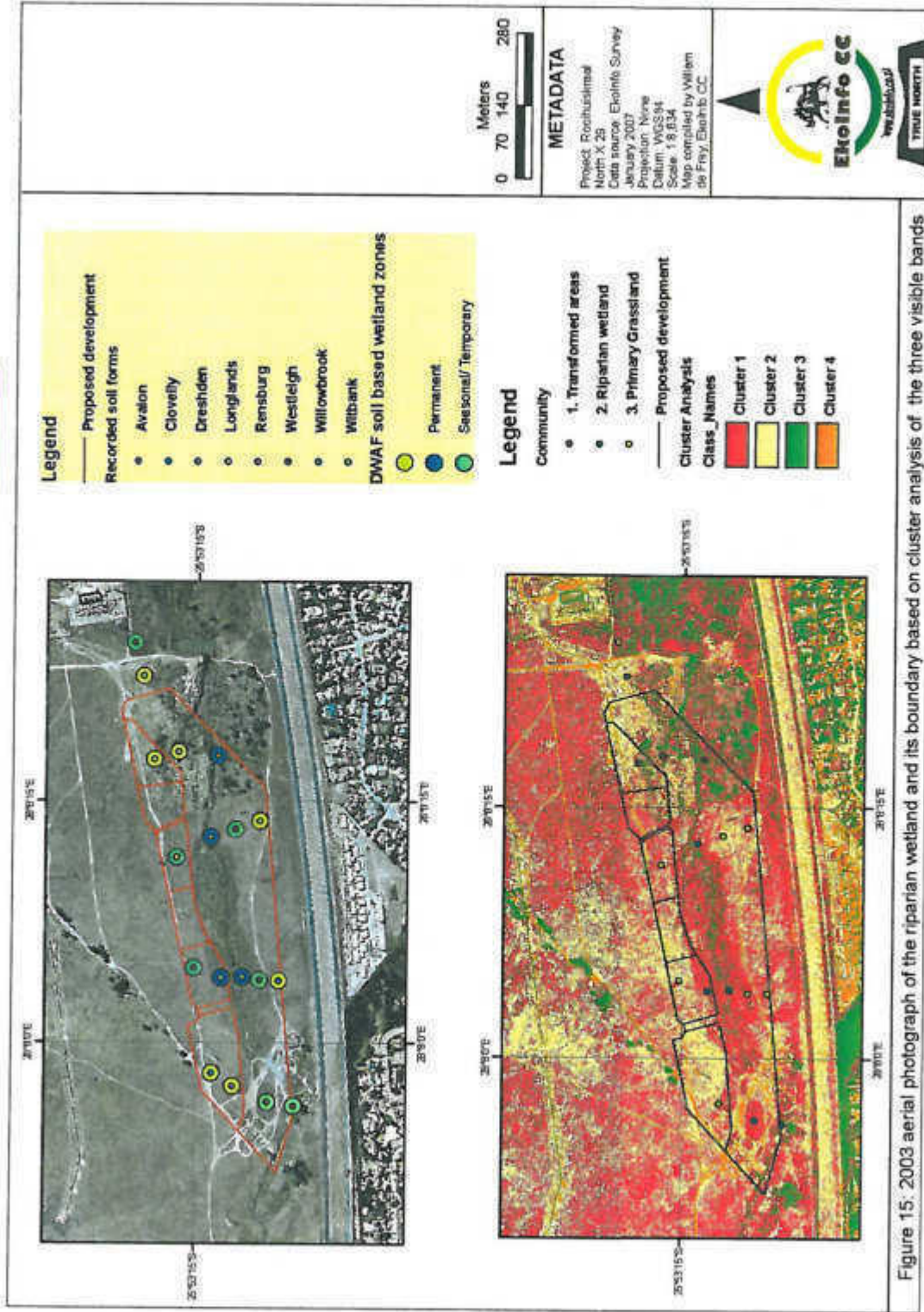


Figure 15: 2003 aerial photograph of the riparian wetland and its boundary based on cluster analysis of the three visible bands



Figure 16: Sensitivity map based on GDACE criteria for wetlands

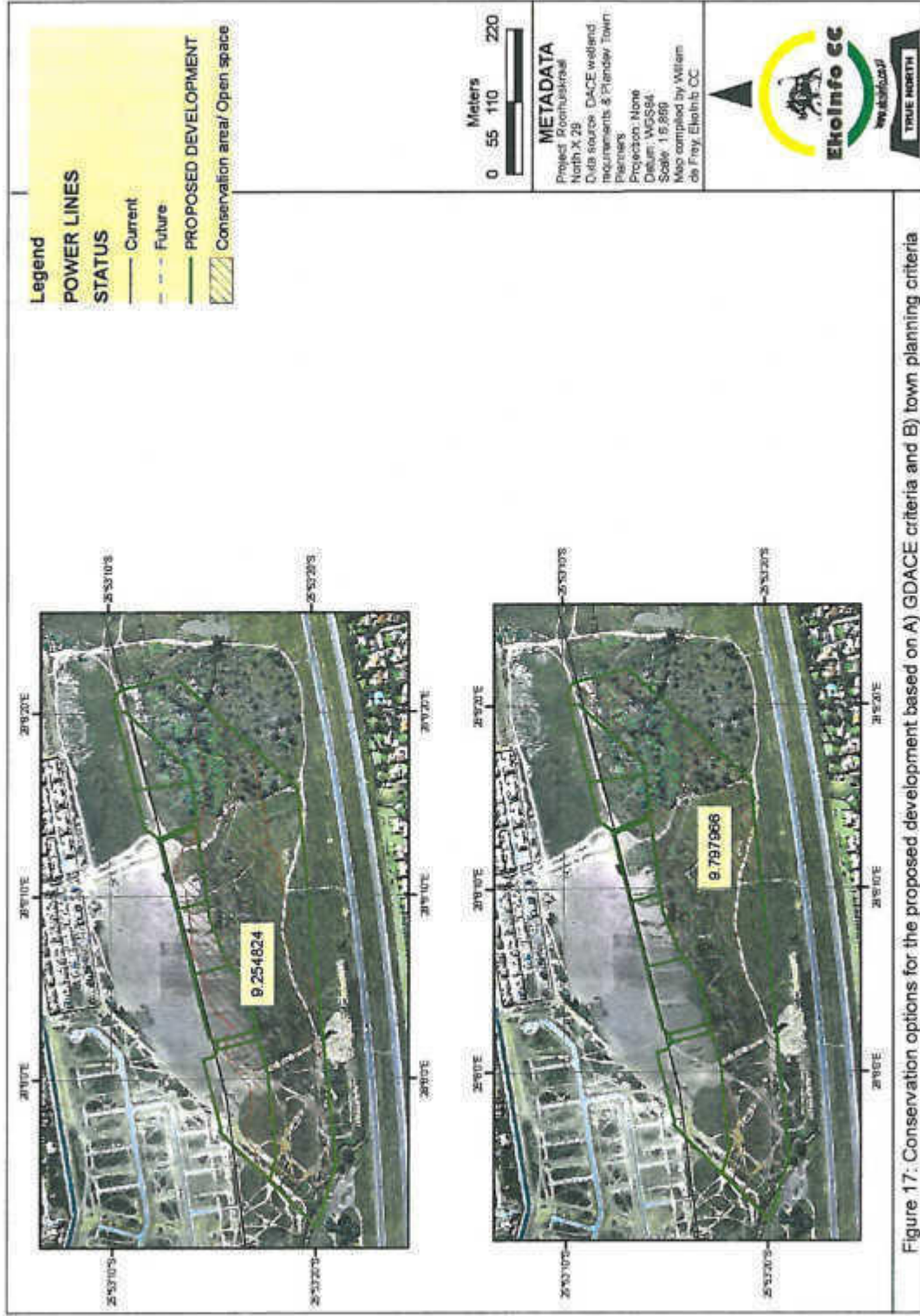


Figure 17: Conservation options for the proposed development based on A) GDACE criteria and B) town planning criteria

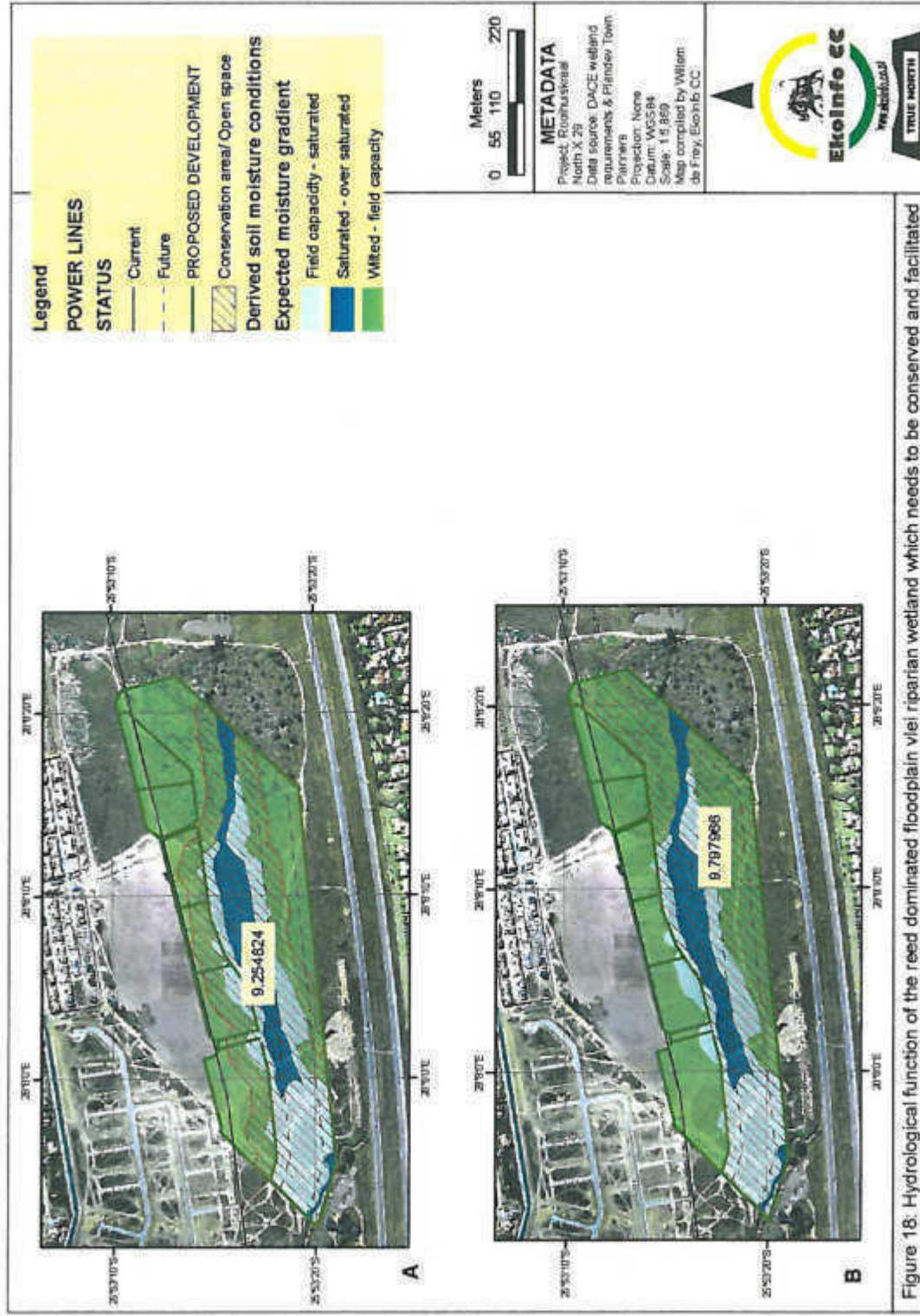


Figure 18: Hydrological function of the reed dominated floodplain vlei riparian wetland which needs to be conserved and facilitated

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## Appendix A – Current site layout plan

**Appendix B – Braun-Blanquet table of species recorded within the study area**

Relieve no	20	21	19	18	5	11	10	6	16	22	7	9	17	15	12	14	13	
Turboveg no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8	
Twin01	100000	100000	100000	100000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	
Twin02	100000	100000	100000	100000	210000	210000	210000	210000	210000	210000	220000	220000	220000	220000	220000	220000	220000	
Twinseq	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Turbo no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8	
<b>Species Group A</b>																		
Jatropha multifida																		
Acacia karroo										1								
Melia azedarach																		
Pennisetum clandestinum																		
Anundo donax																		
Bidens pilosa																		
Datura stramonium																		
Leonotis leonurus																		
Panicum maximum																		
<b>Species Group B</b>																		
Typha capensis																		
Imperata cylindrica																		
Oenothera rosea																		
Verbena bonariensis												r						
Berkheya radula																		
Conyza podocephala																		
Cyperus eragrostis																		
Miscanthus junceus																		
Paspalum urvillei																		
Pericaria lapathifolia																		
Schoenoplectus brachyeras																		

Releve no	20	21	19	18	5	11	10	6	16	22	7	9	17	15	12	14	13
Turboveg no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8
Twin01	100000 100000 100000 100000   200000 200000 200000 200000 200000 200000 200000 200000 200000 200000 200000 200000 200000 200000 200000 200000 200000																
Twin02	100000 100000 100000 100000   210000 210000 210000 210000 210000 210000 210000 210000 210000 210000 210000 210000 210000 210000 210000 210000 210000 210000																
Twin03	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Turbo no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8

**Species Group C**

<i>Geigeria burkei</i> subsp. <i>burkei</i> var. <i>burkei</i>	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
<i>Helichrysum nudifolium</i> var. <i>nudifolium</i>	-	-	-	-	+	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Kohautia virgata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Oxalis obliquifolia</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Wahlenbergia undulata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cynodon dactylon</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Elionurus muticus</i>	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eragrostis gummiflua</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Helichrysum rugulosum</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hibiscus microcarpus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Justicia anagalloides</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Pelargonium luridum</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Suaeda aurantiaca</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Vernonia oligocephala</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Chamaecrista comosa</i> var. <i>comosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eragrostis chloromelas</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Eragrostis racemosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Heteropogon contortus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hypoxis oblusa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Scabiosa columbaria</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Stoebe vulgaris</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Species Group D**

<i>Setaria sphacelata</i> var. <i>sphacelata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Kyllinga alba</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Hypoxis hemerocallidea</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Species Group E - General species**

	3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	r	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Releve no	20	21	19	18	5	11	10	6	16	22	7	9	17	15	12	14	13
Turboveg no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8
Twin01	100000	100000	100000	100000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000
Twin02	100000	100000	100000	100000	210000	210000	210000	210000	210000	220000	220000	220000	220000	220000	220000	220000	220000
Twinseq	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Turbo no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8
Tagetes minuta	+	+	+	3	+	r				+	+	+					
Hypparrhenia hirta	+	2b		2b	2b		+		3	2a	2b	2b	2a	+	3	3	
Themeda triandra	+	+					3			+	2a	2a	2b	3	r	r	
Melinis repens subsp. Repens	+	+		+									+		2a	2a	2a

**Species Group F - Species associated with climax, untransformed areas**

Anthericum cooperi											+							r
Beclium obovatum subsp. obovatum var. obovatum											r							
Bergia decumbens											+							
Bulbostylis burchellii																		
Celtis africana																		1
cf. Helichysum melanacme																		2a
Chaelacanthus costatus																		+
Commelina africana var. africana		+																+
Cyanotis speciosa											r	r						+
Cymbopogon excavatus																		+
Cyperus obtusiflorus var. obtusiflorus																		r
Cyperus rupestris var. rupestris													+					+
Cyphia stenopetala																		+
Digitalia eriantha																		r
Dipcadi viride																		+
Ehretia rigida subsp. rigida																		r
Felicia muricata subsp. muricata																		r
Helichysum aureonitens																		+
Hermannia depressa																		r
Hypoxis rigidula var. rigidula																		+
Ledebouria cooperi																		r
Monsonia angustifolia																		+

Releve no	20	21	19	18	5	11	10	6	16	22	7	9	17	15	12	14	13	
Turboveg no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8	
Twin01	1000000	1000000	1000000	1000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	
Twin02	1000000	1000000	1000000	1000000	2100000	2100000	2100000	2100000	2100000	2200000	2200000	2200000	2200000	2200000	2200000	2200000	2200000	
Twinseq	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Turbo no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8	
Polygala hottentotia					r							r					1	
Protoparagus laricinus										1								
Rhus pyroides var. pyroides																		
Senecio inornatus																		
Sphenostylis angustifolia						1												
Striga asiatica																		
Vahlia capensis subsp. Capensis																		
Xysmalobium undulatum var. undulatum													+					
<b>Species Group G - Species associated with disturbed areas</b>																		
Agave sisalana																		
Amaranthus hybridus subsp. hybridus																		
Aristida congesta subsp. congesta																		
Asclepias fruticosa																		
Campuloclinium macrocephalum																		
Chenopodium album																		
Chloris gayana																		
Chloris virgata																		
Cirsium vulgare																		
Cleome monophylla																		
Commelina erecta																		
Conyza bonariensis																		
Eragrostis curvula																		
Eragrostis plana																		
Euphorbia species																		
Ipomoea purpurea																		
Morus alba var. alba																		
Nidorella hottentotica																		
Plantago lanceolata																		

Releve no	20	21	19	18	5	11	10	6	16	22	7	9	17	15	12	14	13
Turboveg no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8
Twin01	100000	100000	100000	100000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000
Twin02	100000	100000	100000	100000	210000	210000	210000	210000	210000	220000	220000	220000	220000	220000	220000	220000	220000
Twinseq	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Turbo no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8
Populus species					1												
Robinia pseudoacacia																	
Salvia runcinata					r												
Schkuhria pinnata										+							
Teucrium trifidum												+					
Tribulus terrestris																	
Urochloa miosambicensis												r					
Zinnia peruviana		r															
Ziziphus zeyheriana												+					
<b>Species Group H - Species associated with rockiness</b>																	
Anthospermum rigidum subsp. rigidum																	
Athrix elata												+					
Lippia rehmannii																	
<b>Species Group I - Species associated with coarse textured soils</b>																	
Eragrostis capensis														r			
Eragrostis trichophora																	
Pogonarthria squarrosa																	
Trichoneura grandiglumis																	
<b>Species Group I - Species associated with moist and/ or wet conditions</b>																	
Andropogon appendiculatus																	
Berula erecta subsp. erecta							1		+								
Chironia purpurascens subsp. purpurascens		r															
Cyperus congestus							1		+								
Cyperus esculentus var. esculentus																	
Eleocharis dregeana																	
Eucomis autumnalis subsp. clavata																	
Haplocarpha lyrata												r					
Helictotrichon turgidulum													r				

Releve no	20	21	19	18	5	11	10	6	16	22	7	9	17	15	12	14	13
Turboveg no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8
Twin01	1000000	1000000	1000000	1000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000	2000000
Twin02	1000000	1000000	1000000	1000000	2100000	2100000	2100000	2100000	2100000	2200000	2200000	2200000	2200000	2200000	2200000	2200000	2200000
Twinseq	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Turbo no	15	16	14	13	1	6	5	2	11	17	3	4	12	10	7	9	8
Hemarthra altissima		3							1								
Hyparrhenia dregeana									1								
Juncus tomatophyllus	+					+											
Leersia hexandra							+										
Monopsis decipiens								r									
Nesaea schinzii										r							
Nidorella anomala								+									
Paspalum dilatatum									1								
Paspalum scrobiculatum	+																
Pseudognaphalium luteo-album												+					
Rorippa nudiuscula										r							
Rumex crispus																	
Salix babylonica var. babylonica									r								
Schoenoplectus corymbosus	+																
Setaria incrassata												+					



## Appendix C – Primary consultant abridge CV: Willem de Frey

Name of firm: Ekolnfo cc Environmental and Wildlife Management Consultancy

Name of staff: WILLEM HENDRIK DE FREY

Profession: Environmental and Wildlife Management consultant

Years with firm: Since 1995

Nationality: RSA

Membership of professional societies:

The South African Council for Natural Scientific Professions (Reg no 400100/02)

Categories: Botanical Science and Ecological Science

Currently in the process of affiliating to:

South African Association of Botanist (SAAB)

Grassland Society of Southern Africa

South African Institute of Ecologist and Environmental Scientists (SAIE)

### KEY QUALIFICATIONS:

Mr W de Frey has been involved in the discipline of ecology since 1989. During this period he prepared himself for a profession in environmental and wildlife management, by attending courses in chemistry, geology, pedology and statistics, while majoring in Botany and Zoology. His working knowledge was obtained while completing projects for his post-graduate studies in wildlife management in both the Savanna and Grassland Biomes. In addition to his academic publications, he has contributed to numerous reports regarding EMPR's, EIA's, vegetation - and soil surveys and monitoring since the registration of his own consultation close corporation in 1995. He is actively involved in the management and marketing of his close corporation while completing tasks in his field of expertise namely soil, vegetation science and Geographical Information Systems. Mr W de Frey is task orientated with consideration of people's needs and safety. He believes in a holistic approach to environmental and wildlife management and has therefore established a network with individuals in related fields. He is also assisting previously disadvantaged persons in establishing a presence in the environmental industry, namely Lordwick Makhura of Baagi Environmental Consultancy CC and a joint venture company Bonolo Biodiversity And Environmental Management consisting of Baagi Environmental Consultancy CC and Disa Mphago Community Helpers CC.

### EDUCATION:

1992 BSc Botany & Zoology, University of Pretoria

Course	Content	Level
Chemistry	Organic and Inorganic chemistry	1 <sup>st</sup> year
Geology	Introduction/ Geomorphology, Stratigraphy, Structural, Sedimentology Palaeontology, Crystallography	1 <sup>st</sup> and 2 <sup>nd</sup> year
Pedology	Introduction, soil classification, soil fertility, soil ecology, soil physics	1 <sup>st</sup> and 2 <sup>nd</sup> year
Botany	Morphology, Anatomy, Physiology, Taxonomy, Mycology, Ecology, Reproductive biology	1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> year
Zoology	Taxonomy (Vertebrates and Invertebrates), Physiology (mainly vertebrates), Ecology (mainly vertebrates), Animal behaviour (mainly vertebrates)	1 <sup>st</sup> , 2 <sup>nd</sup> and 3 <sup>rd</sup> year
Statistics	Sampling methods, Statistical Analysis, Probabilities	1 <sup>st</sup> year

1993 BSc (Hons) (Cum laude) Wildlife Management, University of Pretoria

Dissertation: 'N HOLISTIESE EKOLOGIESE BENADERING TOT DIE DRAKRAGBEPALING VAN 'N GEMENGDE WILD- EN BEESBOERDERY IN DIE UBOMBO DISTRIK, MET ENKELE BESTUURS AANBEVELINGS, 1993

1999 MSc (Cum laude) Wildlife Management, University of Pretoria

Thesis: PHYTOSOCIOLOGY OF THE MPUMALANGA HIGH ALTITUDE GRASSLANDS, 1999

**COURSES/ WORKSHOPS ATTENDED**

1. Red List And Threatened Species Assessment Training Workshop, Hosted by the Conservation Breeding Specialist Group Southern Africa & Endangered Wildlife Trust, December 2003
2. National State of the Environment Workshop, Hosted by DEAT and SRK, ESKOM Convention Centre – November 2004
3. Gauteng Red Data Flora Workshop, Hosted by SANBI and GDACE – November 2005
4. Gauteng Flora Minimum Requirement Workshop, Hosted by GDACE Nature Conservation – August 2007

**EMPLOYMENT RECORD:**

1986 – 1987

5 Signals Regiment, SADF

1998 – 1993 – Parttime

Council of Geoscience, Palaeontology Section

University of Pretoria, Botany Department

Academy of Marksmanship, Range Officer

U Huisoppasser, Own enterprise

1994 – 1995

University of Pretoria, Botany Department, Assistant researcher

1995 – present

Ekolnfo cc Environmental and Wildlife Management Consultancy, Founding member and consultant

Overall Ekolnfo CC's principal consultant completed or administrated more than 58 vegetation studies as part of Environmental Impact Assessments within all of South Africa's nine provinces and adjacent countries such as Botswana and Mozambique with a focus on either terrestrial vegetation and/ or **wetlands**. Some projects were on provincial level such as the Mpumalanga and Gauteng Degradation Projects coordinated by the Institute for Soil, Climate and Water and sponsored by National Department of Agriculture. The majority of projects were on local scale from 5 ha to 50 000 ha or more for local developers and corporate institutions (SASOL, Anglo Coal, BHP Billington, Ingwe Coal, Deneys Rietz Attorneys, ESKOM) facilitated independently or as a subcontractor/ specialist for the following institutions: Oryx Environmental CC, African EPA, Arcuss Gibb, Digby Wells and Associates, Nature and Business Alliance and Eyethu Engineers, Strategic Environmental Focus.

**COMMUNITY SERVICE**

1. Substitute lecture – 2nd & 3rd year Botany Practical (Vegetation Survey Methods), University of Pretoria -1994 & 1995
2. **Guest lecture – Wetland Vegetation Communities** (2nd year students), Department of Landscape Architecture, University of Pretoria – 1996 & 1997
3. Guest lecture – Principles of Ecology (1st year students), Department of Landscape Architecture, University of Pretoria – 2002
4. Guest lecture – Principles of vegetation survey and mapping for EIA's (3rd year students), Department of Landscape Architecture, University of Pretoria – 2003
5. Referee – ILASA Merits Awards (Environmental Planning), Institute for Landscape Architects of South Africa - 2003

**LANGUAGES:**

Language	Capability
English & Afrikaans	Speak, Read, Write - sufficient
Sepedi (Northern Sotho)	Speak, Read, Write – insufficient



# **Appendix G3**

Red Data Invertebrate and  
Wetland Mammal  
Investigation

# F. S. I.



## faunal specialists incorporated

### **Project:**

Rooihuiskraal North X 29 (Gaut: 002/06-07/N0311): Red Data Invertebrate and wetland mammal investigation

### **Compiled by:**

Dewald Kamffer (Ecocheck)



### **For:**

Ekolnfo

### **Reviewed by:**

Theo Mostert (Karos Environmental Services)

**Legal requirements pertaining to environmental specialists:**

The Natural Scientific Professions Act of 2003 aims "to provide for the establishment of the South African Council of Natural Scientific Professions (SACNASP), and for the registration of professional, candidate and certified natural scientist; and to provide for matters connected therewith."

According to the Natural Scientific Professions Act of 2003: "Only a registered person may practice in a consulting capacity" (20(1) – pg 14).

<b>Details</b>	<b>Author</b>	<b>Reviewer</b>
Name	Dewald Kamffer	Theo Mostert
Company	Ecocheck	Karos
Qualifications	MSc Conservation Biology	MSc Mammology
Experience	5 years of faunal specialist work	5 years of faunal and floral specialist work
SACNASP registration	400204/05: zoological and ecological sciences	pending

## 1. Executive summary

The proposed activity entails a residential development.

The study area is currently not formally used and could be listed as unused open space. However, the study area is extensively used for quad-biking and associated activities. No sensitive areas were identified during the study and therefore the whole of the study area is considered to be of moderately low sensitivity. Again, no sensitivity rules were applied since no sensitive areas and/or species were identified. Please refer to the vegetation assessment for wetland-related issues. No species of concern or any indication of such species were encountered during the field investigation. The pitfall trapping and sweeping done during the field survey did not yield any Mygalomorphae species – some commonly found spiders were found in the pitfall traps. The level of degradation and transformation evident in the study area is an obvious contributing factor. Additionally, the habitat is not optimal for trapdoor spiders; the only clayey soils are present close to the wetland which, historically, was flooded periodically and therefore a danger to these relatively sedentary spiders and therefore sub-optimal habitat. The same reasons are applicable and relevant to the apparent absence of any wetland specialist small mammals. The wetland system of which the wetland in the study forms part of, has been severely degraded and only isolated untransformed relict patches of the original system remain. Otters and other wetland specialist mammals need to move within such a system to achieve successful breeding and feeding. No doubt some the species listed for the area did occur historically; however, the levels of degradation and transformation not only of the system within the study area but also on neighboring properties has negated most of the original wetland ecosystem as suitable habitat for these species. The wetland in the study area has been severely transformed and degraded, as have parts of the same system both up- and down stream of the study area. However, no wetland is totally beyond successful rehabilitation. In an ideal situation, this entire wetland should be rehabilitated, conserved and managed accordingly. Whether only the small section of wetland found within the study area's boundaries can be conserved on its own is very doubtful.

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## 2. Location of pitfall traps on the application site



Figure 1 ~ pitfall trap were placed in the most optimal habitat in the study area which is found in disturbed Egoli Granite Grassland.



### **3. Current use and proposed activity**

The proposed activity entails a residential development.

The study area is currently not formally used and could be listed as unused open space. However, the study area is extensively used for quad-biking and associated activities.

### **4. List of specialist studies conducted**

<b>Investigation</b>	<b>Specialist</b>	<b>Reviewer</b>	<b>Date of survey</b>
Wetland Mammals	Dewald Kamffer	Theo Mostert	05 Dec 2006
Invertebrates	Dewald Kamffer	Theo Mostert	05-12 Dec 2006

### **5. Sensitivity map**

No sensitive areas were identified during the study and therefore the whole of the study area is considered to be of moderately low sensitivity.

### **6. Sensitivity mapping rules applied**

Again, no sensitivity rules were applied since no sensitive areas and/or species were identified. Please refer to the vegetation assessment for wetland-related issues.

## 7. Photographic records



Figure 2 ~ most of the study area has been severely degraded (especially the wetland) or transformed due to building rubble and waste disposal and quad-biking and related activities.

## 8. Methods

### **8.1 Fieldwork**

The emphasis of the study falls on investigations as to the presence of the following species listed as potential inhabitants of the study area and therefore species of concern (GDACE Biodiversity Information):

*Galeosoma pilosum*, *Galeosoma robertsi*, *Aonyx capensis*, *Atilax paludinosus*, *Chrysospalax villosus*, *Dasymys incomtus*, *Lutra maculicollis*, *Otomys angoniensis* and *Otomys irroratus*.

All fieldwork is logged using a GPS based on geographic units and WGS84 datum.

### **8.1.1 Invertebrates:**

Spiders: trapping for Mygalomorphae spiders is done placing pitfall traps in high potential habitat. Traps are left in the field for five to ten days. Ten pitfall traps were placed in a transect line at the position indicated (Figure 1). Additionally surface broom sweeping is done in suitable locations (sweeping with a strong-bristled broom disturbs the coverings of well-camouflaged trapdoor, enabling detection).

### **8.1.2 Wetland Mammals:**

Small mammals: due to the transformed nature of the study area only an active search was conducted to ascertain the presence/absence of the animals listed above (8.1 Fieldwork). No small mammal trapping was conducted.

## ***8.2 Data analyses***

### **8.2.1 GIS:**

- All GPS acquired data is converted from text to shapefiles to allow GIS analyses.
- Sensitivity maps are compiled once data analyses have been completed.

## **9. Results**

### ***9.1 Species of concern encountered***

No species of concern or any indication of such species were encountered during the field investigation.

## 10. Discussion

### Mygalomorphae Spiders:

The pitfall trapping and sweeping done during the field survey did not yield any Mygalomorphae species – some commonly found spiders were found in the pitfall traps. The level of degradation and transformation evident in the study area is an obvious contributing factor. Additionally, the habitat is not optimal for trapdoor spiders; the only clayey soils are present close to the wetland which, historically, was flooded periodically and therefore a danger to these relatively sedentary spiders and therefore sub-optimal habitat.

### Wetland Small Mammals:

The same reasons are applicable and relevant to the apparent absence of any wetland specialist small mammals. The wetland system of which the wetland in the study forms part of, has been severely degraded and only isolated untransformed relict patches of the original system remain. Otters and other wetland specialist mammals need to move within such a system to achieve successful breeding and feeding. No doubt some the species listed for the area did occur historically; however, the levels of degradation and transformation not only of the system within the study area but also on neighboring properties has negated most of the original wetland ecosystem as suitable habitat for these species.

The wetland-associated problems seen in the study area are not unique to the province. Most of the larger systems (Hennops, Hex, Jukskei, Sesmylspruit, Moreleta, Elands, Pienaars etc.) face similar challenges. The simple fact remains: a wetland must be conserved and managed in its entirety or not at all.

## **11. Mitigation**

The wetland in the study area has been severely transformed and degraded, as have parts of the same system both up- and down stream of the study area. However, no wetland is totally beyond successful rehabilitation. In an ideal situation, this entire wetland should be rehabilitated, conserved and managed accordingly. Whether only the small section of wetland found within the study area's boundaries can be conserved on its own is very doubtful.

## **12. Assumptions and limitations**

- Faunal assessment studies of this nature are always limited in scope, time and budget. Discussions and proposed mitigation are made on assumptions, estimations and subjective reasoning. It should therefore be viewed and acted upon with these limitations in mind.
- Only Red Data invertebrate taxa currently listed as such were collected, trapped and sampled.
- Conclusions in this document are reached by assessing current knowledge of each species from the literature and personal experience. It is however unlikely that this would always be supported 100% by reality.

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# Appendix G4

Floral Integrity Scan



# Scientific Aquatic Services

Applying science to the real world

91 Geldenhuis Road, Malvern East Extension 1, 2007

Tel 011 616 7893

Fax 011 615 4106

Cell 083 415 2356

[admin@sasenvironmental.co.za](mailto:admin@sasenvironmental.co.za)

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**Name:** Natasha van de Haar  
**Date:** Thursday, 25 November 2010  
**Ref:** SAS 210159

Bokamoso Landscape architects and Environmental Consultants

Tel: 012 346 3810

Fax: 012 460 7079

E-mail : [lizelleg@mweb.co.za](mailto:lizelleg@mweb.co.za)

Attention: Ms. L Gregory

Dear Madam,

## ***DETERMINATION OF WHETHER THE GRASSLAND ON THE PROPOSED ROOIHUISKRAAL NORTH EXT 29 DEVELOPMENT SITE IS PRIMARY GRASSLAND.***

Bokamoso Landscape Architects and Environmental Consultants appointed Scientific Aquatic Services to undertake a floral integrity scan of the proposed Rooihuiskraal ext 29 development. The subject property is located to the north of the N14 highway and surrounded by existing residential developments. The Rietspruit River runs north of the subject property in a westerly direction.

One field visit was done on the 23<sup>rd</sup> of November 2010 to determine the floral community within the proposed development footprint area. Vegetation surveys were undertaken by first identifying different vegetation units and then analysing the floral species composition at selected points. Different transect lines were chosen within areas that were perceived to best represent the various plant communities. A walking stick was used that was placed every 1m and the plant species of biophysical feature falling closest to the point of the stick was identified. These points were done along a 100m transect line, making for 100 data points along a single transect. The data was then analysed and the percentage contribution of the various floral species for each transect line was calculated. These species lists were then also compared with the vegetation expected in the *Egoli Granite Grassland*, which provided an accurate indication of the ecological integrity and conservational value of the site where the proposed development is to be completed.

The proposed development site falls within the *Grassland* Biome and *Mesic Highveld Grassland* Bioregion of Gauteng. It is represented by one vegetation unit, namely *Egoli Granite Grassland*, which is an *Endangered* vegetation type. *Egoli Granite Grassland* occurs on moderately to strongly undulating plains and low hills supporting tall, usually *Hyparrhenia hirta*-dominated grasslands, with some woody species on rocky outcrops or rock sheets. The rocky habitat show a high diversity of woody species, which occur in the form of scattered shrub groups or solitary small trees. The dominant and typical floral species of *Egoli Granite Grassland* are presented in the table below.

This vegetation type is formally classified as an *Endangered* vegetation type that has only approximately 3% (provincial conservation target is 24%) of it conserved in statutory reserves (Diepsloot and Melville Koppies Nature Reserve). Other conserved areas include the Walter Sisulu National Botanical Gardens. More than two thirds of the vegetation unit has already undergone transformation mostly due to urbanisation, cultivation or by road construction. Current rates of transformation threaten most of the remaining unconserved areas. There is no serious alien infestation in this unit, although species such as *Eucalyptus grandis*, *Eucalyptus camaldulensis* and *Eucalyptus sideroxylon*, as well as exotic *Acacia* species, are commonly found. Erosion is moderate and very low (Mucina & Rutherford, 2006).

**Table 1: Dominant and typical floristic species of Egoli Granite Grassland (Mucina & Rutherford, 2006).**

Grass species	Forb species	Tree/Shrub Species
<i>Aristida canescens</i> (d)	<i>Acalypha angustata</i>	<i>Vangueria infausta</i>
<i>Aristida congesta</i> (d)	<i>Acalypha peduncularis</i>	<i>Rhus pyroides</i>
<i>Cynodon dactylon</i> (d)	<i>Becium obovatum</i>	<i>Anthospermum hispidulum</i>
<i>Digitaria monodactyla</i> (d)	<i>Berkheya insignis</i>	<i>Anthospermum rigidum</i> subsp. <i>pumilum</i>
<i>Eragrostis capensis</i> (d)	<i>Crabbea hirsute</i>	<i>Gnidia capitata</i>
<i>Eragrostis chloromelas</i> (d)	<i>Cyanotis speciosa</i>	<i>Helichrysum kraussii</i>
<i>Eragrostis curvula</i> (d)	<i>Dicoma anomala</i>	<i>Ziziphus zeyheriana</i>
<i>Eragrostis racemosa</i> (d)	<i>Helichrysum rugulosum</i>	<i>Lopholaena coriifolia</i>
<i>Heteropogon contortus</i> (d)	<i>Justicia anagaloides</i>	
<i>Hyparrhenia hirta</i> (d)	<i>Kohautia amatymbica</i>	
<i>Melinis repens</i> subsp. <i>repens</i> (d)	<i>Nidorella hottentotica</i>	
<i>Monocymbium ceresiiforme</i> (d)	<i>Pentanisia prunelloides</i> subsp. <i>latifolia</i>	
<i>Setaria sphaelata</i> (d)	<i>Pseudognaphalium luteo-album</i>	
<i>Themeda triandra</i> (d)	<i>Senecio venosus</i>	
<i>Tristachya leucothrix</i> (d)		
<i>Andropogon eucomus</i> (c)	Geophytic herbs:	
<i>Aristida aequiglumis</i> (c)		
<i>Aristida diffusa</i> (c)	<i>Cheilanthes deltoidea</i>	
<i>Aristida scabrivalvis</i> subsp. <i>borumensis</i> (c)	<i>Cheilanthes hirta</i>	
<i>Bewisia biflora</i> (c)		
<i>Bracharia serrata</i> (c)		
<i>Bulbostylis burchelli</i> (c)		
<i>Cymbopogon caesius</i> (c)		
<i>Digitaria tricholaeoides</i> (c)		
<i>Diheteropogon amplexens</i> (c)		
<i>Eragrostis gummiflua</i> (c)		
<i>Eragrostis sclerantha</i> (c)		
<i>Panicum natalense</i> (c)		
<i>Schizachyrium sanguineum</i> (c)		
<i>Setaria nigrirostris</i> (c)		
<i>Tristachya rehmannii</i> (c)		
<i>Urelytrum agropyroides</i> (c)		

(\*)(d) – Dominant species for the vegetation type; (c) – Common species for the vegetation type.)

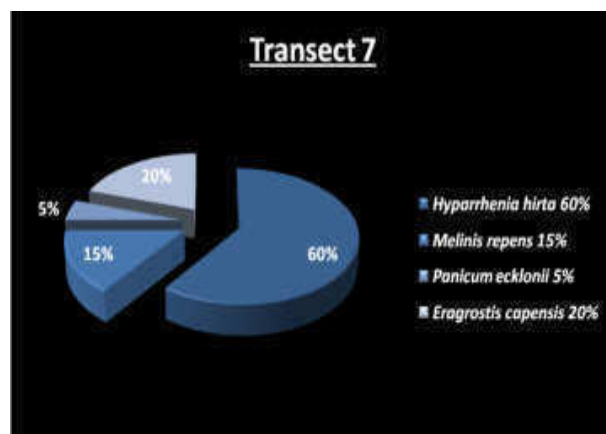
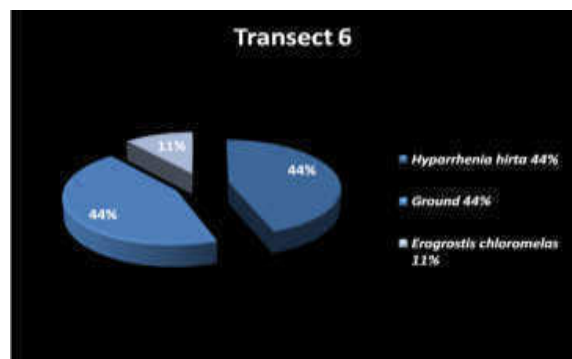
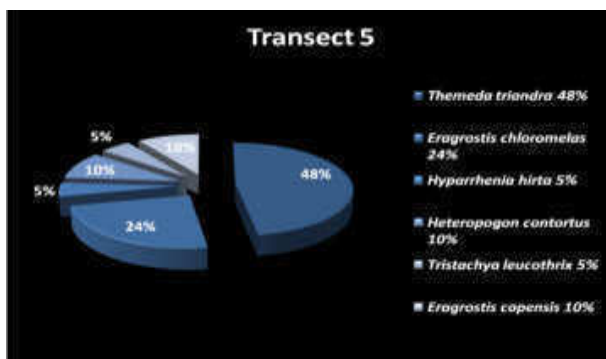
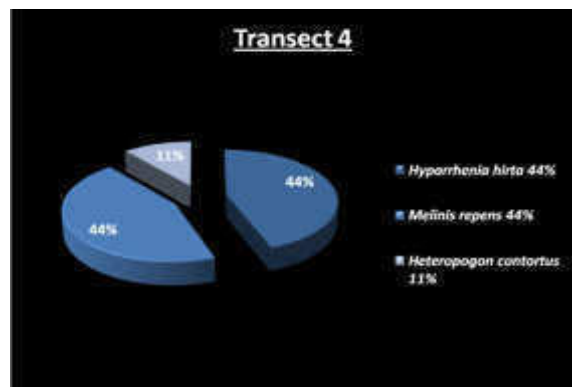
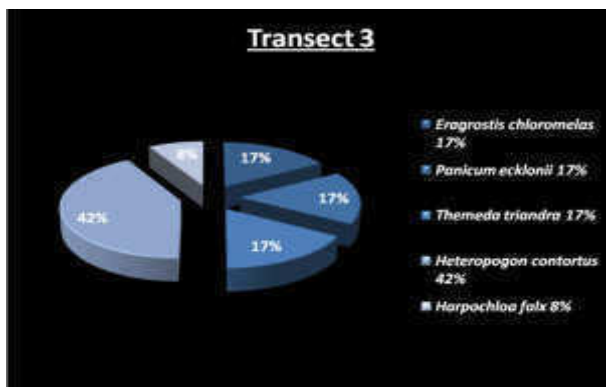
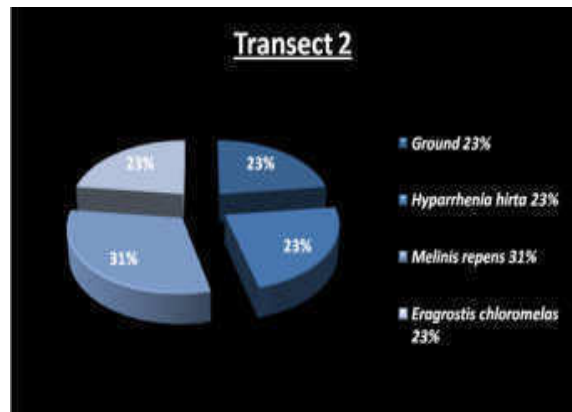
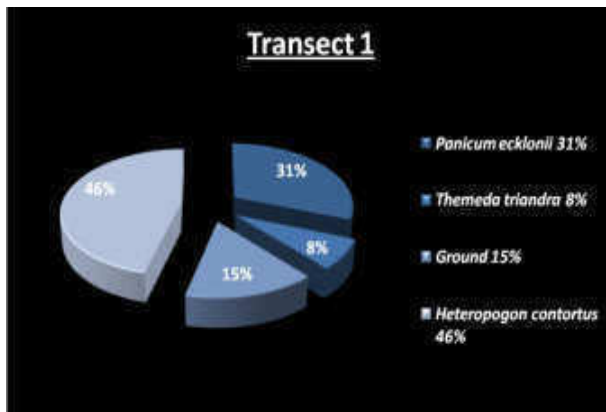
The species community results are presented below. The study area falls outside the wetland buffer and therefore only two habitat units were identified namely transformed and open grassland. Significant vegetation transformation has occurred within the eastern portion of the study area with almost no natural grass species encountered, as a result transect locations were all within the open grassland habitat unit (figure 1 below).





Figure 1: Aerial photograph depicting the locations of the individual transects.





**Table 2: Grass species definitions (Van Oudtshoorn, 2006); \* is an Egoli Granite Grassland indicator species.**

<p><b>*Eragrostis capensis</b> (Heart seed love grass) [Increaser II, Subclimax grass]. Heart seed love grass often grows in places such as vlei areas where the soil is moist for the greater part of the year. It is often found beside tar roads where additional rainwater collects, and also in disturbed places.</p> <p><b>*Eragrostis chloromelas</b> (Narrow curly leaf) [Climax grass; Increaser II]. Curly leaf grows on stony slopes in sandy and loam soil. It is more common in open grassland than in the bushveld.</p> <p><b>Harpochloa falx</b> (Catepillar Grass) [Climax grass, Increaser I]. Catepillar grass grows on stony slopes in well drained soil, usually in areas with a high rainfall. It is mostly found in undisturbed mountainous grassland.</p> <p><b>*Heteropogon contortus</b> (Spear Grass) [Subclimax grass, Increaser II]. Spear grass grows especially in gravelly and other well drained soil. It often grows on slopes and in disturbed places such as road reserves where it can form dense stands.</p> <p><b>*Hyparrhenia hirta</b> (Common thatching grass) [Increaser I, Climax grass]. Grows well in drained soil, especially gravelly soil, in open grassland, as well as in bushveld. It is often found in disturbed places such as old cultivated lands and road reserves. It is also sometimes found along riversides on heavier soil.</p> <p><b>*Melinis repens</b> (Natal Red top) [Subclimax grass, Increaser II]. Natal red top grows in disturbed places such as roadsides and old cultivated lands (subsp. <i>repens</i>) or in sunny dry places (subsp. <i>grandiflora</i>), in all soil types, but especially in well drained soil.</p> <p><b>Panicum ecklonii</b> (Small panicum) Decreaser; climax grass Small panicum grows in open , high altitude, grassland. It grows especially in damp places and on slopes that are often burnt; mostly in sandy soil.</p> <p><b>*Themeda triandra</b> (Red grass) 36%: [Climax grass; Decreaser]. Red grass is abundant in undisturbed open grassland and bushveld in parts with an average to high rainfall. It grows in any type of soil, but mostly in clay soil.</p> <p><b>Trachypogon spicatus</b> (Giant spear grass) [Climax grass; Increaser I]. Giant spear grass mostly grows in open undisturbed grassland, but it also occurs in bushveld areas with a relatively high rainfall. It is often encountered near vleis. It grows mostly in sandy and gravelly soil types.</p> <p><b>*Tristachya leucothrix</b> (Hairy trident grass) [Climax grass; Increaser I]. Hairy trident grass usually grows in open grassland on stony slopes and in marshy places. It mostly occurs in sandy soil in veld that is under-utilised and infrequently burnt.</p>
--

#### Conclusions:

- A fair amount of grass species are indicators of the expected vegetation type.
- All grass species identified occur either in disturbed places or near wetland areas.
- The floral community results show relatively uniform species composition throughout the study area with an increase in species diversity closer to wetland areas.
- The open grassland area is isolated from other similar habitat units mainly due to significant vegetation transformation within the eastern as well as western portion of the study area. The study area is bordered by the N14 Highway, as a result road related activities also contributed towards overall vegetation transformation by means of edge effects.

There is a fair diversity of grassland vegetation within the wetland areas. During previous studies done (SAS, 2010) some ecologically important species such as *Eucomis autumnalis* and *Hypoxis hemerocallidea* were observed within the wetland boundaries. It is essential that the minimum wetland buffers advocated by GDACE be implemented at this site in order to allow for the conservation of these species on the subject property.

After the assessment of the study area it can be concluded that no primary grassland presently exists within the study area and that significant deviation from the natural grass community site of the *Egoli Granite Grasslands* has occurred. The proposed development will have no significant impact on conservation of *Egoli Granite Grasslands*. Based on the observations of this assessment it is the opinion of the ecologists that, from an ecological viewpoint, the proposed development be considered favourably provided that the wetland, with associated buffer, remains open space and all mitigation measures pertaining to wetland areas as stipulated in the wetland assessment are adhered to.

Yours Faithfully,

Digital Documentation Not Signed For Security Purposes

Stephen van Staden





# **Appendix G5**

## Fauna Habitat Assessment

# Fauna Habitat Assessment for Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR, Gauteng Province



March 2017



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## Specialist

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### **Declaration of independence:**

I, the above mentioned specialist investigator responsible for conducting this particular specialist flora study, declare that:



- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);
- At the time of conducting the study and compiling this report I did not have any interest, hidden or otherwise, in the proposed development, except for financial compensation for work done in a professional capacity;
- Work performed for this study was done in an objective manner. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part;
- I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I do not necessarily object to or endorse the proposed development, but aim to present facts, findings and recommendations based on relevant professional experience, and scientific data;
- I do not have any influence over decisions made by the governing authorities;
- I have the necessary qualifications and guidance from professional experts (registered Pr. Nat. Sci.) in conducting specialist reports relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- This document and all information contained herein are and will remain the intellectual property of Bokamoso Environmental: Specialist Division. This document, in its entirety or any portion thereof, may not be altered in any manner or form, for any purpose without the specific and written consent of the respective specialist investigator.



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## Review

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## 1. INTRODUCTION

Bokamoso Environmental Consultants: Specialist Division was appointed to conduct a Basic Faunal Habitat Assessment for the application for the Roohuiskraal North Ext 29 residential development situated partially on the Remainder of Portion 9 and partially on Portion 145 of the Farm Brakfontein 399 JR, Gauteng Province.

An initial study was conducted in December 2006 by Ecocheck. However, this study only focussed on wetland mammals and invertebrates, and failed to apply any sensitivity mapping. Since 2006, guidelines and legislation pertaining to the biological environment has been amended e.g. Gauteng Conservation Plan published in 2014.

This survey is based on the faunal species currently recorded as well as potential fauna species within the study area. The report acts as an overview of the probable and/or known occurrence of the following faunal groups: Mammals, Reptiles, Amphibians, and Invertebrates. This is an independent report and cannot be compared with previous reports as the specific requirements, status of Red Listed species and the current ecological condition of the study area are different.

The primary focus of this report falls on Red Listed species, including Critically Endangered, Endangered and Vulnerable (IUCN, 2016), and species of conservation concern (SCC)<sup>1</sup> occurring on or near the study area. This is to ensure that if present, the appropriate actions are taken to guarantee the conservation of these species.

## 2. SCOPE AND OBJECTIVE OF ASSESSMENT

- To assess the significance of the habitat components and current general conservation status of the property;
- To provide a list of faunal species which potentially occur on the study area, and to identify Red Listed species;
- Comment on ecological sensitive areas within the study area;
- Comment on connectivity with natural vegetation and homogeneous habitats surrounding the study area;
- Highlight potential impacts of the proposed residential development on the fauna present on the study area; and
- Provide management recommendations to mitigate negative and enhance positive impacts should the proposed residential development be approved.

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<sup>1</sup> SCC are species that have a high conservation importance and include not only Red Listed species, but also those classified in the categories Extinct in the Wild (EW), Regionally Extinct (RE), Near Threatened (NT), Critically Rare, Rare, Declining and Data Deficient - Insufficient Information (DDD).

### 3. LIMITATIONS

Even though considerable care is taken to ensure accuracy and professionalism of this faunal habitat assessment, environmental assessment studies are limited in scope, time and budget. Sampling conducted across several phenological seasons is required to accurately produce a comprehensive species inventory and ecological understanding for the environment studied. Since environmental impact studies deal with dynamic natural systems additional information may come to light at a later stage. However, due to EIA timeframes, allocated specialist time and budget, Bokamoso Environmental Consultants cannot be held responsible for incorporating such information after the final delivery of this document unless additional budget and time is allocated.

The desktop study made up the largest part of the data used to conclude the distribution of Threatened species which were sourced by making use of the Animal Demography Unit (ADU): Virtual Museum (VM) (ADU, 2016)<sup>2</sup> data basis. Any limitations in the above mentioned data basis will in effect have implications on the findings and conclusions of this assessment. Accordingly, this report should be viewed and acted upon considering these limitations.

### 4. STUDY AREA

The study area (approximately 18,02 ha in size) also known as Roohuiskraal North Ext 29 is situated partially on the Remainder of Portion 9 and partially on Portion 145 of the Farm Brakfontein 399 JR, Gauteng Province. The study area is located to the north of the N14 (Danie Joubert Freeway) and west of the M37 Roohuiskraal Road. The study area is surrounded by existing residential developments including Amberfield Valley and Amberfield Ridge to the North of the study area. Access to the site can be made from Kraalnaboom Avenue north of the study area (Figure 1). The site is situated in the jurisdiction of the City of Tshwane Metropolitan Municipality.

The study area falls in the 2528CC Quarter Degree Square (QDS), and in the Egoli Granite Grassland (Gm10) (Mucina and Rutherford, 2006). This vegetation unit is considered Endangered according to the National list of threatened terrestrial ecosystems for South Africa, 2011 (National Gazette no. 34809, 2011).

A preliminary layout map was prepared based on previous specialist studies. The layout map indicates that the northern section of the site along with the watercourse should stay undeveloped. Therefore, development of approximately 350 residential units is considered for the southern section (south of the watercourse), adjacent the N14 freeway. The access road will be from Kraalnaboom Avenue, and will cross the watercourse on site (Figure 2).

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<sup>2</sup> <http://vmus.adu.org.za/?vm>



Figure 1: Locality map of the study area.

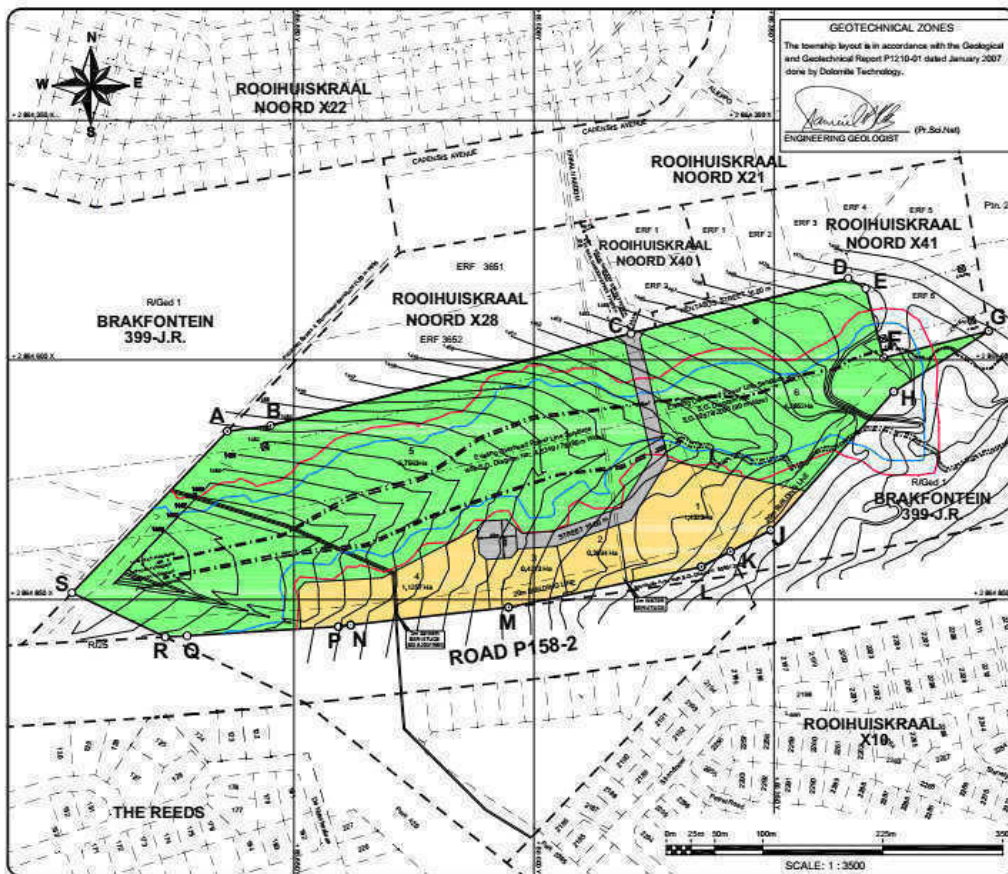


Figure 2: Preliminary layout map of study site.

## 5. METHODS

### Desktop Survey

A desktop study was done prior to the site visit to compile a species list of each faunal group (Mammals, Amphibians, Reptiles and Invertebrates) which might occur on the study area as well as possible Red Listed species and SCC known to occur in the 2528CC QDS. The ADU: VM<sup>3</sup> (ADU, 2016) was consulted to verify the records and occurrence of recorded fauna species in the 2528CC QDS. The Gauteng Conservation Plan (C-Plan v3.3, 2014) was consulted to evaluate ecologically sensitive areas associated with Mammals, Amphibians, Reptiles and Invertebrates. The majority of faunal species are either nocturnal, poikilothermic, hibernators, secretive and seasonal, which makes it difficult to observe them during field surveys. Therefore a number of authoritative tomes such as field guides, datasets and scientific literature were utilized to deduce the probable occurrence of faunal species.

### Mammals

A comprehensive list of probable mammalian occurrence with reference to the study area was compiled on account of the well-known and documented distributions of mammals in South Africa, especially in the Gauteng Province. The occurrence probability of mammal species was deduced in accordance with a species' distribution and habitat preferences. Where a species' distribution range was found to overlap with the study area and its preferred habitat was present, the applicable species was deemed to have a high occurrence probability on or near the study area. In the case where the preferred habitat of a species' was found to be suboptimal on the study area, however its distribution range still overlapped the study area, the applicable species' occurrence probability was deemed to be medium. When the preferred habitat of a species was absent from the study area, the applicable species was deemed to have a low occurrence probability regardless of its distribution range.

### Herpetofauna

Habitat units identified within the study area were documented, and a combined species list was compiled for the possible presence of herpetofauna species, considering the knowledge of their preferred habitats. Field guides such as those of Marais (2004), Alexander & Marais (2007), and du Preez & Carruthers (2009), was used for habitat description of herpetofauna species.

### Invertebrates

Habitat characteristics for Red Listed species were derived from the field survey and descriptions given in the field guide by Picker *et al.* (2004). The IUCN Red Listed Species were consulted online for conservation status of Red Listed species (IUCN 2016).

### Site visit

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<sup>3</sup> <http://vmus.adu.org.za/>



A five hour site visit was conducted on 2 March 2017, during which all faunal habitats and species observed on the study area were identified by visual sightings. No trapping or mist netting was conducted in this assessment, but focused mainly on faunal habitats. Before the commencement of the field survey a list of expected species was compiled to use as a reference in the field. Also, a list of expected Red Listed species and SCC was obtained from GDARD. All the Red Listed species with distribution ranges overlapping the study area were included in the reference list. These species were prioritized and special attention was paid in terms of identifying their associated habitat preferences and noting signs of their possible presence. The field survey was conducted by means of random transect walks in each habitat.

### **Sensitivity and Probability of Occurrence**

The combined habitat sensitivity was then calculated as an average of these numerical values across all of the zoological disciplines. The resulting sensitivity map is displayed below and show a colour gradient from red (Very High sensitivity) to yellow (Very Low sensitivity). Although this manner of combining habitat sensitivities into a single map may not be ideal, it does have the benefit of being able to indicate unanimous agreement between all of the ecologists because an average of 5 means that each of the ecological disciplines evaluated that particular habitat as being of Very High sensitivity.

The general sensitivity scale as will be shown in subsequent sensitivity and critical habitat mapping is described as follows:

#### **High – Very High**

- Low levels of disturbance/transformation
- High mammalian diversity
- High mammalian abundance
- Strong presence of red-data species
- High forage potential
- Strong connectivity with other important habitats
- High refugia potential
- Relatively high vegetation structural diversity
- Relatively low resilience to environmental impacts
- Relatively high ecosystem uniqueness

#### **Moderate**

- Relatively moderate levels of disturbance/transformation
- Moderate forage potential
- Moderate mammalian diversity
- Moderate mammalian abundance
- Moderate presence of red-data species
- Moderate connectivity with other important habitats

- Moderate refugia potential
- Medium levels of structural diversity
- Relatively moderate resilience to environmental impacts

#### **Low – Very Low**

- Relatively high levels of disturbance/transformation
- Low to moderate forage potential
- Low mammalian diversity
- Low mammalian abundance
- Low presence of red-data species
- Low to moderate connectivity with other important habitats
- Low to moderate refugia potential
- Low to medium levels of structural diversity
- Relatively high to moderate resilience to environmental impacts
- Low levels of regional uniqueness.

Further explanation of the criteria is provided below:

- Overall habitat potential: Relates to the ability of a given habitat to support a given mammalian species/group.
- Refugia potential: The ability of a given habitat to fulfil shelter and breeding requirements of a given mammalian species/group.
- Forage potential: The ability of a given habitat to fulfil food requirements of a given mammalian species/group.
- Habitat connectivity: The ability of a given habitat to allow for migratory movement as well as genetic exchange, for a given mammalian species/group.
- Overall faunal importance: The relevant importance of the sub-population of a given mammalian species/group in the context of the region/country and entire species/group community as a whole. Importance is also related to the conservation status of a given faunal species.

## **6. HABITATS**

Four habitats were identified in the study area (Figure 2):

1. Grassland
2. Wetland
3. Mixed Indigenous and Alien Vegetation
4. Disturbed Grassland

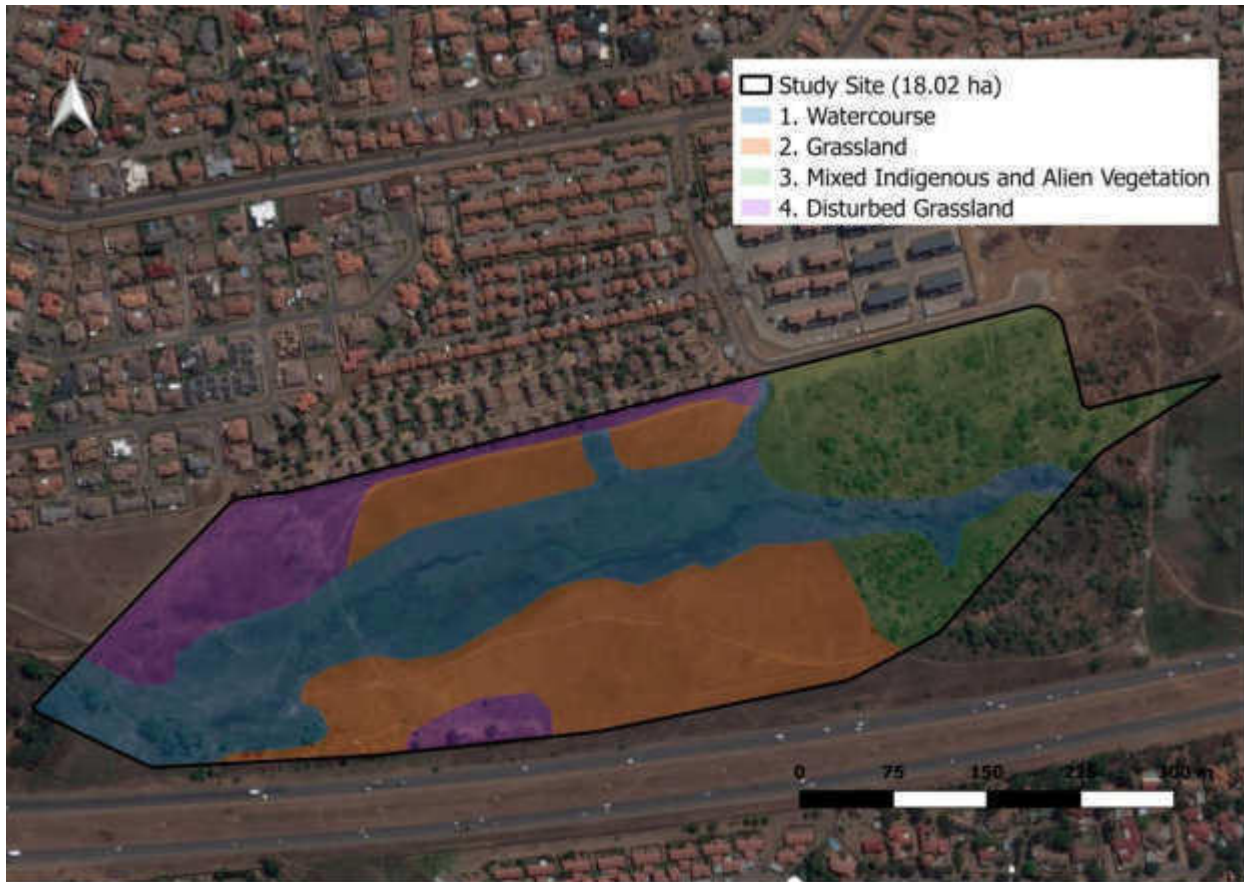


Figure 3: Faunal habitats identified.

## 6.1. Grassland

The Grassland has typical characteristics associated with Egoli Granite Grassland; with the exception of some areas of disturbance (Figure 4). In addition, the surrounding land uses (i.e. residential development and urban road networks) increases disturbance pressures resulting in habitat loss, which leads to fragmentation, reduced habitat connectivity and establishment of alien species. Dominant species include *Cymbopogon caesius*, *Hyparrhenia hirta*, *Hypoxis hemerocallidea*, *Nidorella anomala*, *Helichrysum* spp. and *Themeda triandra*. The grass layer density made it difficult to record herbaceous and other species associated with grasslands.



**Figure 4: Grassland.**

## **6.2. Wetland**

The Wetland is for the most part of the study area still in a good ecological condition (Figure 4). Towards the west and the east of the study area, disturbance and alien and/or invasive plant species increase. Dominant species include *Berkheya radula*, *Cyperus* spp., *Fimbristylis complanata*, *Imperata cylindrica*, *Schoenoplectus* sp., *Typha capensis* and *Verbena brasiliensis* (Alien).



**Figure 5: Wetland.**

### **6.3. Mixed Indigenous and Alien Vegetation**

This study unit is disturbed due to a high density of alien species, habitat destruction and increased pressures from the surrounding residential developments. A power line runs in an east-west direction. Maintenance underneath is minimal. The study unit consists of a mixture of indigenous and alien species. Dominant species include *Amaranthus deflexus* (Alien), *Amaranthus hybridus* (Alien), *Arundo donax* (Alien), *Celtis africana*, *Datura stramonium* (Alien), *Vachellia karroo* and *Verbena bonariensis* (Alien).



**Figure 6: Mixed Indigenous and Alien Vegetation.**

#### **6.4. Disturbed Grassland**

The study unit has been disturbed historically due to road networks and the surrounding expansion of residential developments towards the northwest of the study area. Illegal dumping was observed during the site visit, specifically in areas with easy access (i.e. adjacent road networks on the residential side and from the N14 freeway [Figure 6]). The composition is a mixture of alien and indigenous species. A total of 36 species were recorded during the survey. Dominant species include *Datura stramonium* (Alien), *Coccinia* cf. *sessilifolia*, *Hyparrhenia hirta*, *Hypoxis* spp., *Tagetes minuta* (Alien), *Themeda triandra* and *Wahlenbergia undulata*.



**Figure 7: Disturbed Grassland**

## 7. MAMMAL HABITAT ASSESSMENT

Special attention was paid during the evaluation of the qualitative habitat conditions that would support Red Listed mammal species potentially occurring in or around the study area. Mitigation measures to alleviate the impacts and effects of the proposed development were suggested where applicable. The secondary objective of this investigation was to determine which mammals might still reside in and around the study area and to compile a complete list of expected mammal species.

### 7.1. Specific Requirements

During the field survey attention was paid to note any signs of the potential occurrence of Red Listed species as well as species with conservation importance according to GDARD (GDARD, 2014).

These species include:

Vlei rat (*Otomys irroratus*), Angoni vlei rat (*Otomys angoniensis*), African marsh rat (*Dasymys incomtus*), Water mongoose (*Atilax paludinosus*), Spotted-necked otter (*Hydrictis maculicollis*), Cape Clawless Otter (*Aonyx capensis*), Highveld Golden Mole (*Amblysomus septentrionalis*), Rough-haired golden mole (*Chrysospalax villosus*), Southern African hedgehog (*Atelerix frontalis*), , White-tailed rat (*Mystromys albicaudatus*), and several bat species including Blasius's/Peak-Saddle Horseshoe Bat (*Rhinolophus blasii*), Darling's Horseshoe Bat (*Rhinolophus darlingi*), Geffroy's Horseshoe Bat (*Rhinolophus clivus*), Hildebrandt's Horseshoe Bat (*Rhinolophus hildebrandtii*), Scheiber's Long-Fingered Bat (*Miniopterus natalensis*) and Temminck's Hairy Bat (*Myotis tricolor*).

### 7.2. Results

#### 7.2.1. Mammal habitats identified

During the habitat assessment three distinct mammalian habitats were identified in the study area, namely grassland, wetland and arboreal habitats (**Figure 2**).

#### 7.2.2. Expected and observed Mammal species

A total of 56 mammal species could occur on the study area (**Table 1**).

**Table 1: Mammal species expected in the study area. Red Listed species indicated as defined in Child *et al.*, (2016).**

	Scientific Name	Common Name	Red List Category	Probability of occurrence
1.	<i>Cryptomys hottentotus</i>	Southern African Mole-rat	Least Concern	4
2.	<i>Aepyceros melampus</i>	Impala	Least Concern	2
3.	<i>Antidorcas marsupialis</i>	Springbok	Least Concern	2
4.	<i>Connochaetes taurinus taurinus</i>	Blue Wildebeest	Least Concern	2
5.	<i>Damaliscus pygargus</i>	Blesbok	Least Concern	1
6.	<i>Raphicerus campestris</i>	Steenbok	Least Concern	4



7.	<i>Sylvicapra grimmia</i>	Common Duiker	Least Concern	4
8.	<i>Tragelaphus strepsiceros</i>	Greater Kudu	Least Concern	2
9.	<i>Amblysomus septentrionalis</i>	Highveld Golden Mole	Near Threatened	1
10.	<i>Chrysoxalax villosus</i>	Rough-haired golden mole	Vulnerable	1
11.	<i>Canis mesomelas</i>	Black-backed Jackal	Least Concern	4
12.	<i>Otocyon megalotis</i>	Bat-eared Fox	Least Concern	4
13.	<i>Taphozous mauritanus</i>	Mauritian Tomb Bat	Least Concern	3
14.	<i>Equus quagga</i>	Plains Zebra	Least Concern	3
15.	<i>Atelerix frontalis</i>	Southern African Hedgehog	Near Threatened	3
16.	<i>Leptailurus serval</i>	Serval	Near Threatened	4
17.	<i>Giraffa camelopardalis giraffa</i>	The South African Giraffe	Least Concern	1
18.	<i>Graphiurus murinus</i>	Woodland Dormouse	Least Concern	4
19.	<i>Cynictis penicillata</i>	Yellow Mongoose	Least Concern	4
20.	<i>Herpestes sanguineus</i>	Slender Mongoose	Least Concern	3
21.	<i>Hippopotamus amphibius</i>	Hippopotamus	Least Concern	1
22.	<i>Cloeotis percivali</i>	Short-eared Trident Bat	Endangered	2
23.	<i>Hystrix africaeaustralis</i>	Cape Porcupine	Least Concern	3
24.	<i>Lepus saxatilis</i>	Scrub Hare	Least Concern	4
25.	<i>Elephantulus myurus</i>	Eastern Rock Sengi	Least Concern	3
26.	<i>Aethomys ineptus</i>	Tete Veld Aethomys	Least Concern	4
27.	<i>Gerbilliscus brantsii</i>	Highveld Gerbil	Least Concern	3
28.	<i>Gerbilliscus leucogaster</i>	Bushveld Gerbil	Least Concern	3
29.	<i>Lemniscomys rosalia</i>	Single-Striped Mouse	Least Concern	4
30.	<i>Mastomys coucha</i>	Southern African Mastomys	Least Concern	4
31.	<i>Otomys angoniensis</i>	Angoni Vlei Rat	Least Concern	4
32.	<i>Otomys auratus</i>	Vlei Rat (Grassland)	Near Threatened	4
33.	<i>Rattus rattus</i>	Roof Rat	Least Concern	4
34.	<i>Rhabdomys pumilio</i>	Xeric Four-striped Grass Rat	Least Concern	4
35.	<i>Mystromys albicaudatus</i>	African White-tailed Rat	Endangered	3
36.	<i>Mellivora capensis</i>	Honey Badger	Least Concern	4
37.	<i>Poecilogale albinucha</i>	African Striped Weasel	Near Threatened	4
38.	<i>Dendromus mystacalis</i>	Chestnut African Climbing Mouse	Least Concern	3
39.	<i>Procavia capensis</i>	Rock Hyrax	Least Concern	3
40.	<i>Epomophorus wahlbergi</i>	Wahlberg's Epauletted fruit bat	Least Concern	3
41.	<i>Nycteris thebaica</i>	Egyptian Slit-faced Bat	Least Concern	3
42.	<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe Bat	Least Concern	3
43.	<i>Rhinolophus simulator</i>	Bushveld Horseshoe Bat	Least Concern	3
44.	<i>Crocidura cyanea</i>	Reddish-gray Musk Shrew	Least Concern	2
45.	<i>Crocidura hirta</i>	Lesser Red Musk Shrew	Least Concern	2
46.	<i>Crocidura silacea</i>	Lesser Gray-brown Musk Shrew	Least Concern	2
47.	<i>Phacochoerus africanus</i>	Common Warthog	Least Concern	2
48.	<i>Thryonomys swinderianus</i>	Greater Cane Rat	Least Concern	1

49.	<i>Miniopterus natalensis</i>	Natal long-fingered bat	Least Concern	3
50.	<i>Myotis tricolor</i>	Temminck's Hairy Bat	Least Concern	3
51.	<i>Neoromicia capensis</i>	Cape Serotine Bat	Least Concern	4
52.	<i>Pipistrellus hesperidus</i>	African Pipistrelle	Least Concern	3
53.	<i>Scotophilus dinganii</i>	Yellow House Bat	Least Concern	3
54.	<i>Genetta genetta</i>	Small-spotted Genet	Least Concern	3
55.	<i>Genetta maculata</i>	Rusty-spotted Genet	Least Concern	3
56.	<i>Genetta tigrina</i>	Cape Genet	Least Concern	3

\*The occurrence probability of the mammal species listed above are indicated as follows: Not likely to occur - 1, Low occurrence probability - 2, Medium occurrence probability - 3, High occurrence probability - 4, Confirmed occurrence - 5.

### 6.3.3 Red Listed Mammal species

It is expected that three Red List species may occur on site, although not recorded during the survey. Suitable habitat for several mammal species was observed in the Wetland habitat, including the *L. serval* and *O. auratus*. The serval prefers wetlands and grasslands close to water. They are solitary and mainly nocturnal, preferring grassland and wetland habitats where they prey on small mammals, birds, reptile and insects. Habitat loss and persecution are the main threats to this species.

Near Threatened species associated with the grassland include *A. frontalis*, *M. albicaudatus* and *P. albinucha* (Table 1). It is more likely that *P. albinucha* occur in the study area, but *A. frontalis* and *M. albicaudatus* have a medium occurrence probability.

*C. percivali* has been recorded in a cave approximately 16km northwest of the study area. It is however highly unlikely that the species will occur or visit the study area. *M. tricolor* was also recorded at the same site as *C. percivali*. Although this species is included in the C-Plan v3 (GDARD, 2014), it was recently downgraded from Near Threatened to Least Concern (Child *et al.*, 2016).

## 6.4 Findings

Parts of the terrestrial habitats present on the study area have been transformed and degraded to such an extent that it can no longer be regarded as typical of the Egoli Granite Grassland. There is limited connectivity with similar habitats as the study area is surrounded by roads and residential developments. There is, however still suitable habitat on the study area for Red Listed species. The Wetland is still in a good ecological condition and could potentially support Red Listed and sensitive species such as *L. serval* and *O. auratus*. The Wetland should be excluded from development. The Grassland has limited connectivity with similar habitats, increased edge effects from the surrounding land uses and increased habitat destruction and fragmentation. It is therefore considered to have a moderate to high sensitivity. Increased disturbances from the surrounding land uses and increased alien species will ultimately cause degradation of the Grassland in the long term. In the absence of ecological management and intervention, the status of this grassland will deteriorate over time and make it less suitable for Red Listed species.

## 8. HERPETOFAUNA HABITAT ASESMENT

### 8.1. Specific Requirements

Adequate amount of random transect walks in the study area was attempted to identify herpetofauna species. Emphasis on specific Red List species that might occur on the study area:

- Striped Harlequin Snake (*Homoroselaps dorsalis*)
- Coppery Grass Lizard (*Chamaesaura aenea*)
- Giant Bullfrog (*Pyxicephalus adspersus*)

### 8.2. Results

#### 8.2.1. Herpetofauna habitats identified

The study area has conspicuous standing or flowing water bodies as such to provide for the niche preferences for amphibian species (du Preez & Carruthers, 2009). There are numerous trees, termitaria, logs, leaf litter and old building rubble on site which provides suitable habitat for reptile species.

#### 8.2.2. Expected and observed Herpetofauna species

Based on the impressions gathered during the site visit and records from the “Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland” (Minter et al., 2004), “Ensuring a future for South Africa’s frogs: a strategy for conservation research” (Measey, 2011), “Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland” (Bates et al., 2014) and the databases FrogMAP (continuation of the Southern African Frog Atlas Project) and ReptileMAP (the continuation of the Southern African Reptile Conservation Assessment), the following lists of species which may occur in the study area were compiled (Tables 2 and 3).

No amphibian or reptile species were observed during the survey. Seventeen amphibian species and 35 reptile species have previously been recorded within the 2528CC QDS, their occurrence probability was assessed and are indicated in Tables 2 and 3.

**Table 2: Amphibian species observed or expected to occupy the study area. Taxonomy and Red List rankings of species follow IUCN classifications. Red Listed species are indicated in red.**

	Scientific Name	Common Name	Red List Category	Probability of occurrence
1.	<i>Breviceps adspersus adspersus</i>	Bushveld Rain Frog	Least Concern	4
2.	<i>Schismaderma carens</i>	Red Toad	Least Concern	3
3.	<i>Sclerophrys capensis</i>	Raucous Toad	Least Concern	2
4.	<i>Sclerophrys gutturalis</i>	Guttural Toad	Least Concern	3
5.	<i>Sclerophrys poweri</i>	Western Olive Toad	Least Concern	3
6.	<i>Kassina senegalensis</i>	Bubbling Kassina	Least Concern	3
7.	<i>Phrynobatrachus natalensis</i>	Snoring Puddle Frog	Least Concern	3
8.	<i>Xenopus laevis</i>	Common Platanna	Least Concern	2
9.	<i>Amietia delalandii</i>	Delalande's River Frog	Least Concern	2

10.	<i>Amietia fuscigula</i>	Cape River Frog	Least Concern	2
11.	<i>Amietia queketti</i>	Quekett's River Frog	Least Concern	2
12.	<i>Cacosternum boettgeri</i>	Common Caco	Least Concern	4
13.	<i>Pyxicephalus adspersus</i>	Giant Bull Frog	Near Threatened*	1
14.	<i>Strongylopus fasciatus</i>	Striped Stream Frog	Least Concern	3
15.	<i>Tomopterna cryptotis</i>	Tremolo Sand Frog	Least Concern	4
16.	<i>Tomopterna natalensis</i>	Natal Sand Frog	Least Concern	4
17.	<i>Tomopterna tandyi</i>	Tandy's Sand Frog	Least Concern	3

The occurrence probability of the amphibian species listed above are indicated as follows:  
 Not likely to occur - 1, Low occurrence probability - 2, Medium occurrence probability - 3, High occurrence probability - 4, **Confirmed occurrence - 5.**

\*Regionally considered Near Threatened, but not necessary to include according to GDARD (2014).

**Table 3: Reptile species observed or expected to occupy the study area. Taxonomy and Red List rankings (indicated in red) of species as defined by Bates *et al.* (2014).**

	<i>Scientific Name</i>	<i>Common Name</i>	<i>Red List Category</i>	<i>Probability of occurrence</i>
1.	<i>Agama aculeata distanti</i>	Distant's Ground Agama	Least Concern	4
2.	<i>Agama atra</i>	Southern Rock Agama	Least Concern	3
3.	<i>Chamaeleo dilepis dilepis</i>	Common Flap-neck Chameleon	Least Concern	4
4.	<i>Crotaphopeltis hotamboeia</i>	Red-lipped Snake	Least Concern	3
5.	<i>Dasypeltis scabra</i>	Rhombic Egg-eater	Least Concern	4
6.	<i>Chamaesaura aenea</i>	Coppery Grass Lizard	Near Threatened	3
7.	<i>Cordylus vittifer</i>	Common Girdled Lizard	Least Concern	3
8.	<i>Hemachatus haemachatus</i>	Rinkhals	Least Concern	3
9.	<i>Naja annulifera</i>	Snouted Cobra	Least Concern	3
10.	<i>Hemidactylus mabouia</i>	Common Tropical House Gecko	Least Concern	
11.	<i>Lygodactylus capensis capensis</i>	Common Dwarf Gecko	Least Concern	4
12.	<i>Pachydactylus affinis</i>	Transvaal Gecko	Least Concern	4
13.	<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	Least Concern	3
14.	<i>Aparallactus capensis</i>	Black-headed Centipede-eater	Least Concern	3
15.	<i>Leptotyphlops scutifrons</i>	Peters' thread snake	Least Concern	4
16.	<i>Atractaspis bibronii</i>	Bibron's Stiletto Snake	Least Concern	2
17.	<i>Boaedon capensis</i>	Brown House Snake	Least Concern	4
18.	<i>Homoroselaps dorsalis</i>	Striped Harlequin Snake	Near Threatened	3
19.	<i>Lycophidion capense capense</i>	Cape Wolf Snake	Least Concern	3
20.	<i>Prosymna bivittata</i>	Two-striped Shovel-snout	Least Concern	2
21.	<i>Psammophis brevirostris</i>	Short-snouted Grass Snake	Least Concern	3
22.	<i>Psammophis crucifer</i>	Cross-marked Grass Snake	Least Concern	3
23.	<i>Psammophylax rhombeatus rhombeatus</i>	Spotted Grass Snake	Least Concern	2
24.	<i>Psammophylax tritaeniatus</i>	Striped Grass Snake	Least Concern	3
25.	<i>Pseudaspis cana</i>	Mole Snake	Least Concern	2
26.	<i>Panaspis wahlbergii</i>	Wahlberg's Snake-eyed Skink	Least Concern	3

27.	<i>Trachylepis capensis</i>	Cape Skink	Least Concern	3
28.	<i>Trachylepis punctatissima</i>	Speckled Skink	Least Concern	4
29.	<i>Trachylepis varia</i>	Variable Skink	Least Concern	3
30.	<i>Kinixys lobatsiana</i>	Lobatse Hinged Tortoise	Least Concern	1
31.	<i>Kinixys spekii</i>	Speke's Hinged Tortoise	Least Concern	1
32.	<i>Afrotyphlops bibronii</i>	Bibron's Blind Snake	Least Concern	2
33.	<i>Rhinotyphlops lalandei</i>	Delalande's Beaked Blind Snake	Least Concern	2
34.	<i>Varanus niloticus</i>	Water Monitor	Least Concern	2
35.	<i>Bitis arietan arietans</i>	Puff Adder	Least Concern	2

\*The occurrence probability of the reptile species listed above are indicated as follows:

Not likely to occur - 1, Low occurrence probability - 2, Medium occurrence probability - 3, High occurrence probability - 4, **Confirmed occurrence - 5**

### 8.2.3. Red Listed Herpetofauna species

The Giant bullfrog (*Pyxicephalus adspersus*) has a medium probability of occurring on the study area as there may be suitable habitat, i.e. seasonal shallow grassy pans, vleis or rain-filled depressions in open flat areas of grassland or savanna (du Preez & Carruthers, 2009). The species has been recorded in the QDS and records have been confirmed in the area according to GDARD. The permanent zone of the Wetland is not suitable as it is a deep flowing stream, and the banks are too high which makes movement difficult. There might be suitable habitat in the seasonal zone which creates temporary ponds during a good rainy season.

The Striped Harlequin Snake (*Homoroselaps dorsalis*) is a very rare species and infrequently recorded during surveys (about only 12 recorded for Gauteng). The species has been recorded in the QDS and records have been confirmed in the area according to GDARD. However, since it is a cryptic species which lives mostly underground or in dead termitaria, it is extremely difficult to confirm the existence on the study area. It is likely for this particular species to occur within the study area.

## 8.3. Findings

The majority of the terrestrial habitat present on the study area is still in a natural state, with limited disturbances. There is connectivity with similar habitats in the surrounding area, which increases the probability of genetic exchange and allowing migration of species. There is potentially suitable habitat for the Striped Harlequin Snake (*Homoroselaps dorsalis*) and the Giant bullfrog (*Pyxicephalus adspersus*). It is suggested that a specialist in the field of zoology should assess the possibility of finding these Near Threatened species.

## 9. INVERTEBRATE HABITAT ASSESSMENT

### 9.1. Specific Requirements

During the field survey attention was paid to note any signs of potential occurrence of Red Listed species.

These species include:

(1) Roodepoort Copper Butterfly (*Aloeides dentatis* subsp. *dentatis*), (2) Highveld Golden Opal Butterfly (= Heidelberg Copper) (*Chrysoritis aureus*), (3) Stobbia's Fruit Chafer Beetle (*Ichnestoma stobbiai*) and (4) Highveld Blue Butterfly (*Lepidochrysops praeterita*), which are all regarded as Vulnerable and prioritised by GDARD.

**Roodepoort Copper Butterfly (*Aloeides dentatis* subsp. *dentatis*):**

This butterfly is proposed for Endangered (Henning *et al.*, 2009) and Mecenero *et al.* (2013), based on its limited distribution and possible decline in quality and extent of remaining habitats. Suitable habitat around known localities was mapped off satellite imagery. A 100 % target was set for these areas, though it is worth noting that the entire area is within existing Protected Areas, and hence does not influence the outcome of the Gauteng C-Plan v3.3 (GDARD, 2014).

This species is typically found in Carletonville Dolomite Grassland at an elevation of 1 500 to 1 900 m. The species is only known from Ruimsig (Roodepoort), Heidelberg (Suikerbosrand – from two localities) and Klipriviersberg (west of Suikerbosrand). The species has a range of approx. 70 km<sup>2</sup>. All known localities of this species occur in reserves; however the threat of habitat modification due to environmental changes remains (Henning *et al.*, 2009).

The larval food plant of this species at Ruimsig Reserve is *Hermannia depressa* and at Suikerbosrand *Lotononis eriantha*. The presence of the food plant alone will not ensure the presence of the butterfly (Henning *et al.*, 2009). Population control of this butterfly species probably takes place owing to finite facilities in *Lepisiota* ant nests. Males are strongly territorial and need open patches as territorial sites (Henning *et al.*, 2009).

**Highveld Golden Opal (*Chrysoritis aureus*) (= Heidelberg Copper):**

This butterfly is proposed to be listed as Vulnerable by (Henning *et al.*, 2009) and being upgraded to Endangered by Mecenero *et al.* (2013). Highveld Golden Opal is host plant (*Clutia pulchella*) and host ant (*Crematogaster* species) specific, and known from a handful of localities on the Heidelberg-Balfour-Greylingstad ridge system (Terblanche & van Hamburg, 2003; Henning *et al.*, 2009). The habitat structure of these localities is similar as a tree stratum is absent. It is currently protected in the Alice Glockner Nature Reserve, the Suikerbosrand Nature Reserve and in National Heritage Site No. 14 (Terblanche & van Hamburg, 2003; Henning *et al.*, 2009).

The habitat preference of this species is on south-facing, well-drained slopes with shallow humus in the two vegetation types Andersite Mountain Bushveld and Gold Reef Mountain Bushveld, belonging to the Central Bushveld Bioregion of the Savanna Biome (Mucina & Rutherford, 2006). Frost and fire may both therefore be important ecological factors that sustain a suitable habitat for *Chrysoritis aureus* (Terblanche *et al.*, 2003).

It is possible that the species is under-recorded. Known localities were buffered by 500m and the full extent of this area was included as a target. Modelling for the species was based on SABCA atlas and

data from site visits, and this resulted in the development of a model which reflected the high altitude ridge systems which host the species.

#### **Stobbia's Fruit Chafer Beetle (*Ichneustoma stobbiai*):**

Although not listed, it appears that this species of beetle would qualify as Vulnerable under the IUCN Red List criteria. An expert driven mapping approach was used for the species to map the area likely to be occupied by the beetle at known localities. All suitable, untransformed habitats in the vicinity of known records were mapped as suitable, occupied habitat for the species. No attempt was made to predict the occurrence of additional populations in other areas. A 100% of the confirmed habitat and the extended mapped suitable habitat were targeted.

This species in particular only occur in small fragments in pristine grassland along the Transvaal Magaliesberg system. This rare Fruit Chafer Beetle is mostly endemic to Gauteng Province, with a single population occurring in the adjacent parts of North West Province (Kruger & Scholtz, 2008).

#### **Highveld Blue Butterfly (*Lepidochrysops praeterita*):**

Although the species is classified as Vulnerable, it is proposed for Endangered (Henning *et al.*, 2009), based on a limited distribution and the extent of mining and agricultural activities within its range. It is largely endemic to Gauteng, specifically in the Carletonville area, but extends into the Potchefstroom area in the North West and Sasolburg in the Free State. No conservation measures are in place (Henning *et al.*, 2009). The species is found on a few koppies and rocky hillsides between Potchefstroom area in the North West and Sasolburg in the Free State.

Known localities were buffered by 500m and the full extent of this area was included as a target. Modelling for the species was based on South African Butterfly Conservation Assessment (SABCA) atlas and data from site visits. The model refined the basic distribution by incorporating slope and aspect, and removed unsuitable land cover classes and areas smaller than the smallest known patch of habitat occupied by the species.

The vegetation types where this species have been recorded are the Soweto Highveld Grassland and Rand Highveld Grassland in the Mesic Highveld Grassland Bioregion of the Grassland Biome (described in Mucina & Rutherford, 2006). The larval food plant of this species is *Ocimum obovatum*.

## **9.2. Results**

### **9.2.1. Invertebrate habitats identified**

The study area provides suitable habitat for a variety of species which are adapted to herbaceous and woody species. A Wetland which runs through the study area provide suitable habitat for many hemimetabolous insects to complete their life-cycles and rely on water for reproduction.

### 9.2.2. Occurrence probability of Red Listed invertebrate species.

Table 4: Red Listed invertebrate species expected to occupy the study area.

	<i>Scientific Name</i>	<i>Common name</i>	<i>Red List Category</i>	<i>Probability of occurrence</i>
1.	<i>Aloeides dentatis</i> subsp. <i>dentatis</i>	Roodepoort Copper Butterfly	Endangered	1
2.	<i>Chrysoritis aureus</i>	Heidelberg Copper Butterfly	Endangered	1
3.	<i>Lchnestoma stobbiai</i>	Stobbia's Fruit Chafer Beetle	Vulnerable	1
4.	<i>Lepidochrysops praeterita</i>	Highveld Blue Butterfly	Endangered	1
5.	<i>Metisella meninx</i>	Marsh sylph	Vulnerable*	4

The occurrence probability of the invertebrates species listed above is indicated as follows:

Not likely to occur - 1, Low occurrence probability - 2, Medium occurrence probability - 3, High occurrence probability - 4, **Confirmed occurrence - 5.**

\*According to Henning *et al.* (2009)

### 9.2.3. Red Listed Invertebrate species

No IUCN Red List species were identified in the survey or from virtual museum records. There is no suitable habitat for the four species listed according to GDARD (2014). There is, however, potential habitat for the Marsh sylph which is a sensitive species as they favour wetland habitats, specifically areas with *Leersia hexandra*. The loss of wetland habitat, caused by urbanisation and agriculture, remains a threat to this species.

## 9.3. Findings

No Red Listed invertebrate species are expected to occur in this particular study area, except for the wetland specialist, the Marsh sylph. It is recommended that an entomologist should confirm whether the March sylph occurs on site by means of either a desktop habitat assessment or a field survey.

## 10. OVERALL FINDINGS AND IMPLICATIONS

The study area consists of four habitats. The Wetland and Grassland are potentially suitable to support Red Listed fauna species. The Wetland remains in a natural state with a high ecological sensitivity from a faunal perspective, and should be protected accordingly from any proposed development (Figure 7). Should development, such as the bridge crossing, occur within the wetland and its buffer zone (as determined by a wetland specialist), the necessary mitigation measures as described in this report and the wetland report should be followed.

As the Grassland has limited connectivity with similar habitats and is subject to numerous disturbances such as edge effects, habitat fragmentation and an increase in alien species, the habitat is considered moderate sensitive (Figure 7). Over several years as these disturbances increase due to expanding urbanization, the Grassland would reduce in size and become less suitable for faunal species to occupy.





Figure 8: Sensitivity map.

## 11. ENVIRONMENTAL IMPACT ASSESSMENT

The following Impact ratings are shown in relation to the mapped areas of sensitivity and are subject to avoidance (buffering) mitigation measures. The primary mitigation measures are in relation to buffering and are described in further detail below.

Impact	Pre-mitigation						Post-mitigation					
	Duration of Impact	Spatial Scope	Sensitivity of Receiving Environment	Severity of Impact	Probability of Impact	Significance	Duration of Impact	Spatial Scope	Sensitivity of Receiving Environment	Severity of Impact	Probability of Impact	Significance
Impact on natural movement and foraging of species	Long term	Regional	Ecology highly sensitive /important	High Significance	Highly likely	High	Short-term	Development Specific	Great / harmful/ ecosystem structure and function moderately altered	Low Significance	Unlikely	Low
Invasion of alien fauna	Long term	Regional	Ecology highly sensitive /important	Moderate to High Significance	Highly likely	Moderate to High	Short-term	Development Specific	Moderate / ecosystem structure and function marginally unchanged	Low Significant	Possible	Low
Construction of barriers to animal movement or migration	Permanent	Regional	Significant / ecosystem structure and function highly	Moderate to High Significance	Highly likely	Moderate to High	Long term	Local Area	Moderate / ecosystem structure and function marginally unchanged	Low Significant	Possible	Low

			altered									
Loss of threatened IUCN and National threatened faunal species	Permanent	Regional	Ecology highly sensitive /important	High Significance	Highly likely	High	Long term	Local Area	Moderate / ecosystem structure and function marginally unchanged	Moderate Significance	Likely	Moderate
Trapping or killing of fauna species during construction	Short term	Local area	Ecology moderately sensitive /important	Moderate Significance	Possible	Moderate	Short term	Local Area	Small / ecosystem structure and function largely unchanged	Low Significance	Unlikely	Low
Construction, vegetation clearing and top soil clearing	Short term	Local area	Ecology moderately sensitive /important	Moderate Significance	Possible	Moderate	Short term	Local Area	Small / ecosystem structure and function largely unchanged	Low Significance	Possible	Low
Outside lighting	Long term/Permanent	Local area	Ecology moderately sensitive /important	Moderate Significance	Possible	Moderate	Long Term	Local Area	Small / ecosystem structure and function largely unchanged	Low Significance	Unlikely	Low

## 12. RECOMMENDATIONS AND MITIGATION MEASURES

Should the proposed residential development be approved, the following recommendations are suggested:

- An appropriate management authority should be identified that must be contractually bound to implement the EMPr and ROD during the operational phase of the development and be informed of their responsibilities in terms of the EMPr and ROD;
- The EMPr should comply with the *Minimum Requirements for Ecological Management Plans* according to GDARD;
- Induction should be done for all contractors/personnel prior to commencing on site;
- Construction should be restricted to areas deemed to have a low ecological sensitivity (Please refer to Figure 7). In this case, as development is only proposed south of the watercourse where the site is regarded as moderate sensitive, development could be considered. However, only if the following recommendations are implemented:
  - the northern strip between the watercourse and the existing northern residential units should be kept open for the movement of species (east to west). This should take into consideration movement of species across or underneath the proposed access road as well the bridge crossing;
  - the site towards the east and west which is disturbed should be rehabilitated, especially the removal of alien plant species and replanting of indigenous species;
  - the northern part of the study site must be left undeveloped (as indicated in Figure 2), and act as a corridor along with the wetland habitat for the movement of species.
- Before construction is initiated, the open space system should be fenced-off from ecologically sensitive areas, and all construction-related impacts must be contained within the fenced-off development areas. These areas should be demarcated on site layout plans. All construction-related impacts (including service roads, temporary housing, temporary ablution, disturbance of natural habitat, storing of equipment/building materials/vehicles or any other activity) should be excluded from the open space system. An overspill of construction activities into areas outside of the study area is permitted within designated non-sensitive areas. No personnel or vehicles may be permitted in ecologically sensitive areas except for those authorised to do so. Movement of indigenous fauna should however be allowed (i.e. no solid walls, e.g. through the erection of palisade fencing);
- Construction activities at or close to wetlands, drainage lines and water bodies should be limited. The wetland should maintain the appropriate buffer as delineated by a wetland specialist;
- Where the road crosses the watercourse, an underpass should provide for the movement of aquatic as well as terrestrial species through the inclusion of appropriate buffer zones within the underpass (the appropriate buffer zone as determined by a wetland specialist). It is recommended that the underpass be a minimum of 1.5m high and 1m wide so as to facilitate maintenance access;

- Traffic control measures such as 50km/h speed limits and speed bumps are proposed where a road traverse a watercourse;
- A plan for the immediate rehabilitation of damage caused to wetlands should be compiled by a specialist registered in accordance with the Natural Scientific Professions Act (No. 27 of 2003) in the field of Ecological Science. This rehabilitation plan should form part of the EMPr and a record book should be maintained on site to monitor and report on the implementation of the plan;
- No faunal species may be harmed or disturbed during the construction phase;
- The contractor/ responsible person must ensure that no faunal species are trapped, killed or in any way disturbed;
- It is recommended that prior to the commencement of construction activities' initial clearing of all alien vegetation should take place;
- To ensure minimal disturbance of faunal habitat it is recommended that construction take place during winter, outside the reproductive season of most species present on site;
- It is recommended that all concrete and cement works be restricted to areas of low ecological sensitivity and defined on site and clearly demarcated. Cement powder has a high alkalinity pH rating, which can contaminate and affect both soil and water pH dramatically. A shift in the pH can have serious consequences on the functioning of soil, vegetation and fauna;
- Construction, vegetation clearing and top soil clearing should commence from a predetermined location and gradually commence to ensure that fauna present on the site have enough time to relocate;
- Access of vehicles and people to sensitive areas, including the wetland, should be prevented. Only authorised personnel may enter these areas if necessary;
- The crossing of natural drainage systems such as the wetland on site should be minimised and only constructed at the shortest possible route, perpendicular to the natural drainage system. Bridge crossings should span the entire stretch of wetland and its associated buffer zone;
- Where a road/pipeline/powerline is to traverse a watercourse, measures are required to ensure that it has minimal effect on the dynamics and integrity of the watercourse;
- Outside lighting should be designed to minimize impacts on fauna. All outside lighting should be directed away from sensitive areas, such as the watercourse. Fluorescent and mercury vapour lighting should be avoided and sodium vapour (yellow) lights should be used wherever possible.
- Where possible, indigenous trees naturally growing on the site should be retained as part of the landscaping. Measures to ensure that these trees survive the physical disturbance from the development should be implemented. This ensures that suitable habitat for fauna species is representative of the study area;
- In order to minimize artificially generated surface storm water runoff, total sealing of paved areas such as parking lots, driveways, pavements and walkways should be avoided. Permeable material should rather be utilized for these purposes;
- Sealing of surfaces under a bridge or gabion construction should be avoided; and
- Information boards should be erected within the development to inform residents of the presence of Red and/or Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements.

### 13. CONCLUSION

The attached sensitivity map should be used as guidelines for the layout map (Figure 7). The greatest part of the study area is regarded as sensitive as numerous Red Listed species potentially occur on site due to suitable habitat. A wetland specialist should be consulted to delineate the extent of the wetland. The above-mentioned recommendations should be considered and adhered to in order to maintain ecological functioning, protect sensitive habitats and species, and have minimal negative impacts on the natural environment. Construction should be limited to areas with low sensitivity as such having minimal negative impacts on the biodiversity patterns of fauna species mentioned in this report.

Nevertheless, as indicated in the layout map (Figure 2) and the faunal habitats identified (Figure 3), the development is mainly situated on the Grassland which is indicated as moderately sensitive. If development is approved, the greatest part of the Grassland will be destroyed, which will decrease habitat for fauna species. This can, however, be mitigated (refer to section 12 above) should the northern part of the study site be left undeveloped (as indicated in Figure 2), and act as a corridor along with the wetland habitat for the movement of species. In addition, the eastern section of the site should be rehabilitated, especially the removal of alien plant species and the replanting of indigenous species.

It is suggested that a qualified specialist in the field of zoology assess the occurrence of the Striped Harlequin Snake (*Homoroselaps dorsalis*), the Giant bullfrog (*Pyxicephalus adspersus*), the Marsh sylph (*Metisella meninx*), and the Serval (*Leptailurus serval*) in the study area before commencement of construction activities.

### 14. LITERATURE SOURCES

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# Appendix G6

Flora Survey

# Vegetation survey for a part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR, Gauteng Province



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**March 2017**



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**Verification statement**

This communication serves to verify that the flora report compiled by Corné Niemandt has been prepared under my supervision, and I have verified the contents thereof.

Declaration of independence: I, Dr. J.V. van Greuning (*Pr. Sci. Nat.* reg. no. 400168/08) declare that I:

- am committed to biodiversity conservation but concomitantly recognise the need for economic development. Whereas I appreciate the opportunity to also learn through the processes of constructive criticism and debate, I reserve the right to form and hold my own opinions and therefore will not willingly submit to the interests of other parties or change my statements to appease them.
- abide by the Code of Ethics of the S.A. Council of Natural Scientific Professions.
- act as an independent specialist consultant in the field of Botany.
- am subcontracted as specialist consultant by Bokamoso Environmental Consultants for the residential development situated on a part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR in this report.
- have no financial interest in the proposed development other than remuneration for work performed.
- have or will not have any vested or conflicting interests in the proposed development.
- undertake to disclose to Bokamoso Environmental Consultants and its client as well as the competent authority any material information that have or may have the potential to influence the decision of the competent authority required in terms of the Environmental Impact Assessment Regulations, 2014.



Dr. J. V. van Greuning

**Specialist**

Specialist investigator: Mr. C. Niemandt (*Cand. Sci. Nat Reg. No. 116598; M.Sc. Plant Science*)

**Declaration of independence:**

I, the above mentioned specialist investigator responsible for conducting this particular specialist flora study, declare that:

- I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);
- At the time of conducting the study and compiling this report I did not have any interest, hidden or otherwise, in the proposed development, except for financial compensation for work done in a professional capacity;
- Work performed for this study was done in an objective manner. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part;
- I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I do not necessarily object to or endorse the proposed development, but aim to present facts, findings and recommendations based on relevant professional experience, and scientific data;
- I do not have any influence over decisions made by the governing authorities;
- I have the necessary qualifications and guidance from professional experts (registered *Pr. Sci. Nat.*) in conducting specialist reports relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- This document and all information contained herein are and will remain the intellectual property of Bokamoso Environmental: Specialist Division. This document, in its entirety or any portion thereof, may not be altered in any manner or form, for any purpose without the specific and written consent of the respective specialist investigator.



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## 1. INTRODUCTION

Bokamoso Environmental: Specialist Division was commissioned to conduct a survey of the vegetation on Rooihuiskraal North Ext 29 situated on a part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR, Gauteng Province. The site is scheduled for residential development.

Two previous studies were conducted, one in March 2008 by EcoInfo cc. and a floral integrity scan conducted in November 2010 by Scientific Aquatic Services. Since 2008, numerous guidelines and legislation has been amended and/or added, such as the Gauteng Conservation Plan published in 2014, and NEMBA: Alien and Invasive Species Lists (2016).

The objective of this survey was to determine which species occur in the study site. Special attention was given to possible habitats of Red and Orange List plant species that may occur in the study site. Furthermore, the ecological status of the vegetation and sensitive habitats of the site were investigated.

## 2. OBJECTIVES OF THE STUDY

- To assess the habitat component of the study site and ecological status of the vegetation;
- To identify and list the plant species occurring on the site and indicate whether they are Threatened species;
- To indicate ecological sensitive areas and habitat connectivity of the study area;
- To highlight the potential impacts of the proposed development on the flora of the study area; and
- Provide recommendations to mitigate negative impacts and enhance positive impacts should the proposed development be approved.

## 3. SCOPE OF THE STUDY

This report:

- Lists all plant species, including alien species, recorded during the site visit;
- Comments on ecological sensitive areas and habitat connectivity;
- Comments on impacts affecting the flora of the study area;
- Evaluates the conservation importance and significance of the study area with special emphasis on the status of threatened species; and
- Provides recommendations to mitigate negative impacts, should the proposed development be approved.

## 4. LIMITATIONS OF THIS STUDY

Even though considerable care is taken to ensure accuracy and professionalism of this ecological scoping assessment, environmental assessment studies are limited in scope, time and budget. Several years are needed to derive a 100% accurate report based on intensive field collecting and observations where all seasons are considered to account for fluctuating environmental conditions and migrations. Since environmental impact studies deal with dynamic natural systems additional information may come to light at a later stage.

The current survey is independent and it is suggested that it should not be compared with previous reports as the specific biodiversity requirements, status of Red Listed species and the current condition of the study area are not the same. Care should be taken when comparisons and conclusions made between different reports are made.

The desktop study made up the largest part of the data used to conclude the distribution of Threatened species which were sourced by making use of the SANBI species list (POSA, 2009). Any limitations in the above mentioned data basis will in effect have implications on the findings and conclusion of this assessment.

Therefore, Bokamoso Environmental: Specialist Division cannot accept responsibilities for conclusions and mitigation measures made in good faith with the limited available information at the time of the directive. This report should be viewed and acted upon considering these limitations.

## 5. STUDY AREA

### 5.1 Regional Vegetation

The study area is located in the Quarter Degree Square (QDS) 2528CC in the Egoli Granite Grassland, which is regarded as Vulnerable (Mucina and Rutherford, 2006). This vegetation unit is considered Endangered according to the National list of threatened terrestrial ecosystems for South Africa, 2011 (National Gazette no. 34809, 2011). Approximately 38% is still in a natural state with only 3% protected in Diepsloot and Melville Koppies Nature Reserves (National Gazette no. 34809, 2011; Mucina and Rutherford, 2006). The landscape is described as moderately undulating plains and low hills supporting tall, *Hyparrhenia hirta*-dominated grassland, with some woody species on rocky outcrops or rock sheets (National Gazette no. 34809, 2011). The rocky habitats show a high diversity of woody species, which occur in the form of scattered shrub groups or solitary small trees (National Gazette no. 34809, 2011). No serious alien infestation occurs within this vegetation unit, although Eucalyptus species are common (Mucina and Rutherford, 2006).

### 5.2 Study Site

The study site of approximately 18,02ha (GPS: 25°53'15.27"S, 28° 8'13.65"E) also known as Rooihuiskraal North Ext 29 is situated on a part of the Remainder of Portion 9 and a part of Portion 145 of the Farm Brakfontein 399 JR, Gauteng Province. The study site is located north of the N14 (Danie Joubert Freeway) and west of the M37 Rooihuiskraal Road. The site is surrounded by existing residential developments such as Amberfield Valley and Amberfield Ridge to the north of the study site. Access to the site can be made from Kraalnaboom Avenue north of the study site (Figure 1). The site is situated in the jurisdiction of the City of Tshwane Metropolitan Municipality.

A preliminary layout map was prepared based on previous specialist studies. The layout map indicates that the northern section of the site along with the watercourse should stay undeveloped. Therefore, development of approximately 350 residential units is considered for the southern section, adjacent the N14 freeway. The access road will be from Kraalnaboom Avenue, and will cross the watercourse on site (Figure 2).





Figure 1: Locality map of study site.

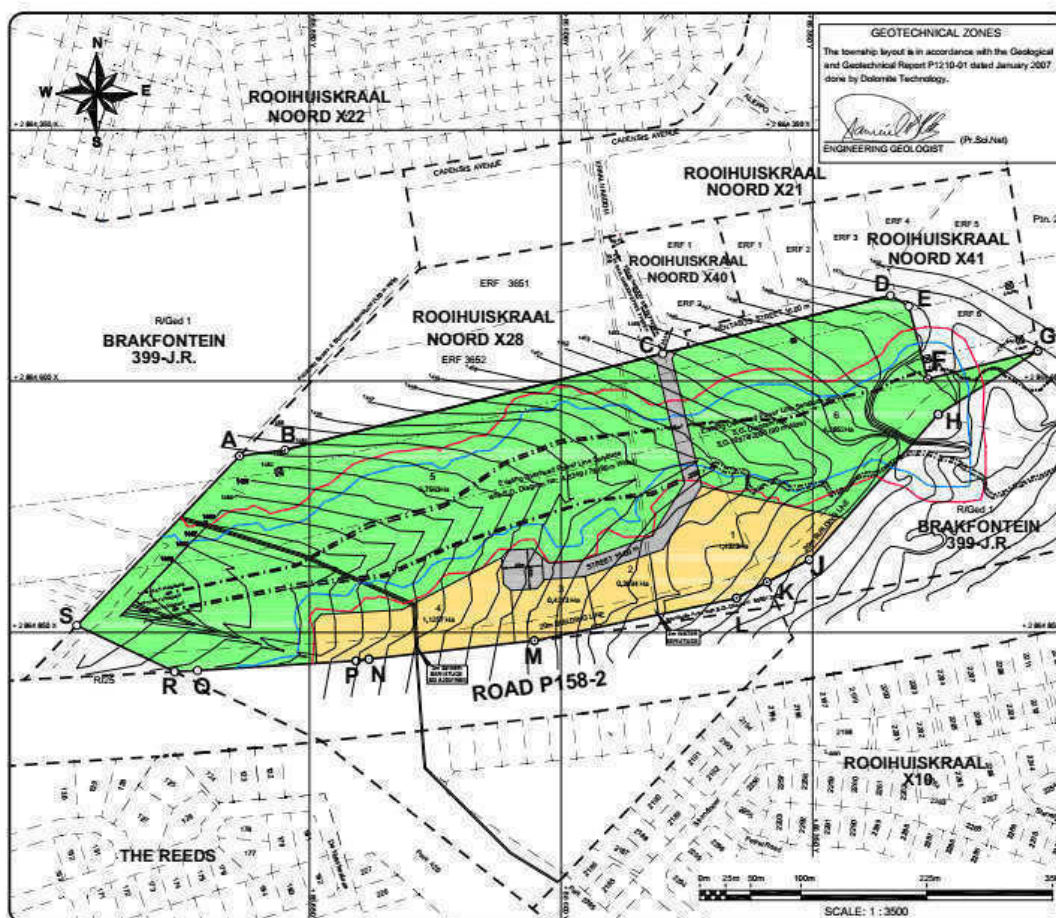


Figure 2: Preliminary layout map of study site.

## 6. METHODS

The study site was visited on 2 March 2017. For each study unit identified, a species list was compiled for all plants recorded. Field guides such as those by Germishuizen and Meyer (2003), Koekemoer *et al.* (2014), Pooley (1998), van Ginkel *et al.* (2011), van Oudtshoorn *et al.* (2014), van Wyk and Malan (1998) and van Wyk (2013) were used to identify the species. The H.G.W.J. Schweickerdt Herbarium, University of Pretoria, was also visited to confirm the correct identification of species if needed.

The survey also included information about the occurrence of Red and Orange List plant species obtained from Gauteng Department of Agriculture and Rural Development for the QDS 2528CC (Pfab, 2002; Pfab and Victor, 2002) (Annexure A). The Red List Plant Species Guidelines and Requirements for Biodiversity Assessments v3. issued by GDARD (2014) was consulted. The plant species list for this QDS obtained from SANBI (Plants of Southern Africa: an online checklist) was consulted to verify the record of occurrence of the plant species recorded at the site. The Gauteng Conservation Plan (C-plan v3.3) was also consulted to evaluate ecologically sensitive areas.

Each study unit was further scrutinised for the occurrence of alien plant species (Bromilow, 2010) and any form of disturbance. Alien species are included in the species lists (in bold in the relevant tables) as they suggest the particular state of each study unit. For each alien species the Category is indicated according to the *Alien and Invasive Species lists* (NEMBA Alien and Invasive Species Lists, 2016).

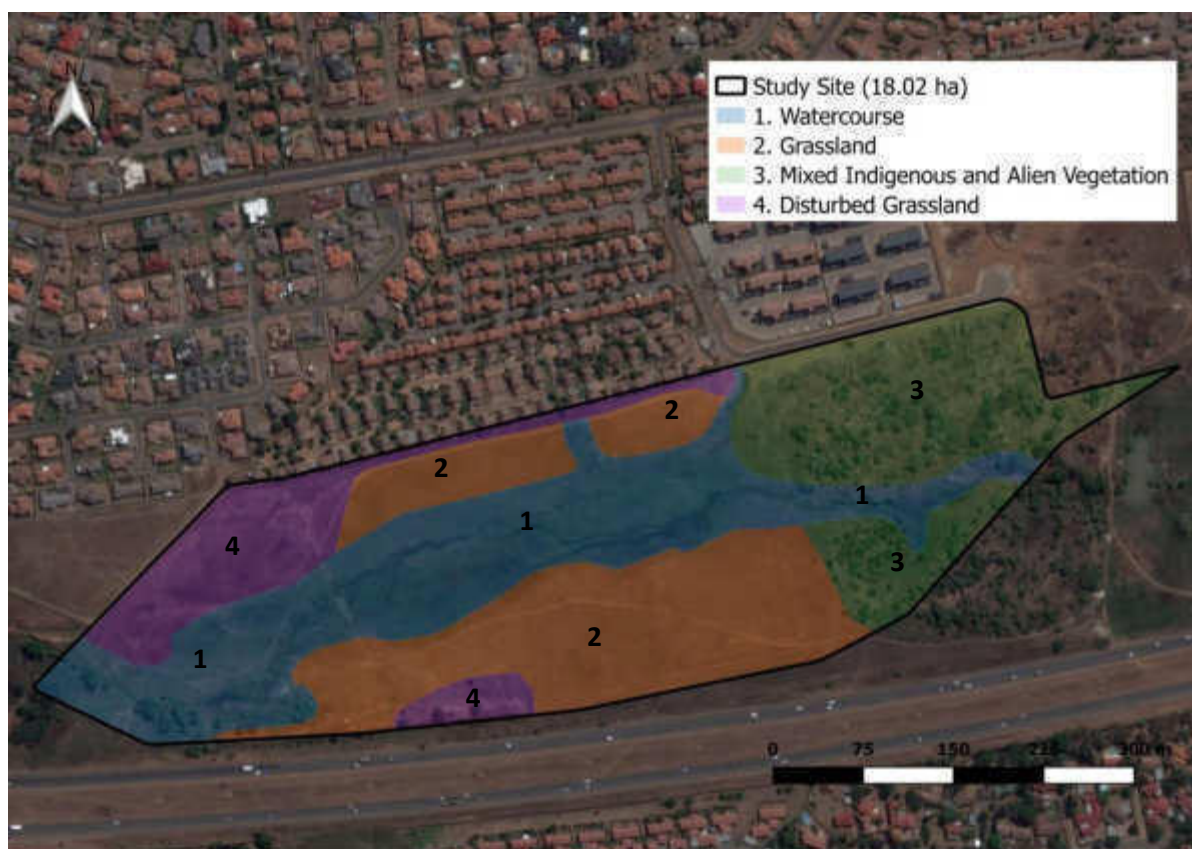
For each plant species, the medicinal properties were assessed (van Wyk *et al.*, 2013). Medicinal plants are marked with an asterisk in the respective tables. Harvesting of medicinal plants causes a decline in numbers of the particular species and, therefore, threatens the conservation of these species.

## 7. RESULTS

### 7.1 Study units

Four study units were identified for this report (Figure 2):

1. Grassland
2. Watercourse
3. Mixed Indigenous and Alien Vegetation
4. Disturbed Grassland



**Figure 2** Study units identified.

## 7.2 Medicinal and Alien plant species

The total numbers of plant species, medicinal and alien species recorded per study unit are listed in Table 1.

**Table 1** The total number of plant species, the number of medicinal species and alien species recorded per study unit.

Study unit	Total number of species per unit	No. of medicinal species per unit	No. of alien species per unit
Grassland	49	6	4
Watercourse	34	5	7
Mixed Indigenous and Alien Vegetation	52	6	26
Disturbed Grassland	36	7	9

The number of alien plant species per Category is indicated in Table 2. For each alien species the Category is indicated according to the amended Alien and Invasive Species (AIS) lists (NEMBA Alien and Invasive Species Lists, 2016) in Government Notice 40166 in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004). The AIS Regulations list 4 different categories of invasive species that must be controlled, managed or eradicated:

**Category 1a:** Invasive species which must be combatted and eradicated. Any form of trade or planting is strictly prohibited.

**Category 1b:** Invasive species which must be controlled and wherever possible, removed and destroyed. Any form of trade or planting is strictly prohibited.

**Category 2:** Invasive species or species deemed to be potentially invasive, in that a permit is required to carry out a restricted activity. Species include commercially important species such as pine (*Pinus* spp.), wattle (*Acacia* spp.) and gum (*Eucalyptus* spp.) trees. Plants in riparian areas are Category 1b.

**Category 3** Invasive species which may remain in prescribed areas and provinces. Further planting, propagation or trade is however prohibited. Plants in riparian areas are Category 1b. Alien plant species and their respective Category are indicated in bold in the species lists (Tables 3 and 4).

**Table 2** Number of alien plant species per study unit.

Study unit	CAT 1a	CAT 1b	CAT 2	CAT 3	Not declared invasive
Grassland	0	2	0	0	2
Watercourse	0	3	0	0	4
Mixed Indigenous and Alien Vegetation	0	10	2	2	12
Disturbed Grassland	0	3	0	0	6

### 7.3 Red and Orange List plant species

Twenty-two Red and Orange List species are known to occur in the QDS 2528CC (Annexure A). The study site has suitable habitat for one Red List species and four Orange List species, of which two have been recorded during the survey (Annexure A).

## 7.4. Grassland

### 7.4.1. Composition

The Grassland is typical of the Egoli Granite Grassland (Figure 3); however some sections have been disturbed in the past. In addition, the surrounding land use increases disturbance pressures as connectivity becomes reduced, habitat loss and fragmentation increases, and increased alien species numbers and density. The surrounding land uses include residential development and extensive road networks such as the N14 freeway. Grass harvesting was observed during the survey.

A total of 49 species were recorded in the Grassland. Dominant species include *Cymbopogon caesius*, *Hyparrhenia hirta*, *Hypoxis hemerocallidea*, *Nidorella anomala*, *Helichrysum* spp. and *Themeda triandra*. The grass layer density made it difficult to record herbaceous and other species associated with grasslands. The orchid, *Habenaria nyikana* subsp. *nyikana*, was recorded during the 2017 survey but not during the 2008 and 2010 surveys.

**Table 3** Species recorded in the Grassland.

Species	Invasive category
<i>Andropogon</i> sp.	
<i>Anthospermum rigidum</i> subsp. <i>rigidum</i>	
<i>Aristida congesta</i> subsp. <i>congesta</i>	
<i>Asparagus laricinus</i>	

<i>Berkheya radula</i>	
<i>Berkheya zeyheri</i>	
<b><i>Campuloclinium macrocephalum</i></b>	<b>1b</b>
<i>Chamaecrista comosa</i> var. <i>comosa</i>	
<i>Commelina africana</i>	
<b><i>Conyza bonariensis</i></b>	
<i>Cymbopogon caesius</i>	
<i>Cyanotis speciosa</i>	
<i>Elionurus muticus</i>	
<i>Eragrostis capensis</i>	
<i>Eragrostis</i> sp.	
<i>Felicia muricata</i>	
<i>Gerbera ambigua</i>	
<i>Gomphocarpus fruticosus</i> *	
<i>Habenaria nyikana</i> subsp. <i>nyikana</i>	
<i>Haplocarpha scaposa</i>	
<i>Helichrysum</i> cf. <i>miconiifolium</i>	
<i>Helichrysum nudifolium</i> var. <i>oxyphyllum</i> *	
<i>Hermannia depressa</i>	
<i>Heteropogon contortus</i>	
<i>Hilliardiella oligocephala</i> *	
<i>Hyparrhenia hirta</i>	
<i>Hypoxis hemerocallidea</i> *	
<i>Hypoxis rigidula</i>	
<i>Indigofera</i> cf. <i>melanadenia</i>	
<i>Ledebouria revoluta</i>	
<i>Lotononis</i> cf. <i>laxa</i>	
<i>Melinis repens</i> subsp. <i>repens</i>	
<i>Microchloa caffra</i>	
<i>Monsonia angustifolia</i>	
<i>Nidorella anomala</i>	
<i>Oenothera rosea</i>	
<i>Ornithogalum tenuifolium</i> subsp. <i>tenuifolium</i>	
<i>Oxalis obliquifolia</i>	
<i>Pelargonium luridum</i> *	
<i>Pentarrhinum insipidum</i>	
<i>Polygala hottentotta</i>	
<i>Scabiosa columbaria</i> *	
<i>Senecio erubescens</i>	
<i>Senecio venosus</i>	
<i>Setaria sphacelata</i> var. <i>sphacelata</i>	
<b><i>Tagetes minuta</i></b>	
<i>Themeda triandra</i>	
<b><i>Verbena bonariensis</i></b>	<b>1b</b>
<i>Wahlenbergia undulata</i>	

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Alien species indicated in **bold**; Medicinal species indicated with (\*)



**Figure 3: Grassland dominated by *Themeda triandra*.**

#### **7.4.2. Medicinal and Alien plant species**

Six medicinal and four alien species have been recorded in the study unit. Two Category 1b species were recorded in this study unit (Table 3).

#### **7.4.3. Red and Orange List species**

The study unit has suitable habitat for one Red List species and three Orange List species, of which *Hypoxis hemerocallidea* was recorded during the survey (Annexure A).

#### **7.4.4. Sensitivity and Connectivity**

The Grassland has limited connectivity with similar habitats, increased edge effects from the surrounding land uses and increased habitat destruction and fragmentation. There is suitable habitat for one Red List species and three Orange List species, of which one Orange List species was recorded during the survey. The presence of orchids such as *H. nyikana* is significant in this study unit. The Grassland, is therefore considered to have a moderate sensitivity.

## 7.5. Watercourse

### 7.5.1. Composition

The Watercourse is for the greatest part of the study site still in a good ecological condition (Figure 4). Towards the west and the east of the study site, disturbances and the number and density of alien species increase. At one location (25°53'15.34"S, 28° 8'12.82"E) agricultural activities have been recorded in the seasonal zone during the site visit.

A total of 34 species were recorded during the survey (Table 4). Dominant species include *Berkheya radula*, *Cyperus* spp., *Fimbristylis complanata*, *Imperata cylindrica*, *Schoenoplectus* sp., *Typha capensis* and *Verbena brasiliensis*.

**Table 4 Species recorded in the Watercourse.**

Species	Invasive category
<i>Berkheya radula</i>	
<b><i>Campuloclinium macrocephalum</i></b>	<b>1b</b>
<i>Chamaecrista comosa</i> var. <i>comosa</i>	
<b><i>Conyza bonariensis</i></b>	
<i>Conyza pinnata</i>	
<i>Conyza scabrida</i>	
<i>Cyperus congestus</i>	
<i>Cyperus esculentus</i>	
<b><i>Datura stramonium</i>*</b>	<b>1b</b>
<i>Eucomis autumnalis</i> *	
<i>Fimbristylis complanata</i>	
<i>Gerbera ambigua</i>	
<i>Gomphocarpus fruticosus</i> *	
<i>Habenaria nyikana</i> subsp. <i>nyikana</i>	
<i>Helichrysum</i>	
<i>Hypoxis hemerocallidea</i> *	
<i>Imperata cylindrica</i>	
<i>Kyllinga</i> cf. <i>melanosperma</i>	
<i>Leersia hexandra</i>	
<i>Miscanthus junceus</i>	
<i>Nidorella anomala</i>	
<b><i>Oenothera rosea</i></b>	
<i>Oxalis obliquifolia</i>	
<i>Persicaria</i> cf. <i>lappathifolia</i>	
<i>Plantago lanceolata</i>	
<i>Polygala hottentotta</i>	
<b><i>Salix babylonica</i></b>	
<i>Schoenoplectus</i> sp.	
<b><i>Tagetes minuta</i></b>	
<i>Themeda triandra</i>	

<i>Typha capensis</i> *	<b>1b</b>
<b><i>Verbena brasiliensis</i></b>	
<i>Wahlenbergia undulata</i>	

Alien species indicated in **bold**; Medicinal species indicated with (\*)



Figure 4: The Watercourse on the study site.

### 7.5.2. Medicinal and Alien plant species

Five medicinal and seven alien species were recorded during the site visit (Table 4). Three species have a Category 1b status.

### 7.5.3. Red and Orange List species

The study unit has suitable habitat for four Orange List species of which two species, *Hypoxis hemerocallidea* and *Eucomis autumnalis* were recorded during the survey (Annexure A). Both the 2008 and 2010 survey recorded these two species as well.

### 7.5.4. Sensitivity and Connectivity

The Watercourse potentially supports four Orange List species, of which two have been recorded during the survey. Towards the west and the east of the study site, disturbances and alien species increase. The Watercourse is well connected towards the west, south and east of the study site. It



seems to be in a good ecological condition which should be excluded from development. Accordingly, it is suggested that this study unit is highly sensitive.

## 7.6. Mixed Indigenous and Alien Vegetation

### 7.6.1. Composition

This study unit is disturbed due to a high density of alien species, habitat destruction and increased pressure from the surrounding residential development. An electrical power line runs in an east-west direction. Maintenance underneath is minimal.

The study unit consists of a mixture of indigenous and alien species. A total of 52 species were recorded in this study unit. Dominant species include *Amaranthus deflexus*, *Amaranthus hybridus*, *Arundo donax*, *Celtis africana*, *Datura stramonium*, *Vachellia karroo* and *Verbena bonariensis*.

**Table 5: Species recorded in the Mixed Indigenous and Alien Vegetation.**

Species	Invasive category
<b><i>Agave sisalana</i></b>	<b>2</b>
<i>Aloe greatheadii</i> var. <i>davyana</i>	
<b><i>Amaranthus deflexus</i></b>	
<b><i>Amaranthus hybridus</i> subsp. <i>hybridus</i> var. <i>erythrostachys</i></b>	
<b><i>Arundo donax</i></b>	<b>1b</b>
<i>Asparagus</i> cf. <i>cooperi</i>	
<i>Berkheya radula</i>	
<b><i>Bidens pilosa</i></b>	
<b><i>Campuloclinium macrocephalum</i></b>	<b>1b</b>
<i>Celtis africana</i>	
<b><i>Cirsium vulgare</i></b>	<b>1b</b>
<i>Commelina africana</i>	
<b><i>Conyza bonariensis</i></b>	
<b><i>Cordyline australis</i></b>	
<i>Cynodon dactylon</i>	
<i>Cyperus congestus</i>	
<i>Cyperus esculentus</i> var. <i>esculentus</i>	
<b><i>Datura stramonium</i>*</b>	<b>1b</b>
<b><i>Euphorbia heterophylla</i></b>	
<b><i>Flaveria bidentis</i></b>	<b>1b</b>
<i>Gomphocarpus fruticosus</i> *	
<i>Guilleminea densa</i>	
<i>Hilliardiella oligocephala</i> *	
<i>Hyparrhenia hirta</i>	
<i>Hypoxis hemerocallidea</i> *	
<i>Hypoxis rigidula</i>	
<b><i>Ipomoea purpurea</i></b>	<b>1b</b>
<b><i>Jatropha multifida</i></b>	
<i>Khadia</i> sp.	

<i>Leonotis nepetifolia</i>	
<b>Melia azedarach</b>	<b>3</b>
<b>Morus alba</b>	<b>3</b>
<i>Ornithogalum tenuifolium</i> subsp. <i>tenuifolium</i>	
<b>Paspalum dilatatum</b>	
<i>Panicum maximum</i>	
<b>Pennisetum clandestinum</b>	
<i>Plantago lanceolata</i>	
<b>Ricinus communis</b>	<b>2</b>
<b>Robinia pseudoacacia</b>	<b>1b</b>
<i>Scabiosa columbaria</i> *	
<i>Searsia leptodictya</i>	
<i>Searsia pyroides</i> var. <i>integrifolia</i>	
<i>Senecio erubescens</i>	
<b>Solanum mauritianum</b>	<b>1b</b>
<b>Solanum sisymbriifolium</b>	<b>1b</b>
<i>Sphenostylis angustifolia</i>	
<b>Tagetes minuta</b>	
<i>Themeda triandra</i>	
<i>Tribulus terrestris</i>	
<i>Vachellia karroo</i> *	
<b>Verbena bonariensis</b>	<b>1b</b>
<b>Zinnia peruviana</b>	

Alien species indicated in **bold**; Medicinal species indicated with (\*)



**Figure 5: Mixed Indigenous and Alien Vegetation.**

#### **7.6.2. Medicinal and Alien plant species**

Six medicinal and 25 alien species were recorded during the survey (Table 5). Nine species occur in Category 1b, two species in Category 2 and two species in Category 3.

#### **7.6.3. Red and Orange List species**

The Orange List species *Hypoxis hemerocallidea* was recorded during the survey.

#### **7.6.4. Sensitivity and Connectivity**

Owing to the many disturbances and the high density and species richness of alien species, this study unit is not considered sensitive. Historical disturbances and the lack of rehabilitation initiatives have left this study unit in a disturbed condition. This makes the habitat less suitable for Red and Orange List species, and increases the possibility that such species no longer occur on the study unit.

### **7.7. Disturbed Grassland**

#### **7.7.1. Composition**

The study unit has been disturbed in the past due to road networks and the surrounding expansion of residential developments towards the northwest of the study site. Illegal dumping was observed during the site visit, especially where access is next to the residential areas and the N14 freeway

(Figure 6). The composition is a mixture of alien and indigenous species. A total of 36 species were recorded during the survey (Table 6). Dominant species include *Datura stramonium*, *Coccinia* cf. *sessilifolia*, *Hyparrhenia hirta*, *Hypoxis* spp., *Tagetes minuta*, *Themeda triandra* and *Wahlenbergia undulata*.

**Table 6: Species recorded in the Disturbed Grassland.**

Species	Invasive category
<i>Andropogon</i> sp.	
<i>Aristida congesta</i>	
<i>Asparagus laricinus</i>	
<b><i>Bidens pilosa</i></b>	
<b><i>Campuloclinium macrocephalum</i></b>	1b
<i>Chamaecrista comosa</i> var. <i>comosa</i>	
<i>Coccinia</i> cf. <i>sessilifolia</i>	
<b><i>Conyza bonariensis</i></b>	
<i>Cynodon dactylon</i>	
<b><i>Datura stramonium</i>*</b>	1b
<i>Elionurus muticus</i>	
<i>Eragrostis capensis</i>	
<i>Eragrostis</i> sp.	
<i>Felicia muricata</i>	
<i>Gomphocarpus fruticosus</i> *	
<i>Haplocarpha scaposa</i>	
<i>Helichrysum nudifolium</i> var. <i>oxyphyllum</i> *	
<i>Hilliardiella oligocephala</i> *	
<i>Hyparrhenia hirta</i>	
<i>Hypoxis hemerocallidea</i> *	
<i>Hypoxis rigidula</i>	
<i>Ledebouria revoluta</i>	
<i>Monsonia angustifolia</i>	
<i>Nidorella anomala</i>	
<b><i>Oenothera rosea</i></b>	
<i>Oxalis obliquifolia</i>	
<b><i>Paspalum dilatatum</i></b>	
<i>Pelargonium luridum</i> *	
<b><i>Pennisetum clandestinum</i></b>	
<i>Scabiosa columbaria</i> *	
<i>Senecio venosus</i>	
<i>Setaria sphacelata</i> var. <i>sphacelata</i>	
<b><i>Tagetes minuta</i></b>	
<i>Themeda triandra</i>	
<b><i>Verbena bonariensis</i></b>	1b
<i>Wahlenbergia undulata</i>	

Alien species indicated in bold; Medicinal species indicated with (\*)



**Figure 6: Disturbed Grassland**

#### **7.7.2. Medicinal and Alien plant species**

Seven medicinal and nine alien species have been recorded during the survey (Table 6).

#### **7.7.3. Red and Orange List species**

The Orange List species *Hypoxis hemerocallidea* was recorded during the survey.

#### **7.7.4. Sensitivity and Connectivity**

Owing to the current and previous disturbances in the study unit, including illegal dumping and high alien species richness, it is regarded as not sensitive.

## **8. FINDINGS**

The Watercourse is regarded as sensitive and the Grassland as moderately sensitive (Figure 7). The Watercourse is regarded as sensitive as there is two Orange List species, one orchid species, and at the time of the study seemed in a reasonably good ecological condition. With active rehabilitation, especially the removal of alien species in the western and eastern side of the study site, the Watercourse could function optimally. It could provide suitable habitat for several native plant

species and increased biodiversity which will attract native fauna species and have increased aesthetic value for the surrounding residents.

The Grassland is indicated as moderately sensitive due to its pristine state, high species richness, presence of species of conservation concern and Orange List species, but also has limited connectivity with similar habitats, increased edge effects from the surrounding land uses and increased habitat destruction and fragmentation. The 2010 survey also found that there is no primary grassland present on the study site due to numerous impacts. The orchid, *Habenaria nyikana* subsp. *nyikana*, was recorded during the 2017 survey in the Grassland and Watercourse, but not during the 2008 and 2010 surveys. The presence of this species which was not recorded previously reiterate the fact that EIAs deal with dynamic natural systems where additional information may come to light at a later stage only, and the fact that the site was more disturbed at the time of the previous surveys. Therefore, a survey done at a specific time cannot capture the entire species composition of a site due to seasonal and flowering period differences. In addition, the site had time to restore and habitats became more suitable for species characteristic of a grassland.



Figure 7: Sensitivity map of study site

## 9. RECOMMENDATION AND MITIGATION MEASURES

The following general recommendations and mitigation measures are suggested for the study area:

- The attached sensitivity map (Figure 7) should be used as a guideline;

- All areas designated as highly sensitive in the attached sensitivity map should be excluded from development. All construction and associated activities should be located on the areas of low sensitivity.
- Although the Grassland has moderate sensitivity, development could occur if the disturbed areas towards the east and north-west of the study site has been rehabilitated, and all Orange Listed species and the mentioned orchid in this report, is relocated to the northern section of the site where no development will take place;
- No personnel or vehicles may be permitted in ecologically sensitive areas such as the Watercourse, except for those authorised to do so;
- A post-construction alien and invasive control, monitoring and eradication programme must be implemented along with an on-going programme to ensure persistence of indigenous species. A qualified botanist/ecologist should compile and supervise the implementation of this programme;
- Construction activities at or close to wetlands, watercourses and water bodies should be limited. A qualified wetland specialist should delineate the wetland and indicate appropriate buffer zones;
- Rehabilitation of natural vegetation should proceed in accordance with a rehabilitation plan compiled by a specialist registered in terms of the Natural Scientific Professions Act (No. 27 of 2003) in the field of Ecological Science.
- Where active rehabilitation or restoration is mandatory for terrestrial systems, it should make use of indigenous plant species native to the study site, but would otherwise be destroyed during clearing for development purposes. The species selected should strive to represent habitat types typical of the ecological landscape prior to construction;
- Only plant species that are indigenous to the natural vegetation of the study area should be used for landscaping. As far as possible, plants naturally growing on the development site, but would otherwise be destroyed during clearing for development purposes, should be incorporated into landscaped areas. Forage and host plants required by pollinators should also be planted in landscaped areas;
- The two Orange Listed species located on the study site should be removed and relocated to a suitable area. It is suggested to contact GDARD with regards to the relocation of these species. Orange List species located in the Watercourse should be protected *in situ*;
- If the development is approved, any Red Listed species occur in the study site and is found during construction, the Environmental Control Officer (ECO) should be notified immediately and construction activities should be stopped. The ECO will then contact a plant specialist and inform GDARD;
- In order to minimize artificially generated surface storm-water runoff, total sealing of paved areas such as parking lots, driveways, pavements and walkways should be avoided. Permeable material should rather be utilized for these purposes.

## 10. CONCLUSION

Approximately a third of the study site is regarded as sensitive, especially the Watercourse (Figure 7). It is suggested that no development occur within the Watercourse, unless authorized to do so, i.e. construction of the road crossing. A wetland specialist should be consulted to delineate the

watercourse and the associated buffer zones. If the residential development is approved, the above-mentioned recommendations should be implemented as part of the Environmental Management Programme, and implemented by the Environmental Control Officer. The Orange List species as well as the mentioned orchid species, located on the southern side of the study site where development is proposed, should be removed to suitable locations before construction activities commence. A plant specialist should be contacted with regards to the removal and relocation of these species. The eastern section of the site should be rehabilitated, especially the removal of alien species. Furthermore, alien plant species located on site, especially in Category 1 and 2 must be eradicated.

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## Annexure A: Red List Species (confidential)

The following Red List species are listed for the quarter degree square 2528CC according to GDARD and POSA. An indication is also provided if suitable habitat exist for each species.

SPECIES	FLOWERING SEASON	SUITABLE HABITAT	CONSERVATION STATUS ( <sup>1</sup> global; <sup>2</sup> national)	SUITABLE HABITAT
<i>Adromischus umbraticola</i> subsp. <i>umbraticola</i>	September-January	Rock crevices on rocky ridges, usually south-facing, or in shallow gravel on top of rocks, but often in shade of other vegetation.	Near Threatened <sup>1</sup>	No.
<i>Boophone disticha</i>	October-January	Dry grassland and rocky areas.	Declining <sup>2</sup>	Yes
<i>Bowiea volubilis</i> subsp. <i>volubilis</i>	September-April	Shady places, steep rocky slopes and in open woodland, under large boulders in bush or low forest.	Vulnerable <sup>2</sup>	No
<i>Brachycorythis conica</i> subsp. <i>transvaalensis</i>	January-March	Short grasslands, hillsides, on sandy gravel overlying dolomite, sometimes also on quartzites; occasionally open woodland; 1000 - 1705m.	Endangered <sup>2</sup>	No
<i>Callilepis leptophylla</i>	August-January & May	Grassland or open woodland, often on rocky outcrops or rocky hillslopes.	Declining <sup>2</sup>	Yes
<i>Ceropegia decidua</i> subsp. <i>pretoriensis</i>	November-April	Direct sunshine or shaded situations, rocky outcrops of the quartzitic Magaliesberg mountain series, in pockets of soil among rocks, in shade of shrubs and low trees, can be seen twining around grass spikes.	Vulnerable <sup>1</sup>	No
<i>Cheilanthes deltoidea</i> subsp. <i>silicicola</i>	November-June	Southwest-facing soil pockets and rock crevices in chert rock.	Vulnerable <sup>1</sup>	No
<i>Cleome conrathii</i>	March-May; December-January	Stony quartzite slopes, usually in red sandy soil, grassland or open to closed deciduous woodland, all aspects.	Near Threatened <sup>1</sup>	No
<i>Crinum macowanii</i>	October-January	Grassland, along rivers, in gravelly soil or on sandy flats.	Declining <sup>2</sup>	Yes
<i>Dicliptera magaliesbergensis</i>	February-April	Forest, savanna (Riverine forest and bush).	Vulnerable <sup>1</sup>	No
<i>Drimia sanguinea</i>	August-December	Open veld and scrubby woodland in a variety of soil types.	Near Threatened <sup>2</sup>	Yes
<b><i>Eucomis autumnalis</i></b>	<b>November-April</b>	<b>Damp, open grassland and sheltered places.</b>	<b>Declining<sup>2</sup></b>	<b>Yes – recorded on site</b>

<i>Gunnera perpensa</i>	October-March	In cold or cool, continually moist localities, mainly along upland streambanks.	Declining <sup>2</sup>	Yes
<i>Habenaria barbertoni</i>	February-March	In grassland on rocky hillsides.	Near Threatened <sup>1</sup>	No
<i>Habenaria kraenzliniana</i>	February-April	Terrestrial in stony, grassy hillsides, recorded from 1000 to 1400m.	Near Threatened <sup>1</sup>	Yes
<i>Habenaria mossii</i>	March-April	Open grassland on dolomite or in black sandy soil.	Endangered <sup>1</sup>	No
<i>Holothrix randii</i>	September-October	Grassy slopes and rock ledges, usually southern aspects.	Near Threatened <sup>2</sup>	No
<b><i>Hypoxis hemerocallidea</i></b>	<b>September-March</b>	<b>Occurs in a wide range of habitats, from sandy hills on the margins of dune forests to open rocky grassland; also grows on dry, stony, grassy slopes, mountain slopes and plateaux; appears to be drought and fire tolerant.</b>	<b>Declining<sup>2</sup></b>	<b>Found on site</b>
<i>Ilex mitis</i> var. <i>mitis</i>	October-December	Riverbanks, streambeds, evergreen forests.	Declining <sup>2</sup>	No
<i>Lithops lesliei</i> subsp. <i>lesliei</i>	March-June	Primary habitat appears to be the arid grasslands in the interior of South Africa where it usually occurs in rocky places, growing under the protection of surrounding forbs and grasses.	Near Threatened <sup>2</sup>	No
<i>Melolobium subspicatum</i>	September-May	Grassland.	Vulnerable <sup>1</sup>	No
<i>Pearsonia bractiata</i>	December-April	Plants in Gauteng and North West occur in gently sloping Highveld grassland, while those in the Wolkberg were collected from steep wooded slopes and cliffs in river valleys.	Near Threatened <sup>1</sup>	No



# Appendix G7

Wetland delineation

**WETLAND DELINEATION OF THE PROPOSED  
DEVELOPMENT ROOIHUISKRAAL  
EXTENSION 29**

PREPARED FOR

**Bokomoso Landscape Architects and Environmental Consultants**

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## **1. Introduction**

Bokomoso Landscape Architects and Environmental Consultants requested a wetland delineation of the proposed Rooihuiskraal extension 29 development. The purpose of the report is to determine the boundary of the wetland areas and to determine the position of the 30 meter buffer around the wetland areas on the subject property since construction within this area will not only prove difficult in some areas, but will impinge on the sensitive wetland habitats on the proposed development site. The property is represented on an aerial photograph (Figure 1). The subject property is located to the north of the N14 highway and surrounded by existing residential developments. The Rietspruit River runs through the subject property in a westerly direction.

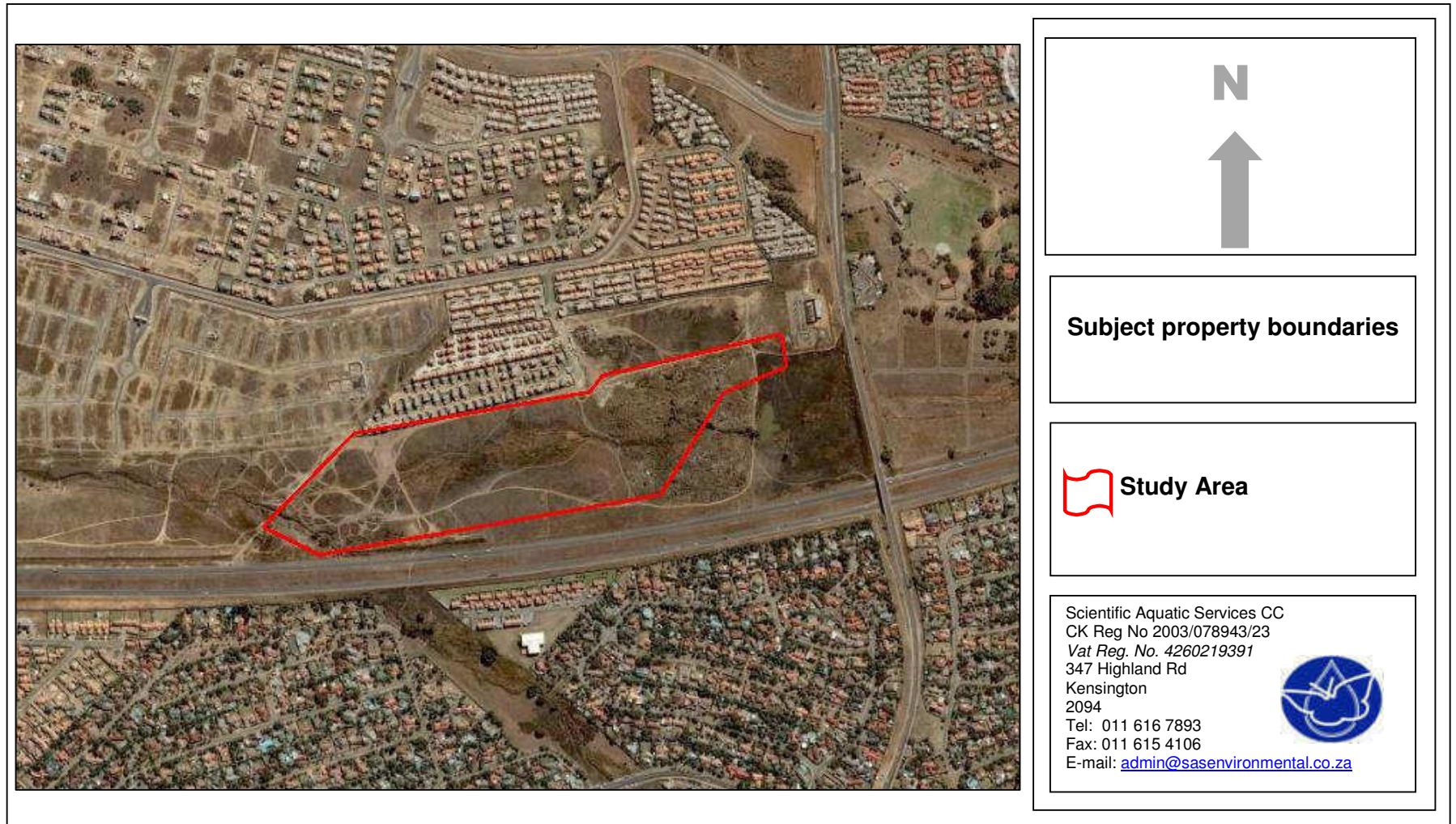


Figure 1 Aerial photograph depicting subject property boundaries (red)





## **1.2 Terms of reference**

Bokomoso Landscape Architects and Environmental Consultants appointed Scientific Aquatic Services to undertake a delineation of the wetland features located on the subject property. The assessment is to provide detailed information on the boundaries of the wetland in order to assist with the proposed development.

## **2. Method of Delineation**

For the purposes of this investigation a wetland was defined according to the definition in the National Water Act as: “land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.”

Wetland/riparian zone delineation took place according to the method presented in the final draft of “A practical field procedure for identification and delineation of wetlands and riparian areas” published by the department of Water Affairs and Forestry in 2005. The foundation of the method is based on the fact that wetlands have several distinguishing factors including the following:

- The presence of water at or near the ground surface
- Distinctive hydromorphic soils
- Vegetation adapted to saturated soils
- The presence of alluvial soils in stream systems

By observing the evidence of these features, in the form of indicators, wetlands can be delineated and identified. If the use of these indicators and the interpretation of the findings are applied correctly, then the resulting delineation can be considered accurate (DWAF 2005).

Wetlands and riparian zones can be divided into three zones (DWAF 2005). The permanent zone of wetness is nearly always saturated. The seasonal zone is saturated for a significant part of the rainy season and the temporary zone surrounds the seasonal zone and is only saturated for a short period of the year but is saturated for a sufficient period of time, under normal circumstances, to allow for the formation of hydromorphic soils and the growth of wetland vegetation. The object of this study was to identify the outer boundary of the temporary zone and then to identify a suitable buffer zone around the wetland area.

During the assessment the following wetland indicators were used:

- The proposed development site had significant amounts of invader species and vegetation associated with disturbed areas. The terrestrial grass community is dominated by *Hyparrhenia hirta*. Vegetation was generally used as the primary indicator of the wetland temporary zone boundary. *Eragrostis gummiflua*, *Trachypogon spicatus* and *Themeda triandra* was the most useful wetland vegetation species during the assessment and used as indicator of the outer boundary of the temporary zone.
- Terrain units were used to identify parts of the landscape where wetlands were more likely to form. The wetland on the upper gradients of the subject property can be characterized as unchannelled valley bottom wetland and channelled valley bottom wetland towards the lower gradients of the site in the western areas of the subject property.
- The soil form was used as the secondary indicator. For the soil form indicator the presence of gleyed soils (most of the iron has been leached out of the soil leading to a greyish/greenish/bluish colour) and mottling were investigated to aid in identifying areas with wetland characteristics where there was uncertainty on the location of the boundary of the temporary wetland zone based on the vegetation characteristics.
- The presence of surface water in the area was also useful in identifying the boundary of the temporary zone of the wetland.

### 3. Results

#### 3.1 Vegetation characteristics

Upon the assessment of the area the various wetland vegetation components were assessed. Dominant species were characterised as either wetland or terrestrial species. The wetland species were then further categorised as temporary, seasonal and permanent zone species. This characterisation is presented in the table below with the terrestrial species identified on the subject property. In many cases where the riparian vegetation was less disturbed the edge of the temporary wetland zone could be easily observed from the vegetation characteristics.

Permanent	Seasonal	Temporary	Terrestrial species
<i>Typha capensis</i>	<i>Verbena bonariensis</i>	<i>Themeda triandra</i>	<i>Hyparrhenia hirta</i>
<i>Cyperus sp.</i>	<i>Cyperus sp.</i>	<i>Eragrostis gummiflua</i>	
	<i>Imperata cylindrica</i>	<i>Trachypogon spicatus</i>	



### 3.2 General observations

- A 30m buffer around this feature is deemed adequate to protect it from the effects of the proposed development provided that the impact minimisation measures presented in the section below are adhered to.
- There is a fair diversity of grassland vegetation within the wetland areas. Some ecologically important species such as *Eucomis autumnalis* and *Hypoxis hemerocallidea* were observed within the wetland boundaries. It is essential that the minimum wetland buffers advocated by GDACE be implemented at this site in order to allow for the conservation of these species on the subject property.
- The subject property had significant amounts of invader species and vegetation associated with disturbed areas. Dolomite stones have been dumped in the vicinity of the wetland area leading to a significant disturbance of both the wetland and terrestrial vegetation of the area as well as the natural drainage and runoff of water in these areas. Soil characteristics in this area have also been significantly altered.
- It was concluded that the grassland vegetation were the most accurate means of identifying the outer boundary of the temporary wetland zone, but due to the significant disturbance of vegetation found on the subject property inaccuracies are possible especially in the eastern sections of the subject property where the disturbance of the area was more severe.

### 3.3 Design and impact minimisation

From the above assessment, some guidelines for the proposed development design are proposed. The design should ensure that the following criteria are met to ensure the ongoing functioning of the various zones of the wetland in the vicinity of the proposed development:

- The 30m buffer around the wetland area should be maintained as private or public open space.
- Adequate stormwater management must be incorporated into the design of the proposed development in order to prevent erosion and the associated sedimentation of the wetland areas.
  - Sheet runoff from paved surfaces and access roads needs to be curtailed.
  - Runoff from paved surfaces should be slowed down by the strategic placement of berms.
  - The wetland buffer zones should be left undisturbed to allow the climax terrestrial vegetation community to establish in these areas.
  - As much vegetation growth as possible should be promoted within the proposed development area in order to protect soils and to reduce the percentage of the



surface area which is paved. In this regard special mention is made of the need to use indigenous vegetation species as the first choice during landscaping.

- Any discharge of runoff into the wetland system must be done in such a way as to prevent erosion. In this regard special mention is made of the use of energy dissipating structures in storm water discharge. Consideration to the use of attenuation facilities must also be given.
- During construction erosion berms should be installed to prevent gully formation. The following points should serve to guide the placement of erosion berms:
  - Where the track has slope of less than 2%, berms every 50m should be installed.
  - Where the track slopes between 2% and 10%, berms every 25m should be installed.
  - Where the track slopes between 10%-15%, berms every 20m should be installed.
  - Where the track has slope greater than 15%, berms every 10m should be installed.
- It must be insured that connectivity of the wetland feature to the wetland features beyond the subject property boundary are maintained.
- All areas affected by construction should be rehabilitated upon completion of the construction phase of the development. Areas should be reseeded with indigenous grasses as required.
- During the construction phase no vehicles should be allowed to indiscriminately drive through the wetland areas or the 30m buffer surrounding the wetland areas.
- Fires within the wetland and associated buffer zone must be prevented at all times.

### **3.4 Wetland delineation**

Figure 2 below serve to conceptually present the location of the wetland zone boundary on the property as well as the 30 meter buffer zone.



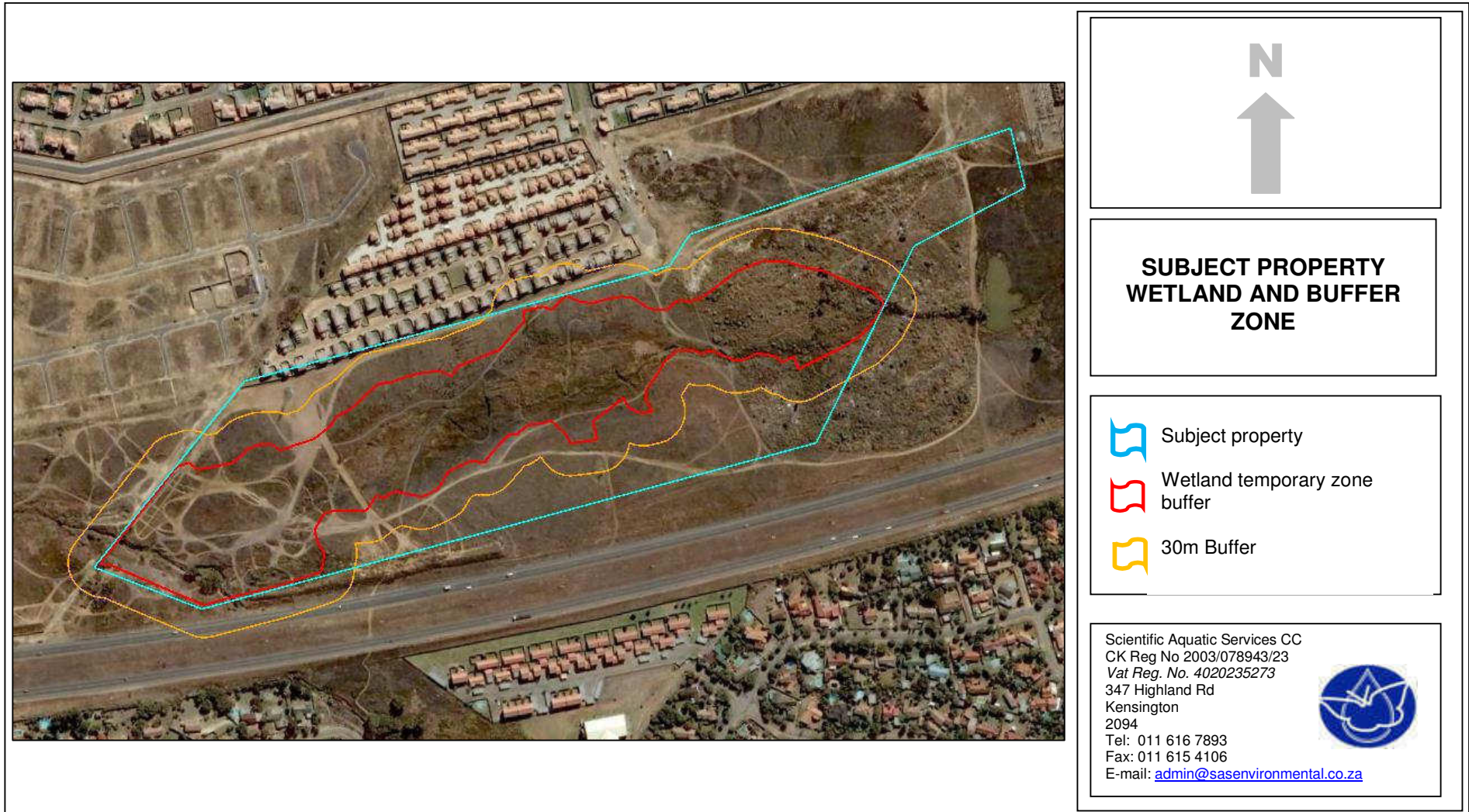


Figure 2: Temporary wetland zone and 30m buffer position for the proposed Rooihuiskraal extension 29 development site.

