

***Final Basic Assessment Report for the Proposed
Sunderland Ridge X29 on a Part of the Remainder of
Portion 70 (A Portion of Portion 29) of the Farm
Mooiplaats 355-JR***



Reference No: Gaut: 002/12-13/E0047

November 2013



**BOKAMOSO
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20 November 2013

RE: Final Basic Assessment Report for the Sunderland Ridge Extension 29 on part of the Remainder of Portion 70 (A Portion of Portion 29) of the Farm Mooiplaats 355 JR (Gaut 002/12-13/E0047).

The sensitivity of the above mentioned project has reference in this letter.

Various Biodiversity Assessments were conducted for this proposed development. No wetlands were found on any of these properties, however, a red data species was found north of the study site. In order to conserve biodiversity as well as to promote employment opportunities and contributing to economic growth of the area, alternatives are provided to have a development that promotes all these factors.

On Sunderland Ridge Extension 30, 31, 32 and 33 the biodiversity of the aforementioned properties are jeopardised by a number of external factors. These properties are located to the west of Sunderland Ridge Extension 29, only the proposed PWV9 separates them. To the south of Sunderland Ridge 30 – 33, a settlement has been established where the income rate within this particular township is low. Consequently, the fences of these properties have been taken away/ stolen. As soon as the fences are absent illegal dumping takes place in the south of Sunderland Ridge Extension 32. Actions like these question the safety of the surrounding area, both in a social and environmental capacity. Approval of Environmental Authorisation has been received for all four (X 30, 31, 32 and 33) these developments in July, August and September 2013. These properties are now going to be developed and the squatters on the area will now move to adjacent properties. The proposed development will open up a great

number of employment opportunities for neighbouring townships; this will reduce the crime and create a safer community.

The flora reports compiled by Galago Environmental, revealed a number of ecological important areas. In order to maintain, even enhance, the ecological integrity of this property and the proposed development, it is recommended to approve the relocation of the red data species, *Drimia sanguinea*, which was identified north of Sunderland Ridge X 29. The specialist recommended a 200m buffer for this red data species. This is not considered feasible as the Future Road PWV9 will encroach this buffer. It is also considered that this red data species is extremely common in the area as it has been found on other properties as well, such as on the Sunderland Ridge Extensions 30 - 33 projects. Therefore it is thought best to relocate the red data plant species out of the proposed development area and future developments to a location where the habitat is associated with this species, in order to conserve the species.

The future of these individuals of the Red Listed plant species around this property is improbable due to the formation of informal settlements on adjacent properties as well as the proposed PWV9 road. If relocation of this red data plant species is not approved, a 100m buffer is recommended rather than the 200m buffer as the Future Road PWV9 as well as the future neighbouring developments will not maintain this buffer area. The buffer area will be treated as an open space with high sensitivity.

According to the flora report, Sunderland Ridge X 29 is marked as highly sensitive due to the Mixed *Eragrostis* grassland study unit on the site that was pristine with connectivity in all directions. The pockets of red Kalahari sand form suitable habitat for the Red List capparid species *Cleome conrathii* that was found in December 2010 on the neighbouring farm Hoekplaats 384-JR in an unrelated survey. This connectivity is considered not applicable as the properties to the west are approved townships and the proposed PWV9 road will fracture the connectivity. It is recommended that a section in the west of the study area should be kept as open space for both the natural grassland and the large *Searsia lancea* individual. Natural veld grass and trees will be incorporated into the landscaping.

The study area of the proposed development has also been highly sensitive for the presence of giant bullfrogs by the specialist, however, this frog species has not been seen on the site. Within 500m from the site there are no wetlands or any other water bodies that will serve as habitat for the bullfrog and therefore the site will not be the permanent habitat of the, now a Least Concern amphibian species, the giant bullfrog. The same connectivity between the grasslands on site and neighbouring properties is recommended for the bullfrogs as for the flora, if this species should cross this site for feeding and aestivation. Nevertheless, should a bullfrog be found on the site during the construction or operational phase it must be reported and then relocated to a suitable site.

Recommendation:

Bokamoso have conducted numerous studies over the years and according to our knowledge it will be very difficult to conserve the red listed species *Drimia sanguinea*. This species does not occur on the proposed development site but on a private landowner's property. Chances are that the landowner is not even aware that a red listed plant species exists on the property. The landowner should be consulted and informed of the situation regarding the presence of a red listed plant species on the property and the future road PWV9 that will probably traverse this population.

One also needs to consider the social, economical and ecological factors and compare them to each other. The ideal situation is to balance all these factors equally. In this case the social and economical factors carries more weight than the ecological factor, as people there are people in need in the surrounding areas that experience poverty and when one is hungry and need to survive you will much rather consider survival even though it means degrading the environment as life would seems more important than conserving the nature at the cost of a human life. These people are also in urgent need of job opportunities and housing in order to make a living and for survival purposes.

We therefore suggest that Alternative 1 should be considered in relocating the red data species *Drimia sanguinea* as it seems that chances are better for survival than

remaining on the adjacent site when facing all the mentioned factors. It could also be seen as an excellent opportunity and chance to experiment to see whether the plant will be able to survive when being transplanted as well as it might stand a change of being reproductive.

In terms of the SANBI website (<http://redlist.sanbi.org/species.php?spesiec=3812-53>) it seems that the *Drimia sanguinea* is not that sensitive to disturbance and removal and it was mentioned that it will flower in a greenhouse after it has been harvested (50-60% of bulbs in the greenhouse were observed to have flowered).

As seen on the proposed issues map we created an open space area to incorporate all the identified sensitivities on the site as well as to consider the surrounding properties. The sensitive areas identified on the proposed x 29 are: the giant bullfrog, types of grassland and the sensitive species *Drimia sanguinea*. It should be noted that the developments to the north-west and south-east have already received approval.

If the relocation of the *Drimia sanguinea* species is approved, the following suggestions are made regarding the locations where the Red Listed species can possibly be relocated to:

- A suitable protected area, excluded from future developments, where the habitat is desirable and suited for the Red Listed *Drimia sanguinea*
- The South African National Biodiversity Institute (SANBI) or the National Botanical Gardens (in Pretoria) can be approached to assist with potential locations or possibly relocating the individuals to the Botanical Garden itself

Once relocation of the Red Listed *Drimia sanguinea* individuals has been approved these options will be investigated and a suitable location will be allocated.

Please find hereto attached the following annexures:

Annexure A: Overall Sensitivity Map;

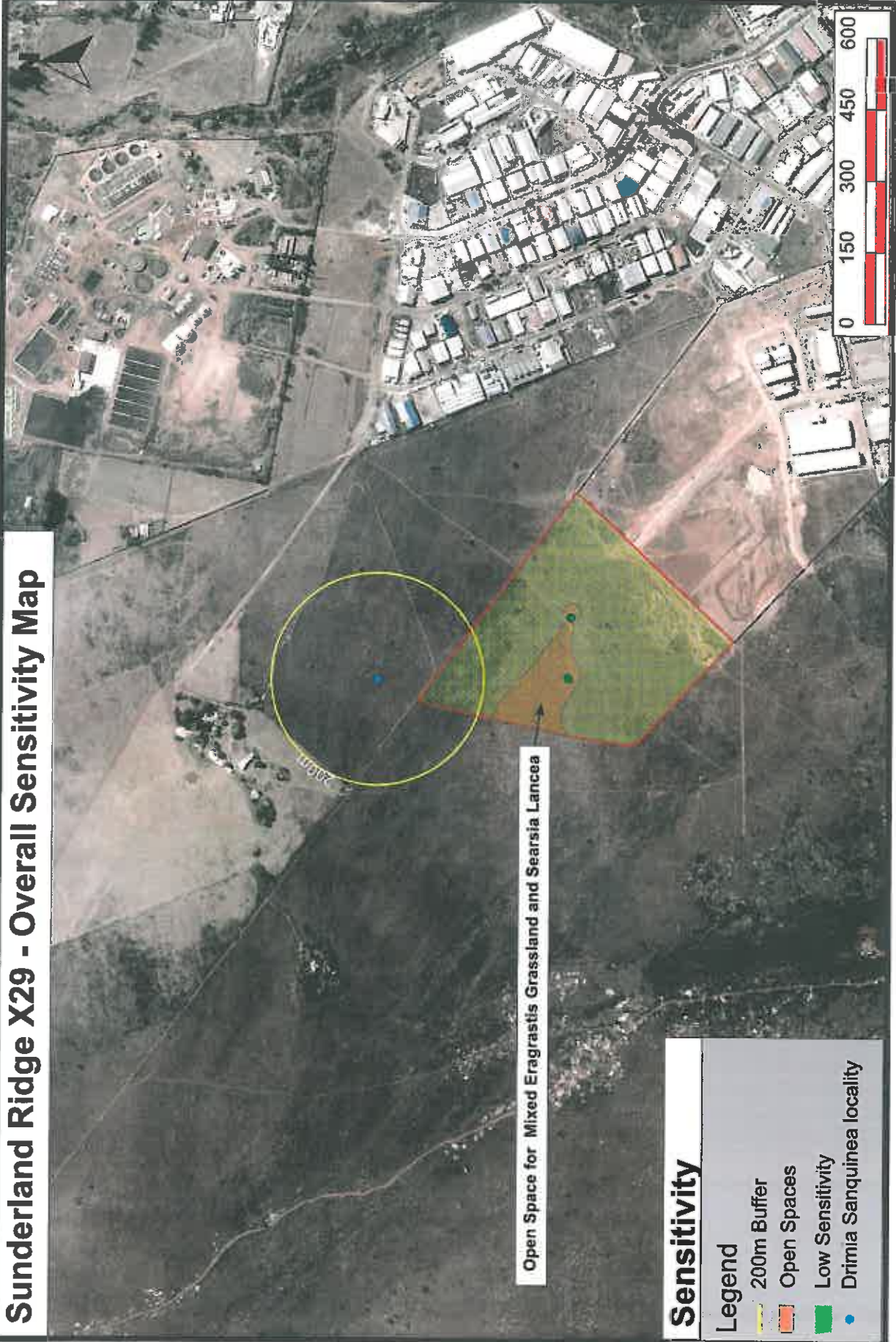
Annexure B: Alternative 1 – Relocation of Red Data Species;

Annexure C: Alternative 2 – 100m Buffer for *Drimia Sanguinea*;

Annexure D: Threatened Species Programme/ SANBI Red List of South African Plants -
<http://redlist.sanbi.org/specise.php?species=3812-53>

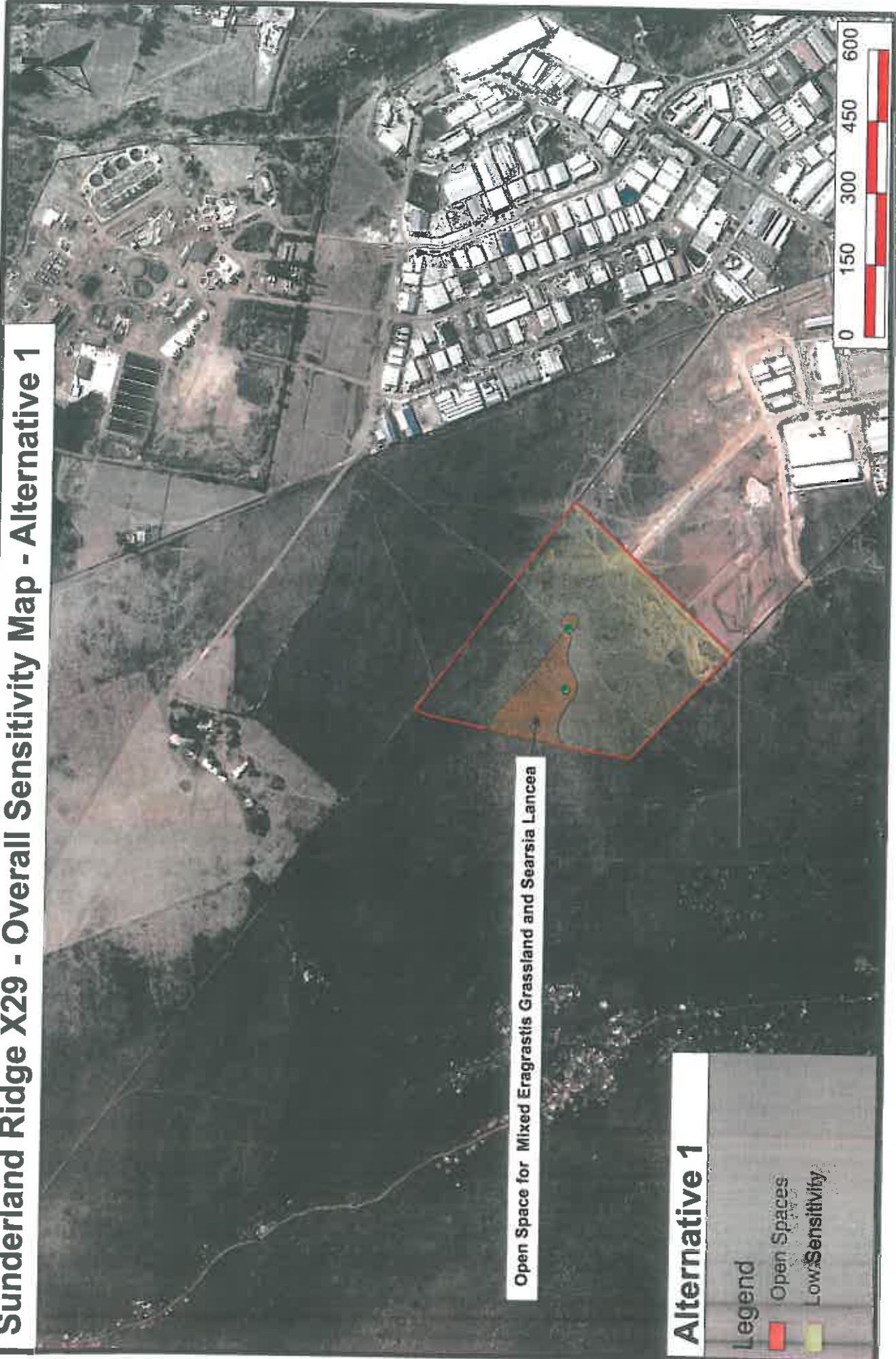
ANNEXURE A

Sunderland Ridge X29 - Overall Sensitivity Map



ANNEXURE B

Sunderland Ridge X29 - Overall Sensitivity Map - Alternative 1



Open Space for Mixed Eragrostis Grassland and Searsia Lancea

Alternative 1

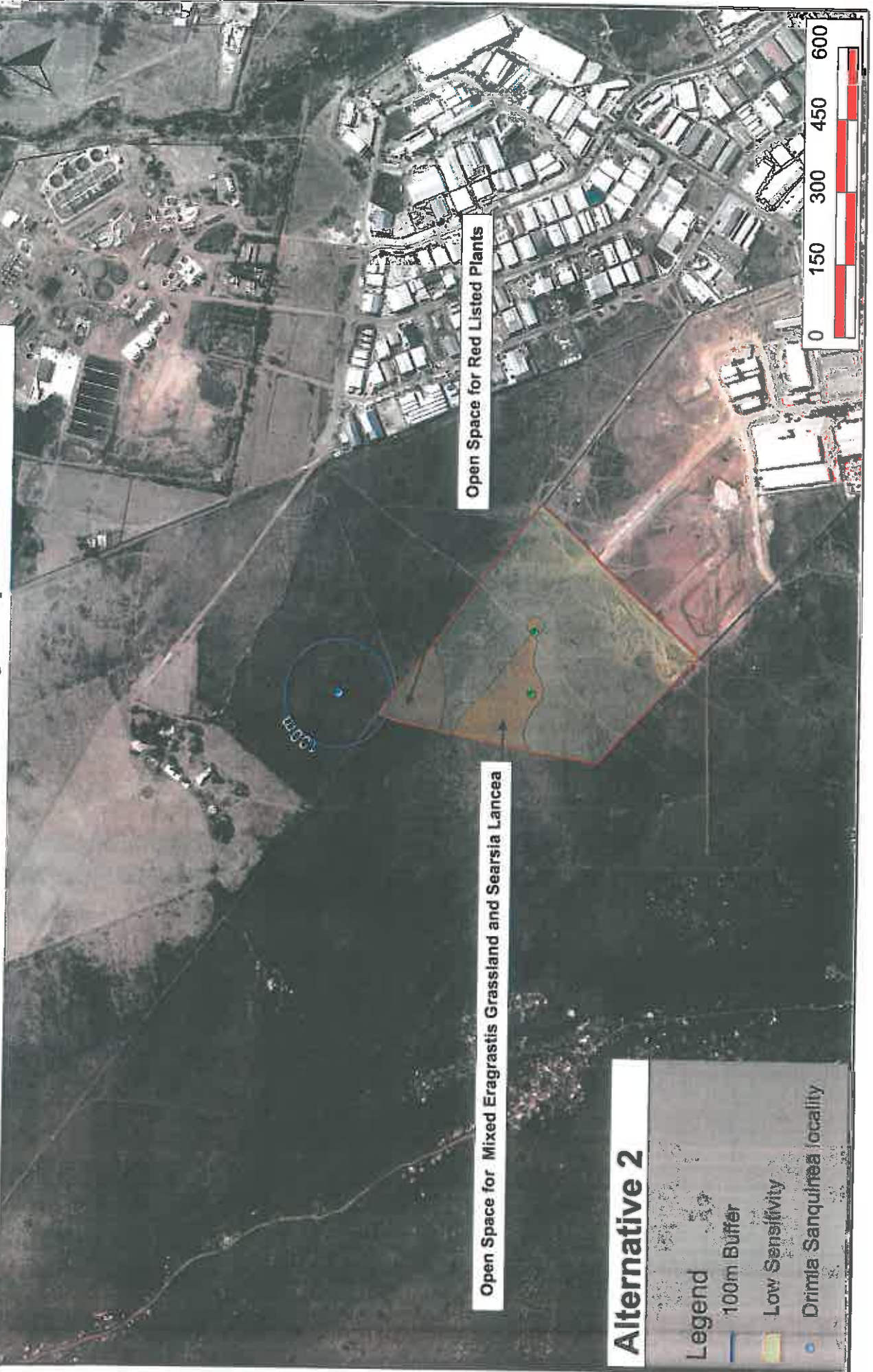
Legend

- Open Spaces
- Low Sensitivity



ANNEXURE C

Sunderland Ridge X29 - Overall Sensitivity Map - Alternative 2



ANNEXURE D

SANBI

Red List of
South
African

Search the Red List

Search

Plants

[Red List statistics
Guidelines for EIAs](#)
[Summary of recent changes](#)
[National Red List categories](#)
[Assessment methodology](#)
[Glossary](#)
[Home](#) >> [Genera: D](#) >> [Genus: Drimia](#)

- [Genera: A](#)
- [Genera: B](#)
- [Genera: C](#)
- [Genera: D](#)
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- [Genera: Q](#)
- [Genera: R](#)
- [Genera: S](#)
- [Genera: T](#)
- [Genera: U](#)
- [Genera: V](#)
- [Genera: W](#)
- [Genera: X](#)
- [Genera: Y](#)
- [Genera: Z](#)

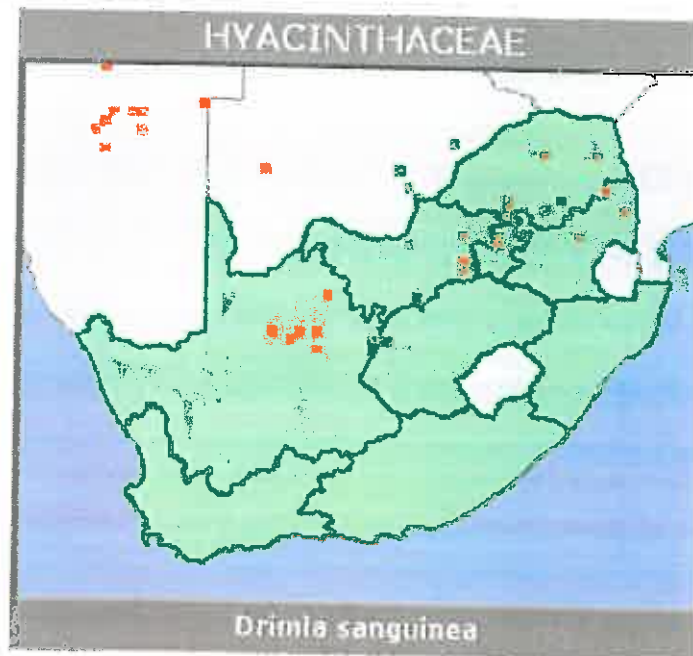
Taxonomy

Scientific Name *Drimia sanguinea* (Schinz) Jessop
Higher Classification Monocotyledons
Family HYACINTHACEAE
Synonyms *Urginea burkei* Baker,
Urginea sanguinea Schinz

National Status

Status and Criteria NT A2d
Assessment Date 2008/01/15
Assessor(s) V.L. Williams, D. Raimondo, N.R. Crouch, V.J. Brueton, A.B. Cunningham, C.R. Scott-Shaw, M. Lötter & A.M. Ngwenya

Justification The population has declined by 20-25% in the last three generations (generation length 20 years) due to harvesting for the medicinal plant trade, especially for the Gauteng trade. Declines are expected to continue and the species should be re-evaluated in the future.



Search for images of *Drimia sanguinea* on [iSpot](#)

Distribution

Endemism Not endemic to South Africa
Provincial distribution Free State, Gauteng, Limpopo, Mpumalanga, Northern Cape, North West
Range Northern Cape and diagonally across to Limpopo and Mpumalanga Provinces, Namibia, Botswana and Zimbabwe.

Habitat and Ecology

Major system Terrestrial
Major habitats Savanna
Description Open veld and scrubby woodland in a variety of soil types.

Threats

Drimia sanguinea is a distinctive, well known and highly poisonous bulb that has a deep-red colour. It has caused mass livestock mortality in the past and was subject to frequent land clearance by farmers. One farmer in the Wolmaransstad area removed up to 400 000 bulbs annually from his land, and eradication was enforced in the Heidelberg and Belfast municipalities after it was declared a noxious weed (Stent & Curson 1929). It is currently threatened by mass harvesting for the medicinal plant trade, especially in the Gauteng Province. It was sold by >70% of muthi shops in 1994, and by more than 50% of the street traders in the Faraday market in 2001 (Williams 2003, Williams 2007). It was also the most common species in the Faraday market and was present at more stalls and in bigger volumes than any other species. Some traders tend to sell it interchangeably with *D. altissima*, *D. elata* and *D. robusta* under the name 'skanama' or 'isiklenama', but it is *D. sanguinea* that is the most prevalent of the 'skanama' species. Williams et al. (2007a) estimated that more than 1961 bags (50kg-size) of *Drimia* spp. were sold annually by the muthi shops, and that more than 443 bags were bought by the Faraday traders. These volumes translated into >380 000 and >124 000 bulbs being extracted annually respectively (Williams et al. 2007b). According to V. Brueton (pers. comm., 2008), *D. Sanguinea* was the most common species in the Gauteng markets and was prevalent in the markets throughout the year in large quantities. At least 80% of the traders in the Faraday market sell it, and most traders have on display a volume equivalent to one medium size shopping bag. The species is not common in the Warwick market in Durban and only about two traders in that market were seen selling a few bulbs in January 2008 - hence it is sporadically available there. According to the chairman of the Warwick market, Ma Dlamini, they primarily sell (and have more access to) *Drimia robusta* but they will use *D. sanguinea* if someone brings it to them from Gauteng. *Drimia robusta* has the same prevalence in the Durban markets as *D. sanguinea* has in the Gauteng markets. *Drimia sanguinea* doesn't seem

to be as sensitive to disturbance and removal as *D. altissima* is, and the former will flower in the markets and in a greenhouse after it has been harvested (50-60% of bulbs in the market and greenhouse were observed to have flowered). It is estimated that the population has declined 20-25% in the last three generations (60 years) due to harvesting for the medicinal plant trade, especially in Gauteng. It is an occasional species in the Durban markets due to the distance from its area of origin. Declines expected to continue and the species should be re-evaluated in the future.

Population

Population trend Decreasing

Assessment History

Date assessed	Taxon	Status and Criteria	Citation/Red List version
2009	<i>Drimia sanguinea</i> (Schinz) Jessop	NT A2d	Raimondo et al. (2009)

Bibliography

Neuwinger, H.D. 1996. African ethnobotany: poisons and drugs: chemistry, pharmacology, toxicology. Chapman & Hall, Weinheim.

Raimondo, D., von Staden, L., Foden, W., Victor, J.E., Helme, N.A., Turner, R.C., Kamundi, D.A. and Manyama, P.A. 2009. Red List of South African Plants. *Strelitzia* 25. South African National Biodiversity Institute, Pretoria.

Stent, S.M. and Curson, H.H. 1929. Poisonous plants of South Africa. Bulletin 49. Department of Agriculture, Union of South Africa.

Williams, V.L. 2003. Hawkers of health: an investigation of the Faraday Street traditional medicine market in Johannesburg. Report to Gauteng Directorate for Nature Conservation, DACEL.

Williams, V.L. 2007. The design of a risk assessment model to determine the impact of the herbal medicine trade on the Witwatersrand on resources of indigenous plant species. Unpublished PhD Thesis, University of the Witwatersrand, Johannesburg.

Williams, V.L., Balkwill, K. and Witkowski, E.T.F. 2007. Size-class prevalence of bulbous and perennial herbs sold in the

Johannesburg medicinal plant markets between 1995 and 2001. *South African Journal of Botany* 73(1):144-155.

Williams, V.L., Witkowski, T.F. and Baikwill, K. 2007. Volume and financial value of species traded in the medicinal plant markets of Gauteng, South Africa. *International Journal of Sustainable Development & World Ecology* 14(6):584-603.

Citation

Williams, V.L., Raimondo, D., Crouch, N.R., Brueton, V.J., Cunningham, A.B., Scott-Shaw, C.R., Lötter, M. & Ngwenya, A.M. 2008. *Drimia sanguinea* (Schinz) Jessop. National Assessment: Red List of South African Plants version 2013.1. Accessed on 2013/11/20

 [Comment on this assessment](#)

(c) South African National Biodiversity Institute (SANBI) 2010-12.

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Appendix B: Photographs (Not yet available)

Appendix C: Facility illustration(s) (Not yet available)

Appendix D: Route position information

Appendix E: Public participation information

Appendix E1 – Proof of site notice

Appendix E2 – Written notices issued to those persons detailed in 1(b) to 1(f) above

Appendix E3 – Proof of newspaper advertisements

*Appendix E4 – Communications to and from persons detailed in Point 2 and 3 above
(Not available)*

Appendix E5 – Minutes of any public and/or stakeholder meetings (Not available)

Appendix E6 - Comments and Responses Report

Appendix E7 – Comments from I&APs on Basic Assessment (BA) Report

Appendix E8 – Comments from I&APs on amendments to the BA report (Not available)

Appendix E9 – Copy of the register of I&APs

Appendix E10 – Comments from I&APs on the application (Not available)

Appendix F: Water use license(s), SAHRA information, service letters from municipalities, water supply information (Not available)

Appendix G: Specialist reports

Appendix G1 – Flora Assessment

Appendix G2 - Mammals Assessment

Appendix G3 – Avifauna Assessment

Appendix G4 – Herpetofuana Assessment

Appendix G5 - Services Report

Appendix H: Environmental Management Plan (EMP)

Appendix I: ENLARGED FIGURES

Appendix I1 – Locality Map

Appendix I2 – Aerial Map

Appendix I3 – Hydrology Map

Appendix 14 – Protected Areas Map
Appendix 15 – Ridges Map
Appendix 16 – Agricultural Potential Map
Appendix 17 – Agricultural Hubs Map
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Appendix 113 – Land-Uses Map
Appendix 114 – Sunderland Ridge Development Framework 2020

Appendix J - Company Profile & CV of Lizelle Gregory (Environmental Assessment Practitioner)

**Application Form
GDARD**

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]



Gauteng Department of Agriculture and Rural Development

Application for authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010 (Version 1)

Kindly note that:

1. This application form is to be completed for both the Basic Assessment process and the Scoping & EIA process.
2. This application form is current as of 2 August 2010. 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. The application must be typed within the spaces provided in the form. The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided. It is in the form of a table that can extend itself as each space is filled with typing.
4. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
5. Incomplete applications may be returned to the applicant for revision.
6. 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 rejection of the application as provided for in the regulations.
7. Three copies of this form and the attachments must be handed in at the offices of the relevant competent authority as detailed below.
8. No faxed or e-mailed applications shall be accepted. Only hand delivered or posted applications will be accepted.
9. 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/Environmental Assessment Practitioner (EAP) must provide any interested and Affected Party (iAP's) with the information contained in this application on request, during any stage of the application process.
10. Attachments, where applicable, to this document are to be ordered in the following prescribed manner

Annexure - A	Locality map
Annexure - B	a) Proof of notification to the Land owner b) Proof of receipt of such notice by the owner
Annexure - C	List of all organs of state and State Departments of where the draft report will be submitted, their full contact details and contact person

Annexure -D	Property description list
Annexure -E	Current land use zonings list
Addendum-A	Declaration of Independence by EAP to be submitted with the report if this application form was submitted by applicant -

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
P.O. Box 8769
Johannesburg
2000

Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
18th floor Glen Cairn Building
73 Market Street, Johannesburg

Administrative Unit telephone number: (011) 355 1345
Department central telephone number: (011) 355 1900

A large, stylized handwritten signature in black ink, located in the bottom right corner of the page.

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

(For official use only)

File Reference

Number:

Application Number:

Date Received:

1. NATURE OF THE ACTIVITY

Establishment of a township for light industrial purposes.

Select the appropriate box with regards to the application form submission

An application for conducting a basic assessment (as defined in the regulations)?

X

A resubmission of an application for conducting a basic assessment (as defined in the regulations)?

An application for conducting a Scoping & EIA process (as defined in the regulations)

A resubmission of an application for conducting a SR & EIA process (as defined in the regulations)

If this is a class application, has a copy of approval letter to undertake such an application been attached as such application may/shall not be undertaken without an approval from this Department

--

Has this project or a substantial similar project which has been previously submitted by the applicant been denied authorisation by the relevant authority in the last three (3) years

YES	NO X
YES	NO

If yes will the application contain new or additional material not submitted previously

To be noted that Regulation 68 of EIA Regulations, 2010 states that no applicant may resubmit an application which is substantially similar to an application previously denied authorisation by the relevant authority unless 3 years has lapsed since the refusal or new material is to be presented

1. PROJECT DETAILS

Project title:

Sunderland Ridge Extension 29

To be noted that the project will be registered under this title and this title must be duplicated through the application life of the project

Local authority(ies) in whose jurisdiction the proposed application will fall

City of Tshwane Metropolitan Municipality

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:

Latitude (S):

Longitude (E):

25.8380° S

28.0963° E

In the case of linear activities:

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

Alternative:

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

Latitude (S):	Longitude (E):

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

N/A

Property description:

A Part of the Remainder of Portion 70 (A Portion of Portion 29) of the Farm Mooiplaats 355-JR

(Farm name, portion etc.) Where a large number of properties (including alternatives) are involved (e.g. linear activities), please attach a list of the property descriptions to this application.

3. ACTIVITIES APPLIED FOR

Describe the activity and associated infrastructure, which is being applied for, in detail

The proposed establishment of a township to be known as **Sunderland Ridge Extension 29**. The proposed development will consist of the following zonings and land-uses:

- "Industrial 1"

Which Listing Notice is the activity (ies) listed under?

Listing Notice 1

X

Listing Notice 2

Listing Notice 3

X

If "or also" listed under Listing Notice 3, describe the Geographical Area triggering the activity and its regional, provincial, national & international significance

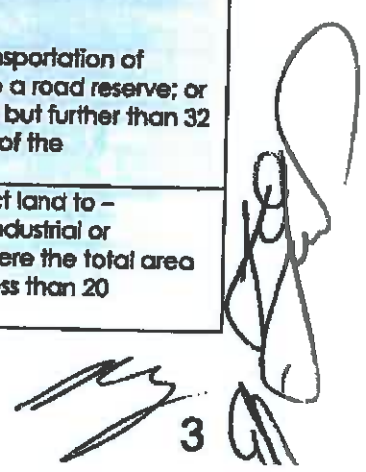
An application may be made for more than one listed or specified activity that, together, make up one development proposal. All the listed activities that make up this application must be listed.

Indicate the number and date of the relevant Government Notice:

Activity No (s) (in terms of the relevant notice): e.g. Listing notices 1, 2 or 3

Describe each listed activity as per the wording in the relevant listing notice:

Listing Notice 1, R544, 18 June 2010	Activity 9	The construction of facilities or infrastructure exceeding 1000 meters in length for the bulk transportation of water, sewage or storm water – <ul style="list-style-type: none"> (i) With an internal diameter of 0,36 meters or more; or (ii) With a peak throughput of 120 liters per second or more; excluding where: <ul style="list-style-type: none"> a. Such facilities or infrastructure are for bulk transportation of water, sewage or storm water drainage inside a road reserve; or Where such construction will occur within urban areas but further than 32 meters from a watercourse, measured from the edge of the watercourse
Listing Notice 1, R544, 18 June 2010	Activity 23	The transformation of undeveloped, vacant or derelict land to – <ul style="list-style-type: none"> (i) Residential, retail, commercial, recreational, industrial or institutional use, inside an urban area, and where the total area to be transformed is 5 hectares or more, but less than 20 hectares; or



3

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

		<p>(ii) Residential, retail, commercial, recreational, industrial or institutional use, outside an urban area, and where the total land area to be transformed is larger than 1 hectare, but less than 20 hectares; -</p> <p>Except where such transformation takes place for linear activities.</p>	
<p>Listing Notice 1, R544, 18 June 2010</p>	<p>Activity 24</p>	<p>The transformation of land bigger than 1000 square meters in size, to residential, retail, commercial, recreational, industrial or institutional use, where, at the time of the coming into effect of this Schedule such land was zoned open space, conservation or had an equivalent zoning.</p>	
<p>Listing Notice 3, R546, 18 June 2010</p>	<p>Activity 4</p>	<p>The construction of a road wider than 4 meters with a reserve less than 13, 5 meters.</p>	<p>In Gauteng:</p> <ul style="list-style-type: none"> i. A protected area identified in terms of NEMPAA excluding conservancies; ii. National Protected Area Expansion Strategy Focus areas; iii. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; iv. Sites identified in terms of the Ramsar Convention; v. Sites identified as irreplaceable or important in the Gauteng Conservation Plan; vi. Areas larger than 2 hectares zoned for use as public open space; vii. Areas zoned for a conservation purpose; viii. Any declared protected area including Municipal or Provincial Nature Reserves as contemplated by the Environmental Conservation Act, 1989 (Act No. 73 of 1989) and the Nature Conservation Ordinance (Ordinance 12 of 1983); ix. Any site identified as land with high agricultural potential located within the Agricultural Hubs or Important Agricultural Sites identified in terms of the Gauteng Agricultural Potential Atlas, 2008.

Please note that any authorisation that may result from this application will only cover activities specifically applied for.



4

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

5. OTHER AUTHORISATIONS REQUIRED

5.1 DO YOU NEED ANY AUTHORISATIONS IN TERMS OF ANY OF THE FOLLOWING LAWS?

4.1.1 National Environmental Management: Waste Act	Yes/No
4.1.2 National Environmental Management: Air Quality Act	Yes/No
4.1.3 National Environmental Management: Protected Areas Act	Yes/No
4.1.4 National Environmental Management: Biodiversity Act	Yes/No
4.1.5 Mineral Petroleum Development Resources Act	Yes/No
4.1.6 National Water Act	Yes/No
4.1.7 National Heritage Resources Act	Yes/No
4.1.8 Other (please specify)	Yes/No
4.2 Have such applications been lodged already?	Yes/No

6. BACKGROUND INFORMATION

Project applicant:	Rugged Property Investments (ONE) Pty Ltd		
Trading name (if any):	Rugged Property Investments (ONE) Pty Ltd		
Contact person:	Emil Manuel Keyser		
Physical address:	267 Waterkloof Road, Waterkloof, Pretoria		
Postal address:	PO Box 95288, Waterkloof, Pretoria		
Postal code:	0145	Cell:	082 895 7869
Telephone:	(012) 370 7000	Fax:	086 662 6029
E-mail:	emo@veimore.co.za		

Project Environmental Assessment Practitioner:	Bokamoso Landscape CC trading as Bokamoso Landscape Architects & Environmental Consultants		
Contact person:	Lizelle Gregory		
Postal address:	P.O. Box 11375, Maroelana		
Postal code:	0161	Cell:	083 255 8384
Telephone:	(012) 346 3810	Fax:	086 570 5659
E-mail:	lizelleg@mweb.co.za		

EAP qualifications & relevant experience

Registered Landscape Architect & Environmental Consultant (degree obtained from the University of Pretoria), with more than 18 years experience in

- The compilation of Environmental Evaluation Reports,
- Environmental Management Plans,
- Strategic Environmental Assessments;
- All stages of Environmental Input,
- EIA under the ECA and the new and amended NEMA Regulations; and
- Various other Environmental Reports and documents.

Professional affiliation(s) (if any)

The South African Council of the Landscape Architects Profession (SACLAP); Institute for Landscape Architects in South Africa (ILASA); and Institute for Environmental Management and Assessment (IEMAS)

Landowner:	Rugged Property Investments (ONE) Pty Ltd		
Contact person:	Emil Manuel Keyser		
Postal address:	PO Box 95288, Waterkloof, Pretoria		
Postal code:	0145	Cell:	082 895 7869
Telephone:	(012) 370 7000	Fax:	086 662 6029
E-mail:	emo@veimore.co.za		

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

In instances where there is more than one landowner (including for alternative sites), please attach a list of landowners with their contact details to this application.

In instances where the landowner is not the applicant –attach proof of notification of the landowner and a proof of receipt of such notice by the owner, manager or person in control of the land.

List of the land owner is attached	N/A
Landowner notification proof is attached	N/A
Landowner proof of receipt of such notification is attached	N/A

Local authority in whose jurisdiction the proposed activity will fall:

Contact person:
Postal address:
Postal code:
Telephone:
E-mail:

City of Tshwane Metropolitan Municipality	
Livhuwani Siphuma	
Private Bag X1454, Pretoria	
0001	Cell:
(012) 358 8871	Fax:
livhuwanis@tshwane.gov.za	

In instances where there is more than one local authority involved (including for alternative sites), please attach a list of local authorities with their contact details to this application.

List of local authorities is attached YES

List of properties is attached YES

Town(s) or district(s):
Street/Physical address:

City of Tshwane Metropolitan Municipality

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

List of towns or districts is attached N/A

State Departments administering a law affecting the environment:

Contact person:
Postal address:
Postal code:
Telephone:
E-mail:

Department of Water Affairs	
Mr. Justice Maluleke	
Private Bag X313, Pretoria	
0001	Cell:
012 336 6507	Fax: 012 336 8311
Maluleke.J@dwa.gov.za	

In instances where there is more than one State Department involved, please attach a list of all State Departments with their contact details.

Current land-use zoning:

Vacant

In instances where there is more than one current land-use zoning (including alternatives), please attach a list of current land use zonings that also indicate which portions each use pertains to , to this application.

List of current land-use zonings is attached N/A

Handwritten signatures and a circled number 6.

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

Locality map:

A locality map(s) (including alternatives) must be attached to the back of this document, as Annexure A. The scale of the locality map must be between 1:10 000 and 1:50 000. The scale must be indicated on the map. The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites;
- all rivers within a 1km radius of the site or alternative sites; and
- a north arrow.

7. COMPLIANCE WITH CONDITIONS

Have you ever been in non-compliance with a condition of an authorization or exemption issued by this Department or any other provincial or national environmental department in terms of the Environment Conservation Act (No 73 of 1989) or the National Environmental Management Act (No 107 of 1998) as amended?

YES	NO X
-----	---------

If yes, indicate details of non-compliance together with reasons for non-compliance:

Attach all relevant documentation e.g. compliance audit reports, pre-directives, directives, compliance notices

8. ACTIVITY INFORMATION

Socio-economic value of the activity

What is the expected capital value of the activity on completion?

What is the expected yearly income that will be generated by or as a result of the activity?

Will the activity contribute to service infrastructure?

Will the activity contribute to a public amenity

Total number of new employment opportunities to be created in the development phase of this activity.

Of these opportunities how many are:

Women

People with disabilities

Female

Male

Youth

Female

Male

What is the expected value of the employment opportunities during the development phase?

What percentage of this will accrue to previously disadvantaged individuals?

20 Million	
3.5 Million	
YES X	
YES X	
50	
8	

2
2

Work opportunity will be provided for youth, where possible
Work opportunity will be provided for youth, where possible
2 Million
80%

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

Total number of new employment opportunities to be created in the operational phase of this activity.

Of these opportunities how many are:

Women

People with disabilities

Female

Male

Youth

Female

Male

What is the expected current value of the employment opportunities during the first 10 years?

What percentage of this will accrue to previously disadvantaged individuals?

75
30
N/A
3
3
N/A
Work opportunity will be provided for youth, where possible
Work opportunity will be provided for youth, where possible
4 Million
50%

Need and Desirability of the activity

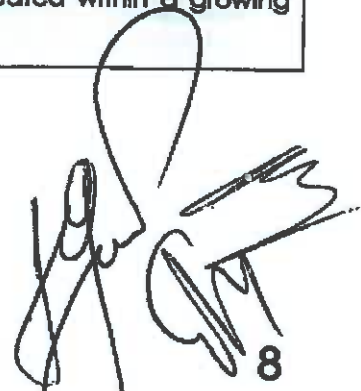
Motivate and explain the need and desirability of the activity (including demand for the activity):

The need and desirability for the proposed development are supported by various planning policies. The property owner/developer realised the development potential of the site as it has been identified as an industrial and commercial development zone within the Monavoni and Western Farms Development Framework 2020.

The Sunderland Ridge area, where the application site is located, is characterised by light industrial and commercial townships. There are few vacant land parcels within the Sunderland Ridge Industrial area which are suitable for development, because they are either not well maintained or plagued by informal settlements. These land parcels should be better utilised as the provision of municipal services becomes more viable with an increase in the industrial density through infill development. By adding additional light industrial stands, available municipal services and infrastructure will be optimally utilised.

The centurion west area has experienced a major boom in the residential, commercial, retail and industrial sectors and during the past 5 to 10 years and is still developing despite the current economic climate. Current planning legislation and development plans for the area have added value and secured the investment potential of the area for the period of 2008-2020 (MWFDF, 2008). Thereby, creating a need for erven zoned for industrial and commercial land use.

Taking into account the contextual characteristics of the area and the accessibility of the application site and its connectivity to the region, the proposed township for which there is a proven need should be regarded as desirable and strategically situated within a growing area of Sunderland Ridge.



APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

Indicate any benefits that the activity will have for society in general:

The construction of the proposed development will contribute to economic growth of the area i.t.o. infrastructure, business and amenities. It will also provide various employment opportunities.

The proposed development will generate additional income for the CTMM through additional rates and taxes levied on the additional industrial and commercial stands. By approving the proposed township establishment the value of the application site is increased, thereby increasing the economic base of the Municipality.

The Bus Rapid Transport (BRT) will come into operation during the next few years, therefore making the area and application site more accessible via public transport. Together these factors make the application site a desirable location for the development.

Considering the location of the application site adjacent to the established townships of Sunderland Ridge, the application site is also very accessible to the surrounding area via Mimosa Avenue and internal road network consisting of Barolog and Sunbeam Street. There are numerous minibus taxis which operate in the area providing public transport to the industrial area of Sunderland Ridge.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The proposed development will offer an economic turnover as it will provide various employment opportunities to a number of skilled, semi-skilled and unskilled employees during the construction and operational phase.

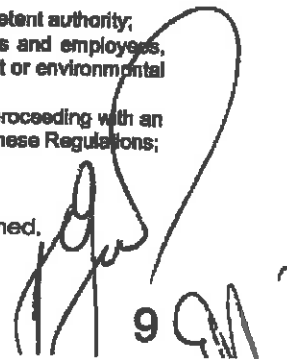
9. DECLARATIONS

The Applicant

I, Emil Keyzer, declare that I -

- am¹, the applicant in this application for **Sunderland Ridge Extension 29**;
- have appointed an environmental assessment practitioner to act as the independent environmental assessment practitioner for this application;
- will provide the environmental assessment practitioner and the competent authority with access to all information at my disposal that is relevant to the application;
- will be responsible for the costs incurred in complying with the Environmental Impact Assessment Regulations, 2010, including but not limited to -
 - costs incurred in connection with the appointment of the environmental assessment practitioner or any person contracted by the environmental assessment practitioner;
 - costs incurred in respect of the undertaking of any process required in terms of the Regulations;
 - costs in respect of any fee prescribed by the Minister or MEC in respect of the Regulations;
 - costs in respect of specialist reviews, if the competent authority decides to recover costs; and
 - the provision of security to ensure compliance with conditions attached to an environmental authorisation, should it be required by the competent authority;
- will ensure that the environmental assessment practitioner is competent to comply with the requirements of these Regulations and will take reasonable steps to verify whether the EAP complies with the Regulations;
- will inform all registered interested and affected parties of any suspension of the application as well as of any decisions taken by the competent authority in this regard;
- am responsible for complying with the conditions of any environmental authorisation issued by the competent authority;
- hereby indemnify the Government of the Republic, the competent authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action which the applicant or environmental assessment practitioner is responsible for in terms of these Regulations;
- will not hold the competent authority responsible for any costs that may be incurred by the applicant in proceeding with an activity prior to obtaining an environmental authorisation or prior to an appeal being decided in terms of these Regulations;
- will perform all other obligations as expected from an applicant in terms of the Regulations;

¹ If this is signed on behalf of the applicant, proof of such authority from the applicant must be attached.



APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

- all the particulars furnished by me in this form are true and correct; and
- I am aware that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Signature of the applicant / Signature on behalf of the applicant

Name of company (if applicable):

Date:

Signature of the Commissioner of Oaths:

Date:

Designation:

Commissioner of Oaths Official stamp (below)

HENDRIK JOHANNES DU PLESSIS
KOMM. VAN ED/COMM. OF OATHS P.S.A
PRAKTISERENDE PROKUREUR
PRACTISING ATTORNEY
BERHARDSTRAT/STREET 144
LYTTLETON

The Environmental Assessment Practitioner

I, Lizelle Gregory, declare under oath that I –

- I act as the independent environmental practitioner for this application **Sunderland Ridge Extension 29**;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

For Basic Assessment applications I further declare under oath that:

² If the applicant is a juristic person, a signature on behalf of the applicant is required as well as proof of such authority.

APPLICATION FORM [REGULATION 12 (1) & (2)(A)(B)(I)(II)]

- * I will fix the site notice(s) in a conspicuous place, on the property(ies) where it is intended to undertake the activity(ies);
- * I will place a notice in the required newspaper(s);
- * I will provide the following with all the project information and give I&AP's an opportunity to register as an I&AP
 - o landowners and occupiers of adjacent land
 - o landowners and occupiers of land within 100 metres of the boundary of the property
 - o the ward councillor
 - o any organisation that represents the community in the area of the application
 - o the municipality which has jurisdiction over the area in which the proposed activity will be undertaken
 - o any organ of state that may have jurisdiction over any aspect of the activity of the applicant's intention to submit an application to the competent authority; and
- * I will include on the register all persons as required per Regulation 55 (1) (c);
- * The Reports as submitted will contain the same information (including layout, project design and mitigation) as provided to the registered I&APs for comment; and
- * All issues raised by the I&APs during the public participation process will be included in the Comments and Response Report as attached.


Signature of the Environmental Assessment Practitioner:

Bokamoso Environmental Consultants
Name of Company:

Date:


Signature of the Commissioner of Oaths:

17/5/2012
Date:

PARTNER
Designation:

Commissioner of Oaths Official stamp (below)

WARREN WESLEY BUTT
COMMISSIONER OF OATHS
38 LEBOMBO ROAD
ASHLEA GARDENS
PRETORIA 0081
CHARTERED ACCOUNTANT OF SOUTH AFRICA

11. 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; and
- > The form has been signed by the applicant, by the EAP or both.

12. ANNEXURES

Annexure A: Locality Map

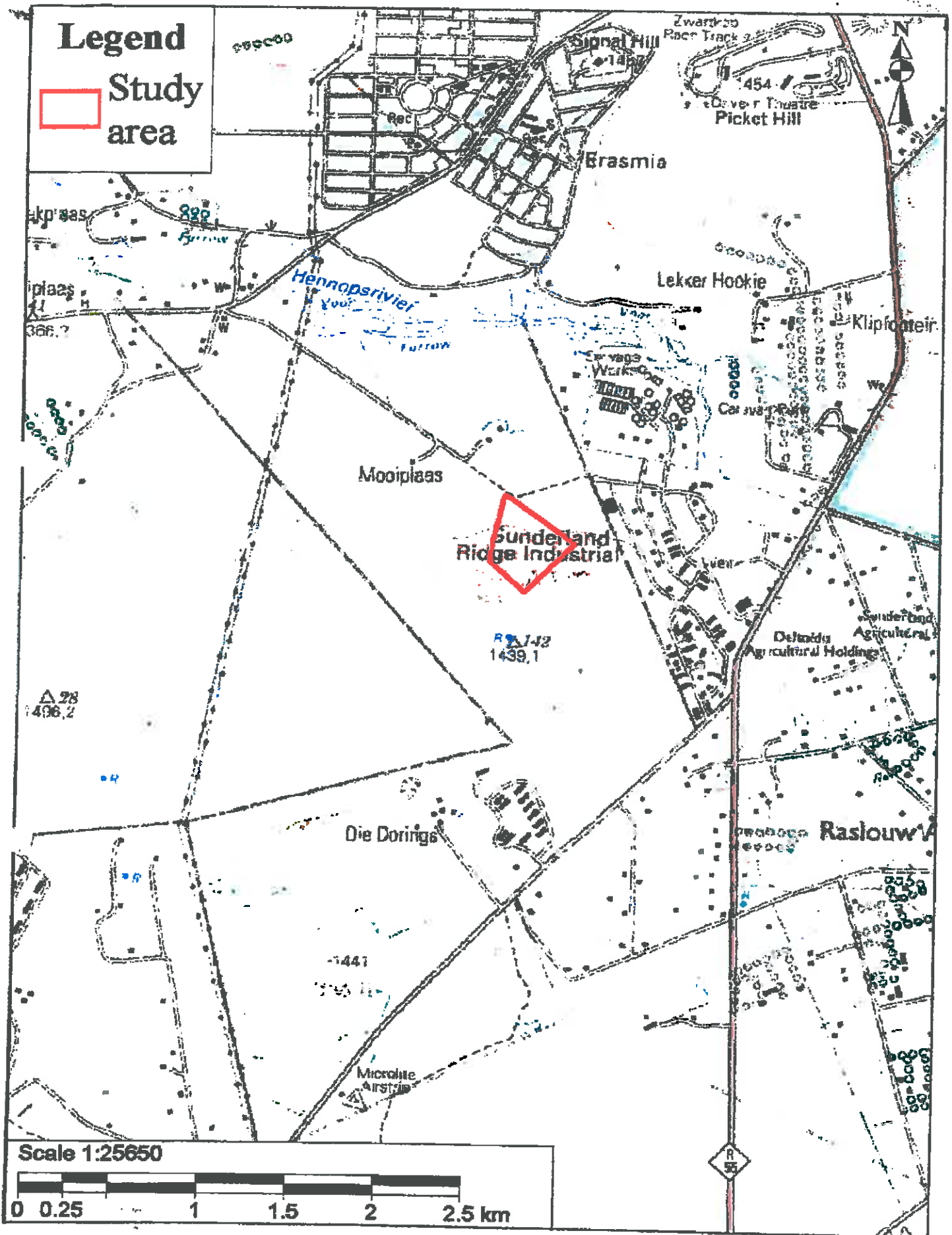

11

ANNEXURE A:

Locality Map

Legend

 Study area



ANNEXURE B:

- a. Proof of notification to the Land owner;
- b. Proof of receipt of such notice by the owner.

Not applicable.

ANNEXURE C:

List of all organs of state and State Departments of where the draft report will be submitted, their full contact details and contact person.

List of all Organs of State and State Departments of where the Draft Report will be submitted:

Local authority in whose jurisdiction the proposed activity will fall:

Contact person:
Postal address:
Postal code:
Telephone:
E-mail:

City of Tshwane Metropolitan Municipality		Cell:	-
Lhluwani Siphuma		Fax:	
Private Bag X1454, Pretoria			
0001			
(012) 358 8871			
lhluwanis@tshwane.gov.za			

Local authority in whose jurisdiction the proposed activity will fall:

Contact person:
Postal address:
Postal code:
Telephone:
E-mail:

Department of Water Affairs		Cell:	-
Mr. Justice Matuleke		Fax:	(012) 336 8311
Private Bag X 313, Pretoria			
0001			
(012) 336 6507			
Matuleke.J@dwa.gov.za			

Local authority in whose jurisdiction the proposed activity will fall:

Contact person:
Postal address:
Postal code:
Telephone:
E-mail:

PHRAG		Cell:	-
Maphata Ramphela		Fax:	011-355 2513
38 Rissik Street, Johannesburg			
2000			
011-355 2572			
Maphata.ramphela@gauteng.gov.za			

Local authority in whose jurisdiction the proposed activity will fall:

Contact person:
Postal address:
Postal code:
Telephone:
E-mail:

Eskom Northern Region		Cell:	-
Annellen Potgieter		Fax:	012-421 3757
P.O. Box 36099, Menlopark, Pretoria			
0102			
012-421 3170			
central@eskom.co.za			

Local authority in whose jurisdiction the proposed activity will fall:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

SANRAL	
Private Bag x 17, Lynnwood Ridge	
0040	Cell: -
012-426 6200	Fax: 012-348 1512
schmidk@nrd.co.za	

Local authority in whose jurisdiction the proposed activity will fall:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Spearnet	
Daniel Ramokone	
Private Bag x 47, Johannesburg	
2000	Cell: 083 276 3763
011-774 4996	Fax: 011-570 7490
Daniel.ramokone@transnet.net	

ANNEXURE D:

Property description list.

Property Description List:

A Part of the Remainder of Portion 70 (A Portion of Portion 29) of the farm Mooiplaats 355 JR.

ANNEXURE E:

Current land use zonings list.

Current land use zonings list:

Agriculture.

**Acknowledgement Letter
From GDARD**



agriculture and rural development

Department: Agriculture and Rural Development
GAUTENG PROVINCE

Diamond Corner Building, 63 Raft & Market Street, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 535-1000

Fax: (011) 535-1000

Website: <http://www.agric.za>

Reference:	Gaut: 002/12-13/EC047
Enquirer:	Justine Chan
Telephone:	(011) 355-1835
Email:	justine.chan@pandora.net

Botswana Landscape Architects and Environmental Consultants

Fax no. 335 570 5659

PER FACSIMILE

Dear Sir / Madam

Application for Environmental Authorisation: Sunderland Ridge extension 29

The Department acknowledges having received the application form for environmental authorisation of the above-mentioned project on 21/05/2012, but final amendments were received on 29/05/2012.

The application has been assigned the reference number Gaut: 002/12-13/EC047. Kindly quote this reference number in any future correspondence in respect of the application.

Please circulate the draft report to any state department that administers a law relating to a matter affecting the environment to comment.

You are required to submit two (2) copies (full colour CDs-PDF) of the Draft Basic Assessment Report as well as proof of submission to state departments referred to above.

In order to determine whether a biodiversity assessment is required and, if so, which specialist studies are required, please send a shapefile (WGS84 datum; geographic co-ordinates system) of the application site to our biodiversity information service (GDACE_BiodiversityInfo@gauteng.gov.za), the e-mail clearly indicating the project

reference number. Where biodiversity assessment is required, please ensure that it is conducted consistent with the *GDACE Requirements for Biodiversity Assessments*. A copy of this document can be obtained by e-mailing GDACE_BiodiversityInfo@gauteng.gov.za

In terms of Regulation 67(1) (2) of the NEMA EIA Regulations 2010, this application will lapse should you fail to submit the requested information within 6 months of the date of signature of this letter, except in the case where the Department has received and accepted written explanation for failure to submit such information.

Please draw the applicant's attention to the fact that the activity may not commence prior to an environmental authorisation being granted by the Department.

Yours faithfully



Boniswa Bolet

Deputy Director: Strategic Administration Support

Date: 28/05/2012

CC: Rugged Property Investments (One) Pty Ltd

Att: FM Keyser

Tel: 012 370 7000

Fax: 086 662 6029

Basic Assessment



Gauteng Department of Agriculture and Rural Development (GDARD)

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, 2010

List of all organs of state and State Departments where the draft report has been submitted, their full contact details and contact person

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2010 and must be submitted together with the application form.
 2. This application form is current as of 2 August 2010. 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 to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken; the submission of such a draft report to such State Departments must be done on the day of submission of the draft report to the competent authority, this Department. (Attach a signed proof of such submission). signed**
 4. 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.
 5. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
 6. An incomplete report may be returned to the applicant for revision.
 7. 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 rejection of the application as provided for in the regulations.
 8. 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.
 9. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
 10. 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.
-

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
P.O. Box 8769
Johannesburg
2000

Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
18th floor Glen Cairn Building
73 Market Street, Johannesburg

Admin Unit telephone number: (011) 355 1345
Department central telephone number: (011) 355 1900

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

(For official use only)

File Reference Number:

Application Number:

Date Received:

(i) Submission to State Department (Section 3 above)

(A) Has a draft report for this application been submitted to all State Department administering a law relating to a matter likely to be affected as a result of the activity?

(B) Is a list of State Departments referred to in section A above been attached to this report,

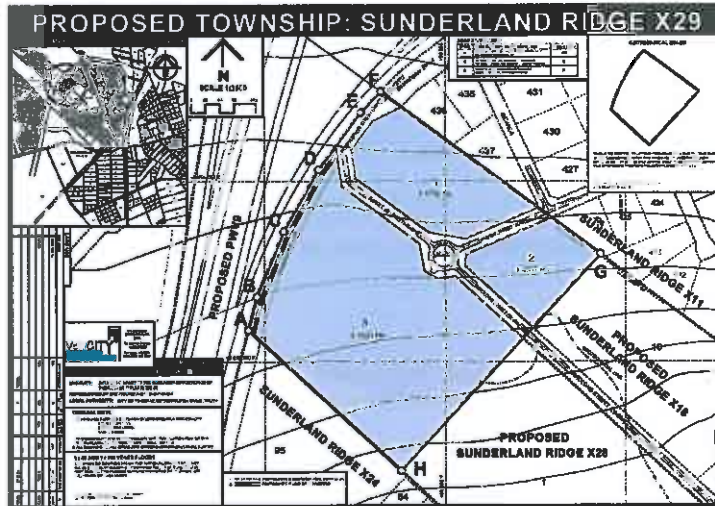
if no, state reasons for not attaching the list.

SECTION A: ACTIVITY INFORMATION

1. ACTIVITY DESCRIPTION

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

Establishment of an Industrial 1 Township to be known as Sunderland Ridge x 29



LAND USE TABLE						
USE ZONE	Erf Number	Total Number of Erven	Min Erf Size (m ²)	Average	Total Area (Ha)	%
Industrial 1	1-3	3	N/A	N/A	12,1355	89,68
Streets	N/A	N/A	N/A	N/A	1,3960	10,32
TOTAL		3	N/A	N/A	13,5315	100,00

Select the appropriate box

The application is for an upgrade The application is for a new Other,

of an existing development development specify

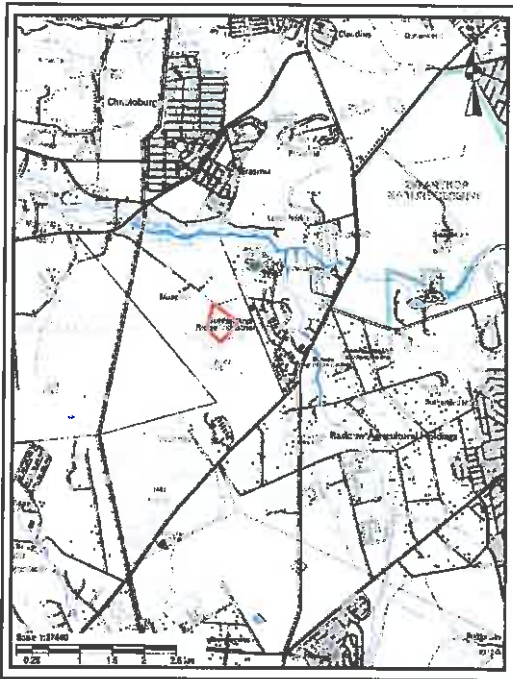


Figure 1: Locality Map



Figure 2: Aerial Map

Describe the activity and associated infrastructure, which is being applied for, in detail

The proposed development is for an "Industrial 1" Township establishment. The township layout makes provision for 3 erven including the reticulation of internal infrastructure as well as Streets on the 13.5315 ha site

The site is located east of the proposed PWV9 road and the Proposed Sunderland Ridge x 11 is situated to the north east of the site. The approved Industrial Township known as Sunderland Ridge x 18 and the proposed Sunderland Ridge x 28 are situated to the south east. The proposed Sunderland Ridge x 24 is situated to the south west of the proposed site.

Activities Applied for

Indicate the number and date of the relevant Government Notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity:
R. 544, 18 June 2010	Activity 9	The construction of facilities or infrastructure exceeding 1000metres in length for the bulk transportation of water, sewage or storm water

		<ul style="list-style-type: none"> i. with an internal diameter of 0,36 metres or more; or ii. with a peak throughput of 120 litres per second or more, <p>excluding where:</p> <ul style="list-style-type: none"> a. such facilities or infrastructure are for bulk transportation of water, sewage or storm water or storm water drainage inside a road reserve; or b. where such construction will occur within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse.
<p>Reason for inclusion: <i>According to the involved civil engineers sewage network is required for the proposed development.</i></p> <p><i>It was decided to retain this activity as part of the activities applied for, because some amendments to the storm water management or to pipelines could be required by DWA and such amendments could trigger additional activities.</i></p>		
R. 544, 18 June 2010	Activity 23	<p>The transformation of undeveloped, vacant or derelict land to</p> <ul style="list-style-type: none"> (i) residential, retail, commercial, recreational, industrial or institutional use, inside an urban area, and where the total area to be transformed is 5 hectares or more, but less than 20 hectares, or (ii) residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares; <p>except where such transformation takes place for linear activities.</p>
<p>Reason for inclusion: <i>The study area is currently vacant and if it is approved it will be transformed to an Industrial 1 Township. The study area is larger than 1 hectare and therefore this activity remains applicable.</i></p>		
R. 544, 18 June 2010	Activity 24	The transformation of land bigger than 1000 square metres in size, to residential,

		<p>retail, commercial, industrial or institutional use, where, at the time of the coming into effect of this Schedule such land was zoned open space, conservation or had an equivalent zoning.</p> <p><i>The application site is surrounded by proposed developments, which comprises of residential units and business/office developments. The aforementioned township is in the process to be developed and lies within the Monavoni Development Framework (Refer to Appendix J). A proposed School development (Monavoni Ext 23) is located north-east of the application site.</i></p>
<p>Reason for exclusion:</p> <p><i>Even though the area to be transformed is bigger than a 1 000 square metres in size the study area is currently zoned as agricultural.</i></p> <p><i>Therefore this activity is excluded as the site is not zoned as open space, conservation or has any equivalent zoning thereof.</i></p>		
<p>R. 546, 18 June 2010</p>	<p>Activity 4</p>	<p>The construction of a road that is wider than 4 meters with a reserve less than 13, 5 metres.</p> <p>(b) In Gauteng:</p> <ul style="list-style-type: none"> (i) A protected area identified in terms of NEMPAA, excluding conservancies; (ii) National Protected Area Expansion Strategy Focus areas; (iii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (iv) Sites identified in terms of the Ramsar Convention; (v) Sites identified as irreplaceable or important in the Gauteng Conservation plan; (vi) Areas larger than 2 hectares zoned for use as public open space; (vii) Areas zoned for a conservation purpose; (viii) Any declared protected area including Municipal or Province Nature Reserves as contemplated by the Environment Conservation Act, 1989

		<p>(Act No. 73 of 1989) and the Nature Conservation Ordinance (Ordinance 12 of 1983)</p> <p>(ix) Any site identified as land with high agricultural potential located within the Agricultural Hubs or Important Agricultural Sites identified in terms of the Gauteng Agricultural Potential Atlas, 2006.</p> <p><i>This assessment identifies all the road upgrading required to accommodate the traffic generated by the proposed development.</i></p>
<p>Reason for inclusion:</p> <p><i>According to GDARD C-Plan information, the study area incorporates some ecological supported areas and it is likely that the proposed development will also trigger some of the activities as listed in Listing Notice 3.</i></p>		

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:	Adminstrating Authority:	Promulgation Date:
National Environmental Management Act No. 107 of 1998	National & Provincial	27 November 1998
<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.</p> <p>The Minister of Environmental Affairs and Tourism passed (in April 2006) Environmental Impact Assessment Regulations¹ (the Regulations) in terms of Chapter 5 of the National Environmental management Act, 1998² (NEMA). The new Regulations came into effect on 3 July 2006.</p> <p>Notice No. R 386 and R 387 of the New Regulations list activities which require that the EIA Process be followed. The Activities listed in Notice No. R 386 requires that a Basic Assessment Process be followed and the Activities listed in Notice No. R 387 requires that the Scoping and EIA process be followed.</p> <p>Implications to the development:</p> <p>Significant - The application for the proposed development consist only of</p>		

activities listed under Notice No. R 386, therefore a Basic Assessment Report will be submitted for the authorization from the Local Authority.

Environmental Impact Assessment Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act No 107 of 1998)	National	2010
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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). The Amended Regulations came into effect on 2 August 2010, and therefore all new applications must be made in terms of the Amended NEMA regulations and not in terms of the 2006 NEMA Regulations or the New Regulations of the ECA. 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 544, R 545 and R 546 of the Amended Regulations list the activities that indicate the process to be followed. The activities listed in Notice No. R 544 requires that a Basic Assessment process be followed and the Activities listed in terms of Notice No. R 545 requires that the Scoping and EIA process be followed. Notice No. 546 has been introduced to make provision for Activities in certain geographical and sensitive areas.

Subsequently, Listing (R. 546) requires that a Basic Assessment Process be followed. It should however be noted that the Draft Guideline Document of DEA [Department of Environmental Affairs, (Previously known as the Department of Environmental Affairs and Tourism)] states that if an activity being applied for is made up of more than one listed activity, and the Scoping and EIA process is required for one or more of these activities, the Scoping and EIA process must be followed for the whole application.

Implications for development:

Significant - The application for the proposed development consist of activities listed under Notice R. 544 (Listing No. 1) and R. 546 (Listing No. 3) and therefore a Basic Assessment Report will be submitted to GDARD for consideration.

National Water Act, 1998 (Act No. 36 of 1998)	National & Provincial	20 August 1998
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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.

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.

Implications for the Development:

Not Significant -The proposed development is not subjected to flood lines of any natural stream or water course within an expected frequency of 1:50 and 1:100 years and therefore in terms of Section 21 of the National Water Act, the developer will not need any water licenses for the proposed development. **(Refer to Figure 3 – Hydrology Map)**



Figure 3 – Hydrology Map

**National Environmental Management:
Air Quality Act, 2004 (Act 39 of 2004)**

**National &
Provincial**

2004

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.

Implications for the development

Significant - During the construction phase, dust and the generation of noise can become a significant factor, especially to the surrounding landowners. However if the development is well planned and the mitigating measures are successfully implemented the proposed development's contribution to air pollution and the generation of air pollution can become less significant.

National Heritage Resources Act, 1999 (Act No. 45 of 1965 (NHRA))	National & Provincial	April 1965
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The National Heritage Resources Act legislates the necessity and heritage impact assessment in areas earmarked for development, which exceed 0.5ha. 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).

Implications for the development

Significant - Although no features of Heritage importance were identified during the Assessment, if any such features are discovered during construction activities and clearing of the application site, the correct "procedures for an Environmental incident" (**at the end of EMP, Appendix H**) must be followed.

National Environmental Management Protected Areas Act, 2003 (Act No. 57 of 2003)	National	2003
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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.

Implications for the development:

Not Significant -This Act will not have to be considered for the application as the study area does not fall in any protected areas.



Figure 4 – Protected areas

National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)

National

2004

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 bioprospecting, and the establishment of a regulatory body on biodiversity- **South African Biodiversity Institute.**

Objectives of the Act:

- (a) With the framework of the National Environmental Management Act, to provide for:**
 - (i) The management and conservation of biological diversity within the Republic and of the components of such biological diversity;
 - (ii) The use of indigenous biological resources in a sustainable manner; and
 - (iii) The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;
- (b) To give effect to ratified international agreements relating to biodiversity 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.

Implications for proposed development:

Significant - No Red Listed plant species were recorded on the proposed development site. The site lies within the 2528CC quarter degree grid cell and the habitat on site was suitable for three of the seven Orange Listed plant species. Only two of these were recorded on site and they are not assigned a conservation status of rare or endangered. The Red Listed, *Drimia sanguinea*, was recorded north of the site. The specialist recommended a 200m buffer area for this species. Two large multi-stemmed *Searsia lancea* specimens were observed during the site visit and should preferably be included in an open space area. However, from an Environmental point of view it is recommended that these red listed plant species be relocated and the large trees be part of the landscaping and layout plan. Therefore with approval of the Environmental Authorization the status of these recommendations will be known and it will be implemented accordingly.

GDARD Draft Ridges Policy	Provincial	2007
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The main purpose of the draft Red Data Policy is to protect red data plant species in Gauteng Province. This policy requires that red data species remain in situ and it gives priority ratings (based on where they occur) to the different Red Data species. If Red Data species are discovered on the study area this policy will have relevance and it should be described in detail as to how it is applicable to this project in the BA report.



Figure 5 – Ridges

Implications for the development

The policy will not have to be considered for the application as the study area does not fall on a ridge or in a buffer zone of any ridge.

Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	National	1 June 1983
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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.

Implications for the development

Not Significant – According to the Gauteng Agricultural Potential Atlas (GAPA 3), Sunderland Ridge Extension 29 Development is located on high potential for Agricultural land. In addition, GIS Data and GIDS data from GDARD also clearly indicates that the development is located with in the Gauteng Urban Edge (2010), and does not fall within any of the Seven Agriculture Hubs identified for the Gauteng province.

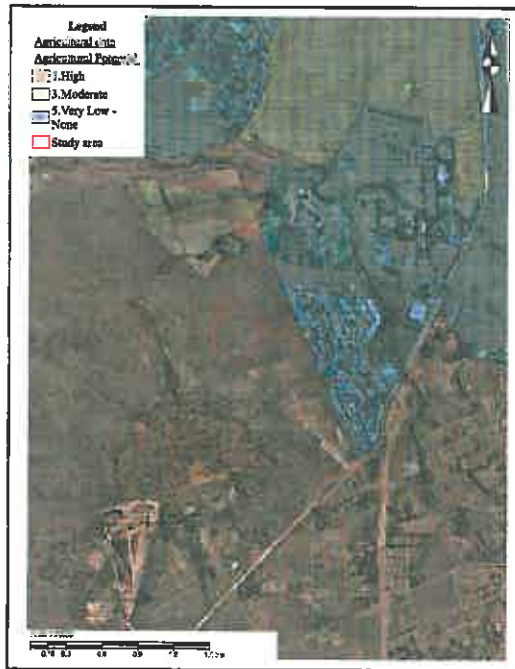


Figure 6 – Agricultural Potential

GDARD Agricultural Hub Policy	Provincial	2006
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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 hubs areas. Urban development is usually not supported in these hubs.

Implications for the development

Not significant - The study area is not situated within any of the 7 agricultural hubs identified for Gauteng.



Figure 7 – Agricultural Hubs

Gauteng Urban Edge 2008 / 2009	Provincial	2009
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According to Mr. Neels du Toit of the Gauteng Department of Economic Development the urban edge is now delineated on a yearly basis and it is the responsibility of the local authorities to request for a yearly amendment to the urban edge.

From this year onwards the urban edge will be reviewed at the end of September and it will be adjusted to be in accordance with the proposals supplied by the various local authorities.

Implication for the development:

Significant - The study area is included into the urban edge as indicated on the spatial development framework, the 2007 provincial urban edge and into the revised 2008 / 2009 urban edge. The proposed development is regarded as in line with this policy.



Figure 8 – Urban Edge

**National Environmental Management:
Waste Act (Act 59 of 2009)**

National

**11 June
2010**

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:

- 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;
- Addressing reduction, reuse, recycling and recovery of waste;
- The requirements for industry and local government to prepare integrated waste management plans;
- The establishment of control over contaminated land;
- 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;
- 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
- The establishment of a national waste information system.

Implication for the development:

Not Significant – No waste management license will be required during the construction or operational phases of the proposed Township. Due to the fact that a limited amount of solid construction waste will be stored and handled on the site, before it is hauled away and dumped at the nearest registered landfill site.

Red List Plant Species Guidelines	Provincial	26 June 2006
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The purpose of these guidelines is to promote the conservation of Red List Plant Species in Gauteng, which are species of flora that face risk of extinction in the wild. By protecting Red List Plant Species, conservation of diverse landscapes is promoted which forms part of the overall environmental preservation of diverse ecosystems, habitats, communities, populations, species and genes in Gauteng.

These Guidelines are intended to provide a decision-making support tool to any person or organization that is responsible for managing, or whose actions affect, areas in Gauteng where populations of Red List Plant Species grow, whether such person or organization be an organ of state or private entity or individual; thereby enabling the conservation of the Red List Plant Species that occur in Gauteng.

Implication for the development:

Significant - A red listed plant species, *Drimia sanguinea*, was recorded north of the proposed development site. The northern corner of the study site will encroach the 200m buffer for the red listed plant species.

However, this is not considered feasible as the Future Road PWV9 will in the near future be developed on the north western boundary of the proposed development site. Therefore the 200m buffer will not only encroach the proposed development site but also this buffer will be right next to the future PWV9 road and the species will therefore experience all the impacts associated with road construction and ongoing traffic of humans and vehicles. Consequently it was thought best to relocate the red data plant species out of the proposed development area and future development to a location where the habitat is associated with this species, in order to conserve the species.

Gauteng Noise Control Regulations, 1999	Provincial	1999
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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.

Implications for the Development:

Not Significant - Within the construction phase of the proposed development, the impact of noise could be problematic, but such impacts are generally short

term. One should note that practical mitigation measures for noise pollution are low, but certain measures can be implemented to mitigate the severity. **(Please Refer to Appendix H (EMP) for a list of suitable guidelines and mitigation measures)**

The Gauteng Transport Infrastructure Act, 2001	Provincial	2001
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The Act was created to consolidate the laws relating to roads and other types of transport infrastructure in Gauteng; and to provide for the planning, design, development, construction, financing, management, control, maintenance, protection and rehabilitation of provincial roads, railway lines and other transport infrastructure in Gauteng; and to provide for matter connected therewith.

Implications for the proposed development

Significant - All developments in Gauteng must take the Gauteng Road network as published into consideration and no development may be planned across any provincial or K-route.



Figure 9 – Roads and Railways

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.

Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, operational or other(provide details of "other")	Description
1	Proposal	Industrial 1
2	Alternative 2	Mixed uses/ Residential

NOTE: The numbering in the above table must be consistently applied throughout the application report and process

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:

Alternative:

Alternative 1(Proposed activity)

Size of the activity:

13.5315
13.5315

Ha

Alternative 2 (if any)

Alternative 3 (if any)

or, for linear activities:

Alternative:

Alternative 1(Proposed activity)

Alternative 2 (if any)

Alternative 3 (if any)

Length of the activity:

m/km

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

Alternative:

Alternative 1(Proposed activity)

Alternative 2 (if any)

Alternative 3 (if any)

Size of the site/servitude:

13.5315
13.5315

Ha/m²

5. SITE ACCESS

Alternative 1 (Proposal)

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

YES	NO
X	
	m

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

Describe the type of access road planned:

Access to the proposed development will be obtained from Sunderland Ridge x 18 through Baralong Road.

Include the position of the access road on the site plan.

Alternative 2

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

YES	
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X	
	m

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

Describe the type of access road planned:

Access to the proposed development will be obtained from Sunderland Ridge x 18 through Baralong Road.

Include the position of the access road on the site plan.

Alternative 3

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.

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. SITE 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 as Appendix A to this document. The site or route plans must indicate the following:

- the scale of the plan, which must be at least a scale of 1:2000 (scale cannot be larger than 1:2000 i.e. scale cannot be 1:2500 but could where applicable be 1:1500)
- the property boundaries and numbers of all the properties within 50m of the site;
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- the exact position of each element of the application 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, street lights, sewage pipelines, septic tanks, storm water infrastructure and telecommunication infrastructure;
- walls and fencing including details of the height and construction material;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites 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);
- for gentle slopes the 1m contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- the positions from where photographs of the site were taken.
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the 32m position from the bank to be clearly indicated)

7. SITE PHOTOGRAPHS

Colour photographs from the centre 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.

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.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal

Further:

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 2 is to be completed and attached in a chronological order; then
- all significantly different environments identified for Alternative 3 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)

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

1. PROPERTY DESCRIPTION

Property description:

A Part of the Remainder of Portion 70 (A Portion of Portion 29) of the farm Mooiplaats 355 JR.

(Farm name, portion etc.)

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:

Latitude (S):	Longitude (E):
25,832521°S	28,085810E

In the case of linear activities:

Alternative:

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

Latitude (S):	Longitude (E):

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

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	1:50 – 1:20	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	Undulating plain/low hills	River front
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5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

REFER TO APPENDIX I: FIGURE 10 – SOILS MAP



Figure 10 – Soils Map

Please note for clarity purposes all figures within the Basic Assessment for Sunderland Ridge Ext 29 is in a larger format at the back of the Report as Appendix I.

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

YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	NO
YES	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).

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

YES	NO
-----	----

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	NO
-----	----

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	NO
-----	----

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

The 1:50 000 Geological Map indicates that the site is underlain by dolomite bedrock and its weathering products of the Chuniespoort Group, Transvaal Super Group into which syenite sills have intruded. It seems that the chertrich Monte Christo Formation characterize the site.

A Geotechnical study is being conducted and it is recommended that the proposed development be approved and it should be made a recommendation of the ROD that the Geotechnical study should be approved and accepted by GDARD and the relevant stakeholders (i.e. CoT and DWA).

6. AGRICULTURE

REFER TO APPENDIX I: FIGURE 11 – AGRICULTURAL POTENTIAL MAP

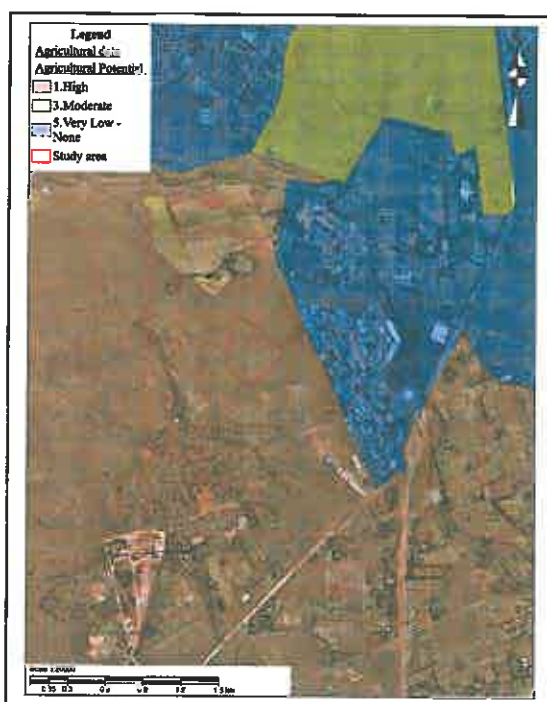


Figure 11 – Agricultural Potential Map

Does the site have high potential agricultural soils as contemplated in the Gauteng Agricultural Potential Atlas (GAPA)? **YES** **NO**

Please note: The Department may request specialist input/studies depending on the nature of the soil type and location of the site

Implications for the development

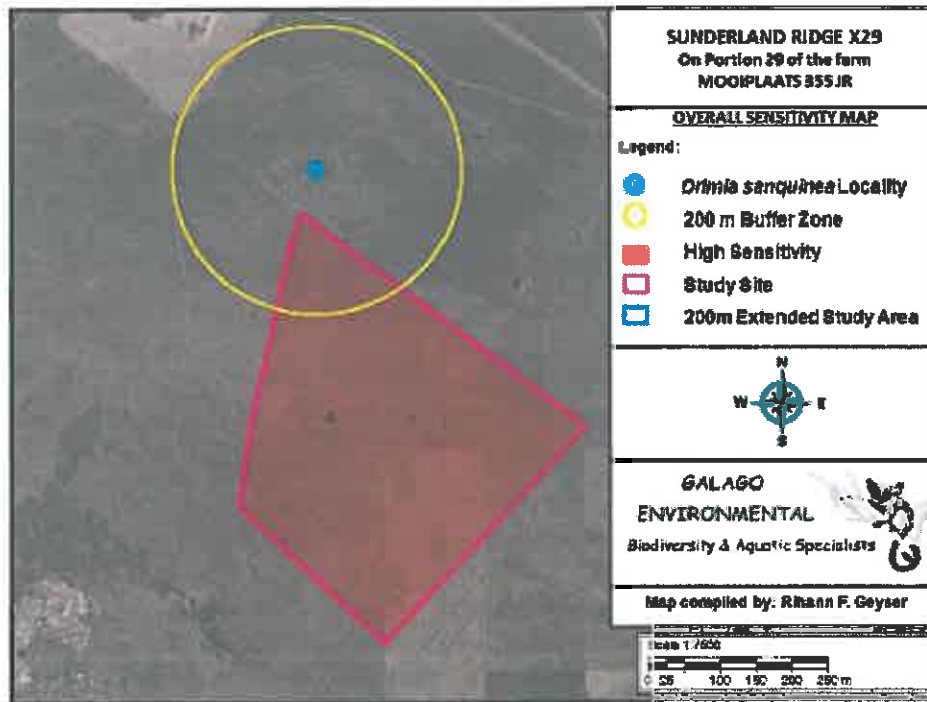
No Agricultural Potential Study was conducted for the proposed development due to the following:

- The proposed development site under application is still rural of nature, with no landowners/ tenants practicing agricultural activities;
- The proposed application is too small for economic viable Agricultural Activities:

- The application site is situated within an area underline by the dolomitic conditions, and extensive irrigation of such soils is not supported;
- The Agricultural Potential of the proposed application site according to GAPA version 3 indicates a High Agricultural Potential;
- The proposed development has been identified as Industrial and commercial development zone within the Monavoni and Western Farms Development Framework 2020.
- The proposed development sites are located within the Gauteng urban Edge (2010), and not located within any of the seven Agriculture Hubs Identified for the Gauteng Province. (Please refer to figure 11 – Urban Edge Map)

7. GROUNDCOVER

REFER TO APPENDIX I: FIGURE 12 – VEGETATION GROUNDCOVER MAP



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 % = 92	Natural veld with heavy alien infestation % =	Veld dominated by alien species % = 8	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

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	NO X
-----	----------------

Refer to Appendix G1: Biodiversity Assessment
 Refer to Appendix G2: Avifaunal Habitat Assessment
 Refer to Appendix G3: Herpetofauna Habitat Scan
 Refer to Appendix G4: Mammal Habitat Scan
 Refer to Appendix G5: Flora Assessment

If YES, specify and explain: Note: Although the answer is no, it was decided to supply some detail regarding the fauna and flora of the study area.

No Red Listed plant species were recorded on the proposed development site. The site lies within the 2528CC quarter degree grid cell and the habitat on site was suitable for three of the seven Orange Listed plant species. Only two of these were recorded on site and they are not assigned a conservation status of rare or endangered. The site is described as Mixed *Eragrostis* Grassland and classified as Carltonville Dolomite Grassland by Mucina and Rutherford (2006). This vulnerable vegetation type is considered a species-rich grassland where a quarter of the vegetation type is transformed by cultivation, urbanization and mining. The entire study area is marked as highly sensitive due to the Mixed *Eragrostis* grassland study unit on the site that was pristine with connectivity in all directions. The pockets of red Kalahari sand form suitable habitat for the Red List capparid species *Cleome conrathii* that was found in December 2010 on the neighbouring farm Hoekplaats 384-JR in an unrelated survey. This connectivity is considered not applicable as the properties to the west are approved townships and the proposed PWV9 road will also break the connectivity. However, it will be recommended that the landscaping will incorporate the two large trees and natural veld grass into the development. An open space area on the western side of the site is recommended to conserve the large tree and natural grassland.

The Red Listed, *Drimia sanguinea*, was recorded north of the site. The specialist recommended a 200m buffer area for this species. Two large multi-stemmed *Searsia lancea* specimens were observed during the site visit and should preferably be included in an open space area. It is recommended by the specialist that areas used for development on the site should still promote connectivity between the grasslands on site and neighbouring properties.

Regarding the Red Listed plant species, *Drimia sanguinea*, it seems to be a rather abundant plant species in the Sunderland Ridge region as another group of species was recorded north of Sunderland Region Extension 30. According to the South African National Biodiversity Institute (SANBI) the Red Listed plant species, *Drimia sanguinea*, is extensively harvested for its medicinal value and muthi. The traders have found *D. sanguinea* to be not as sensitive to disturbance and removal compared to other *Drimia* species. It was also mentioned that it will flower in a greenhouse after it has been

harvested (50-60% of bulbs in the greenhouse were observed to have flowered). If it becomes known to the neighbouring residents of informal settlements that this particular plant species is popular for muthi it would not be viable to protect a species adjacent to such an area as it will be harvested to extinction in a short period of time. Apart from the Red Listed plant species' medicinal uses, maintaining the buffer around the *Drimia sanguinea* (thus excluding development actions) is not considered feasible as the Future Road PWV9 will in the near future be developed on the north western boundary of the proposed development site. Therefore the 200m buffer will not only encroach the proposed development site but also this buffer will be right next to the future PWV9 road and the species will therefore experience all the impacts associated with road construction and ongoing traffic of humans and vehicles. Consequently it was thought best to relocate the red data plant species out of the proposed development area and future development to a location where the habitat is associated with this species, in order to conserve the species. It is therefore proposed that the Red Listed individuals north of the proposed development should be relocated to an area where the conservation of these plant species will be first priority.

Therefore we are of the opinion as mentioned above that the proposed relocation of the species which would in any way be destroyed, creates the ideal opportunity to experiment with suitable relocation techniques (hand on recommendations and on site – supervisor of expertise) that are species specific (as a pilot project) in order to test the relocation possibilities of such endangered species. It would be foolish to test the relocation of such species located in habitats that are protected, pristine or well linked with larger open space systems. On such sites the in-situ policy must be adhered to at all times. Sites with unfavorable conditions (in example areas surrounded by development, areas threatened by illegal settlements, areas subject to littering/ dumping, areas situated from the longer open space system/networks) create ideal opportunities for experimental relocations and such pilot projects will in the long term assist conservationists to ensure successful reproduction of such plants, if such relation methods prove to be successful.

If the relocation of the *Drimia sanguinea* species is approved, the following suggestions are made regarding the locations where the Red Listed species can possibly be relocated to:

- A suitable protected area, excluded from future developments, where the habitat is desirable and suited for the Red Listed *Drimia sanguinea*;
- The South African National Biodiversity Institute (SANBI) or the National Botanical Gardens (in Pretoria) can be approached to assist with potential locations or possibly relocating the individuals to the Botanical Garden itself.

A desktop survey was conducted for mammals and herpetofauna. A full survey for mammals is deemed unnecessary. The proposed development will result in a degree of environmental and faunal loss, but that is regarded as of no significance, since the site is considered low in mammal sensitivity. According to the herpetofauna desktop study it is highly unlikely that any snakes occurs on the proposed development site.

The wetlands or any other waterbody is situated more than 500m from the proposed development site and therefore the site will not be the permanent habitat of the, now a Least Concern amphibian species, the giant bullfrog. The same connectivity between the grasslands on site and neighbouring properties is recommended for the bullfrogs as for the flora, if this species should cross this site for feeding and aestivation. Nevertheless, should a bullfrog be found on the site during the construction or operational phase it must be reported and then relocated to a suitable site. The surface water runoff from the development site might have a negative impact on the herpetofauna downstream. The construction of retention ponds will improve the quality of water from the discharge that is released into the Hennops River. If this amphibian species should occur on the site, the proposed PWV9 road will pose a threat to this species through possible road kills and decreasing the recommended connectivity. Even though, it will be recommended that a condition of the ROD should include a specialist investigation prior to the clearing of vegetation and start of construction to determine whether there are any bullfrogs on site. Should any bullfrogs be found during the construction phase, it should be reported to the relevant authority and a license for relocation should be obtained.

An avifaunal study was conducted on the proposed development site. Melodious Lark (*Mirafra cheniana*) is a Red Data avifaunal species for which suitable foraging habitat was confirmed on the study site and within the 500m extended study site. This is however a non-priority Red Data avifaunal species according to GDARD. None of the other Red Data species (according to the quarter degree grid cell 2528CC) are likely to occur on the site.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban edge, May 2002) or within 600m (if outside the urban edge, May 2002) radius of the site	YES	NO
	X	

If YES, specify and explain:

The Red Listed, *Drimia sanguinea*, was recorded north of the site, approximately 50m from the northern corner. The specialist recommended a 200m buffer area for this species. It is recommended by the specialist that areas used for development on the site should still promote connectivity between the grasslands on site and neighbouring properties.

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

A 200m buffer for this red listed plant species does not seem like a feasible option as the proposed PWV9 road is aligned to the north western corner of the site (see layout map/sensitivity map on cover letter). This road is planned towards this species' location and the entire population not just the buffer will be affected. The connectivity issue (as stated in the flora and other ecological reports) is considered not applicable as the properties to the west are approved townships and the proposed PWV9 road will also break the connectivity. It is therefore recommended that this species should be relocated as mentioned above.

Are there any special or sensitive habitats or other natural features present on the site? YES NO

If YES, specify and explain:

Was a specialist consulted to assist with completing this section? YES NO
X

If yes complete specialist details:

Name of the specialist:	Mrs. P. Lemmer (Botany)		
Qualification(s) of the specialist: Professional Registration	B.Sc. (Botany) Cert. Sci. Nat.		
Postal address:	638 Turf Street		
Postal code:	0181		
Telephone:	(012) 345 4891	Cell:	Not available
E-mail:	Vanessam@lantic.net	Fax:	086 675 6136

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: **February 2013**

Name of the specialist:	I.L. Rautenbach		
Qualification(s) of the specialist: Professional Registration	Pr. Sci. Nat. Ph.D. T.H.E.D.		
Postal address:	638 Turf Street		
Postal code:	0181		
Telephone:	(012) 345 4891	Cell:	Not available
E-mail:	Vanessam@lantic.net	Fax:	086 675 6136



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: **January 2013**

Name of the specialist:	Mr. J.C.P van Wyk		
Qualification(s) of the specialist: Professional Registration	Pri. Sci. Nat: M.Sc		
Postal address:	638 Turf Street		
Postal code:	0181		
Telephone:	(012) 345 4891	Cell:	Not available
E-mail:	Vanessam@lantic.net	Fax:	086 675 6136

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

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:	February 2013
Name of the specialist:	Mr. R.F. Geyser (Ornithology)		
Qualification(s) of the specialist: Professional Registration			
Postal address:	638 Turf Street		
Postal code:	0181		
Telephone:	(012) 345 4891	Cell:	Not available
E-mail:	Vanessam@lantic.net	Fax:	086 675 6136
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:	February 2013

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

8. LAND USE CHARACTER OF SURROUNDING AREA

REFER TO APPENDIX I: FIGURE 13 – SURROUNDING LAND-USES MAPS

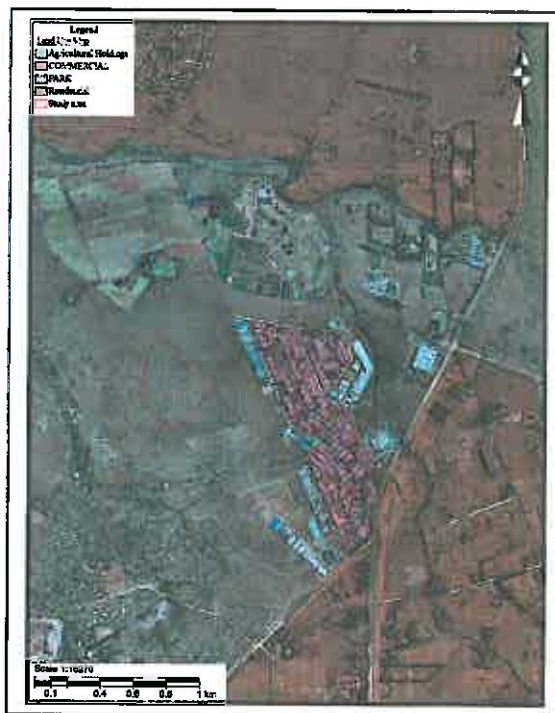


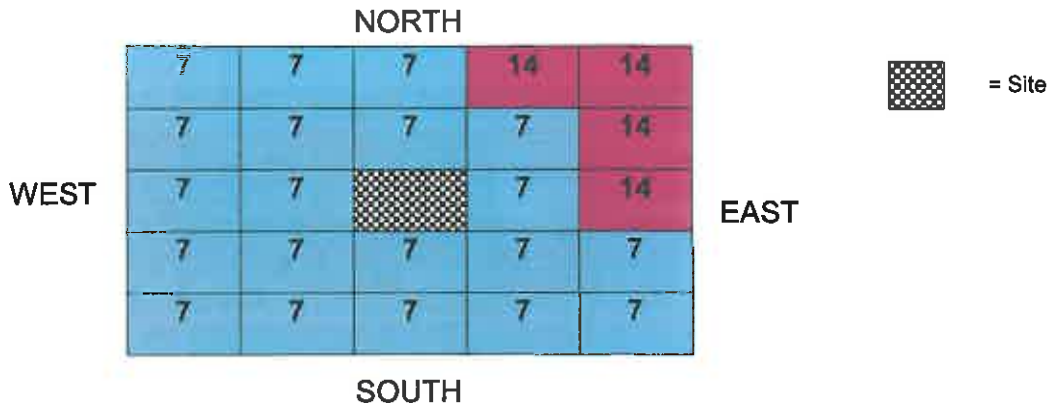
Figure 13 – Surrounding Land-use Map

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

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

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

NOTE: Each block represents an area of 250m X250m



Note: More than one (1) Land-use may be indicated in a block

Please note: The 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 ^{AN} and with an ^N respectively.

Have specialist reports been attached

YES	NO
X	

If yes indicate the type of reports below

Biodiversity Assessment (Appendix G1)
Avifaunal Habitat Assessment (Appendix G2)
Herpetofauna Habitat Scan (Appendix G3)
Mammal Habitat Scan (Appendix G4)
Flora Assessment (Appendix G5)

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.

The application site is currently vacant and is surrounded by industrial and commercial land uses to the east and vacant to the north, south and west. A couple of planned (proclaimed) industrial townships i.e. approved Sunderland Ridge x 18, Proposed Sunderland Ridge x 28, Sunderland Ridge x 24 and Sunderland Ridge x 11 about the proposed site which in effect will eliminate urban sprawling to some extent.

The proposed development will uplift the area aesthetically and economically and it will probably create an interest for other developers and attract them to the area. This will have a very positive financial influence on the area.

A prominent character of the Sunderland Ridge area where the application site is located is light industrial and commercial townships. There are few vacant land parcels within the Sunderland Ridge Industrial area that are suitable for the development currently either not well maintained or plagued by informal settlements. Thus these land parcels should be utilized as the provision of municipal becomes more viable with an increase in the industrial density through infill development. By adding additional light industrial stands, available municipal services and infrastructure will be optimally utilized.

The developer recognised the need and desirability for an "Industrial 1" development as the area has been classified by the Sunderland Ridge Development Framework 2020 as an Industrial/ Commercial development zone. Residential and Commercial uses are situated further to the north, south and east.

The Centurion West Area has experienced a major boom in the residential, commercial, retail and industrial sectors and during the past 5 to 10 years and is still developing despite the current economic climate. Current planning legislation and development plans for the area have added value and secured the investment potential of the area for the period of 2008-2020 (MWFDF, 2008). Thereby, creating a need for erven zoned for industrial and commercial.

The proposed Sunderland Ridge x 29 will generate additional income for the CTMM through additional rates and taxes levied on the additional industrial and commercial stands. By approving the proposed township establishment the value of the application site is increased, thereby increasing the economic base of the Municipality.

Furthermore, the development can be of economic importance to the surrounding community and the area as a whole. The proposed development will contribute by means of job opportunities during the operational phase; and construction phase for construction related workers (skilled, semi-skilled and un-skilled individuals).

Together these factors make the application site a desirable location for development.

Tshwane Densification and Compaction Strategy

Is specifically focused on addressing development within the urban area and is therefore specifically relevant in as far as Sunderland Ridge x 29 is concerned.

The following aspects are considered to be key directives for the Tshwane Densification and Compacting Strategy:

- Minimise unmanaged or unfocussed urban growth;
- Create opportunities for the densification of existing low density areas,
- Promote higher density and integrated environments with typical urban characteristics to counteract suburban developments,
- Ensure that residents have access to a range of choices with regard to housing typologies as well as locations;
- Integrate residential development, movement systems, social facilities and employment opportunities;
- Focus residential densification around areas of opportunity (economic opportunity, transport opportunity etc).

Furthermore the proposed application site is not affected by any sensitive features such as ridges, Rocky outcrops or wetlands/rivers. The proposed development site has been extensively disturbed by means of human activity.

The development of the application site will effectively contribute to more effective utilization of the available infrastructure and services within the area. The application site is also well located in regards to major traffic routes in the area.

Integrated Development Plan

The Integrated Development Plan (LIDP) for the City of Tshwane Metropolitan Municipality was approved by the MEC: Gauteng Department of Planning and Local Government in May 2002, provides broad strategies and visions for a city, and is done in conjunction with the community through a public

participation process. The site is situated within the urban edge. The LIDP identifies certain objectives for which compliance therewith is self-explanatory and can be summarized as follows:

- Strengthen and developed nodes of mixed land-use patterns.
- The optimal use of the existing road network, as well as other existing infrastructure.
- The integration, infill and densification of land to ensure the viability of services.
- The management of development in an environmentally sustainable manner.

The proposed land use for the application site correlates to the envisaged development for the area and utilize these principles listed as important considerations.

Spatial Development Framework: Southern Region

The location of the application site spatially demarcates the area to form part of Tshwane's Southern Region. The urban development framework for this area is based on an integrated urban lattice on which densification and intensification of development can take place in an integrated manner.

The lattice development concepts consists of an interconnected system of development corridors along highways, mobility spines, mobility roads, activity spines and activity streets as well as strategically placed nodes serving as pull factors in the network.

Accordingly the urban lattice is based on the four following elements:

- A latticed configuration – maximizing access, movement and development choices;
- A Nodal Structure – guiding intense development to specific locations and linked to increased accessibility;
- A precinct strategy – creating a diverse character along spines; and
- Integrated and phased in public transport – creating opportunities for multiple connections.

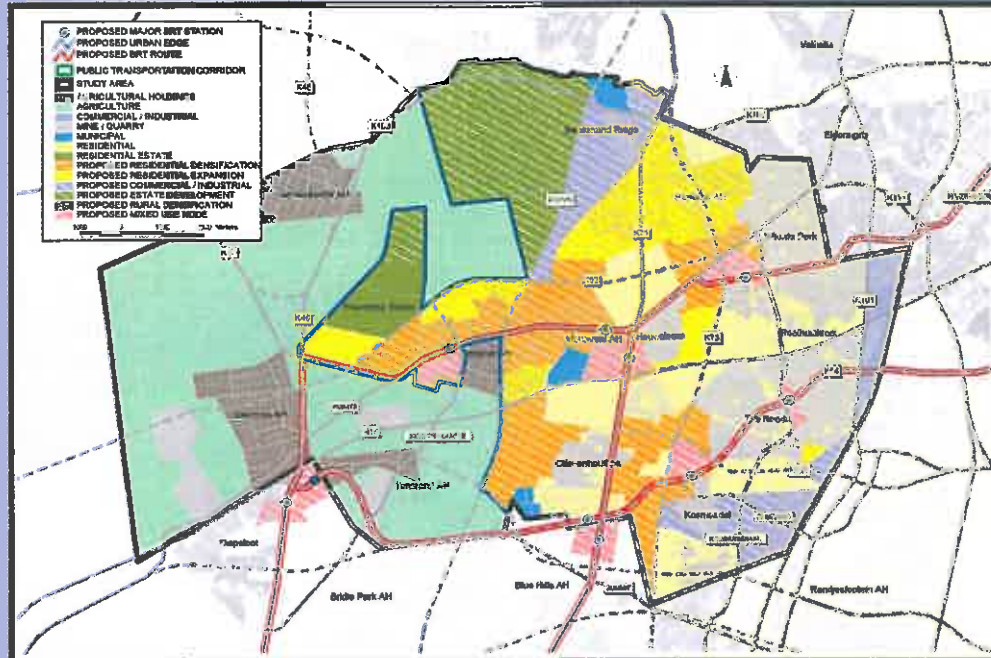
Micro Development Context.

From a micro contextual perspective Sunderland Ridge x 29 is located in the centre of a vast proposed Industrial/ Commercial area at an easily accessible intersection.

Sunderland Ridge Development Framework 2020

This is the latest development framework to guide development within the Sunderland Ridge area, which includes the application site. Although this framework has not yet been formally approved, it is envisaged to dictate the future development in the area within the next few years.

The figure below is an indication of the proposed development of the Sunderland Ridge area.



This development framework largely focuses on several aspects for the area, which include principles for:

- **TRANSPORTATION DEVELOPMENT** – An extensive transport system is envisaged for the area including both north-south and east-west linkages that will improve the access to the area as well as internal movement within the area. These roads include freeways, distributor roads and collector roads.
- **ESTIMATED POPULATION GROWTH** – An average growth rate of 5.2% was predicted for the area that will lead to an estimated increase of 49000 households for the area by 2020.
- **SETTLEMENT EXPANSION** – It is estimated that approximately 3100ha of land for urban expansion will be required to house the estimated population growth up to the year 2020.
- **PUBLIC TRANSPORT** – The introduction of BRT (bus rapid transport) routes is envisaged for the area. It is therefore important to adequately

develop the area to ensure that a population mass exists to ensure that the public transport can be feasible and used optimally.

- **NODAL DEVELOPMENT** – These nodes aim to serve local communities with employment and recreational opportunities as well as community facilities. These nodes have been strategically located to ensure easy access to residents. The locality of these nodes has an impact on the proposed surrounding residential densities.

The purpose of our application is therefore to develop the site in line with the proposed **SUDNERLAND RIDGE DEVELOPMENT FRAMEWORK 2020** and the envisaged development of the area by the Council. The application site falls within an area that has been earmarked for Industrial/ Commercial uses that are permitted in this area, thus is the application in line with the envisaged development for the area.

City of Tshwane Open Space Framework – (June 2005)

The aim of the Tshwane Open Space Framework (TOSF) is to establish a thorough understanding on the intrinsic value of Open Space and to then develop a visionary roadmap towards the creation of an exceptional Open Space network for the city and its people.

The following objectives for the study have been identified:

- Create a detailed data and information base on all Open Spaces within the metropolitan area, including conservation areas and strategically important Open Space resources as noted within the Gauteng Open Space Plan and the Gauteng Conservation Plan (C-Plan);
- Establish the status of the CTMM's Open Space resources as a vital and valuable physical and economic resource within the metropolitan area;
- Develop an Open Space network based on a defined vision, goals, principles, typologies and categories on metropolitan and regional scale;
- Develop Principles and Policy Statements as a basis for consistent and integrated decision making by the local authority regarding issues affecting Open Space resources;
- Provide Principles and Policy Statements as a basis for informing all scales of land use and infrastructure planning and development;
- Provide an Institutional and Management Framework to ensure the effective and collaborative planning, implementation and administration of the Open Space network;
- Inform the acquisition and disposal of Open Space; and
- Provide a Framework within which development activities within the city

comply with the National Environmental Management Amendment Act, 2004 (Act 8 of 2004).

The TOSF identifies the following networks:

- Green Network
- Blue Network
- Brown Network
- Grey Network
- Red Network

GREEN NETWORK

- **Green Nodes** - Green Nodes are areas within which ecological systems, processes and value are concentrated. They include important habitats for fauna and flora, and areas representative of local biomes, vegetation types and high ecological sensitivity such as Protected Areas, GDARD Irreplaceable and Important sites.

Green Nodes should not be confused with landscaped areas such as parks which have high socio-economic value and are cultivated.

- **Green Ways** - Green Ways consist of ridge systems. Such ridges are defined as areas steeper than 5 degrees in which ecological systems processes and values are concentrated. Green Ways also represent important habitats for fauna and flora, areas representative of local biomes, vegetation types and high ecological sensitivity as well as areas of linkage and connectivity.

BLUE NETWORK:

- **Blue Nodes** - Blue Nodes include dams, wetlands, peat-lands as well as any area defined by the presence of a permanent water body or water saturated soils, housing aquatic fauna and flora. Blue Nodes should not be confused with areas for the outright purpose of storm-water management.
- **Blue Ways** - Blue Ways include all watercourses (rivers and spruit areas) in the city irrespective of their character and order. Such areas are defined by natural contour low points and the 1:50 year flood-line or 32 meters from the centre line of the Blue Way, whichever is the greatest. It accommodates permanent and perennial water flow and do not include channels and canals constructed purely for storm-water

purposes

BROWN NETWORK:

Brown Node - Brown Nodes include predominantly informal and formalised recreational Open Spaces, (such as resorts, recreational parks, and sport facilities) as well as socio-economic centres (such as urban cores).

Brown Way - Brown Ways include different types of “movement” space, the most important being corridors, linkages, activity streets, collector roads, their full road reserves and adjacent Open Space elements.

GREY NETWORKS:

Grey Node - Grey Nodes include open space with services and urban utilities such as water reservoirs, quarries, landfill sites and cemeteries.

Grey Way - Grey Ways include open space with service and urban utilities such as railway lines and servitudes.

RED NETWORKS:

Red Node - Red Nodes consist of the most important “Place-making moments” in the city structure. They are well defined in terms of geographical setting, spatial features, and historical relevance and include landmarks, gateways, squares and culture historical elements or places.

Red Way - Red Ways include ceremonial routes and boulevards that link symbolic elements (Red Nodes) or Brown Nodes.

The TOSF indicate that there is no sensitive Green, Blue, Brown, Grey or Red Nodes situated on the proposed application site. Though, the proposed development Sunderland Ridge x 29 is situated on a Brown way the proposed PWV 9 and is in close proximity to another Brown Way the R55.

The proposal of Sunderland Ridge x 29 for an Industrial Development could therefore be seen as in line with the Tshwane Open Space Framework (TOSF).

10. CULTURAL/HISTORICAL FEATURES

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

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, power-line, 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?

YES	NO X
-----	----------------

If YES, explain:

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:

No cultural heritage resources or graves older than sixty years were found on the proposed development area but should any such features be discovered during construction activities and clearing of the application site, the correct "procedures for an Environmental incident" (at the end of EMP, Appendix H) must be followed.

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

YES	NO X
YES	NO X

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

1. ADVERTISEMENT

The Environmental Assessment Practitioner must follow any relevant guidelines adopted by the competent authority in respect of public participation and must at least –

- 1(a) Fix a notice in a conspicuous place, on the property where it is intended to undertake the activity which states that an application will be submitted to the competent authority in terms of these regulations and which provides information on the proposed nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations on the application may be made.
- 1(b) inform landowners and occupiers of adjacent land of the applicant's intention to submit an application to the competent authority
- 1(c) inform landowners and occupiers of land within 100 metres of the boundary of the property where it is proposed to undertake the activity and whom may be directly affected by the proposed activity of the applicant's intention to submit an application to the competent authority;
- 1(d) inform the ward councillor and any organisation that represents the community in the area of the applicant's intention to submit an application to the competent authority;
- 1(e) inform the municipality which has jurisdiction over the area in which the proposed activity will be undertaken of the applicant's intention to submit an application to the competent authority; and
- 1(f) inform any organ of state that may have jurisdiction over any aspect of the activity of the applicant's intention to submit an application to the competent authority; and
- 1(g) place a notice in one local newspaper and any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of these regulations.

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 30 (thirty) calendar days before the submission of the application.

Has any comment been received from the local authority?

YES	NO
X	

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

The Draft Basic Assessment Report was submitted to the City of Tshwane (CoT) on 31 August 2012. Comments on the Draft Basic Assessment Report were received by CoT on 12 November 2012. Please refer to Appendix E for the Comments and Issues Register.

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

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3. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?

YES	NO
X	

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

The Draft Basic Assessment Report was submitted to the Department of Water Affairs (DWA) on 31 August 2012. Comments on the Draft Basic Assessment Report were received by the Department on 24 October 2012. Please refer to Appendix E for the Comments and Issues Register.

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 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 inadequate.

The practitioner must record all comments and respond to each comment of the public / interested and affected party before the application 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 to those persons detailed in 1(b) to 1(f) above
- Appendix 3 – Proof of newspaper advertisements
- Appendix 4 – Communications to and from persons detailed in Point 2 and 3 above
- 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

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal

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)

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?

YES	NO
X	

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

Not Available	
---------------	--

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

During the construction phase the disposal of solid waste will be the responsibility of the developer. An area on the application site will be earmarked for dumping of solid waste to be disposed of during construction. This area must be situated carefully not to be visual from the surrounding residents. The demarcated area must be easily accessible for dumping trucks to collect waste. The waste will be carted to registered landfill site. During the operational phase all disposal of solid waste will be the responsibility of the Local Authority.

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

All construction solid waste will be disposed of at the nearest registered dumping site. No solid waste will be dumped on surrounding open areas or adjacent properties.

Will the activity produce solid waste during its operational phase?

YES	NO
X	

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

218.44 m ³ /day	
----------------------------	--

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

All the waste will be collected within the proposed development, where the relevant service provider will collect and dispose the waste once a week.

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	NO
<input type="checkbox"/>	<input type="checkbox"/>

The Waste Group landfill Site:

There are +- 5 million m³ of airspace available on phase 1.
 More than sufficient to accommodate the proposed developments in the Sunderland Ridge area.
 The waste group landfill site are the closest, thus they can collect the solid waste as well as recycling reducing therefore the solid waste streams and carbon footprint.
 Composting of Greens can also be accommodated.
 Waste Group can thus do the physical collection as well as Landfill facility provision.

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

The solid waste will be collected in bins on the application site and then dumped at the nearest dumping/landfill site on a weekly basis

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	NO
<input type="checkbox"/>	<input checked="" type="checkbox"/>

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	NO
<input type="checkbox"/>	<input checked="" type="checkbox"/>

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:

Frequent correspondence between the different contractors on the proposed development will ensure optimum reuse and recycling of materials where possible. Furthermore it is proposed that all waste construction materials be sorted into recyclable and non-recyclable materials. The recyclable materials should be re-used where ever possible or disposed of by a 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	NO
<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

Not Applicable	
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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)?

Not Applicable	
----------------	--

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

Yes	NO
<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

Not Applicable	
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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	NO
<input type="checkbox"/>	<input checked="" type="checkbox"/>

If yes, provide the particulars of the facility:

Facility name:	
Contact person:	
Postal address:	

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

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:
No Measures will be taken to ensure water re-use or recycling.

Liquid effluent (domestic sewage)

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

YES X	NO
Approximately 218.44kl/day	
YES X	NO
YES	NO X

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

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

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

If yes describe how it will be treated and disposed of.

Not Applicable.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO X
Not Applicable	

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. Only the additional vehicle traffic, exhaust fumes may have an influence, but is regarded as insignificant.

2. WATER USE

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

Municipal	Directly from water board	groundwater	river, stream, dam or lake	other	the activity will not use water
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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 and Forestry?

YES	NO X
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If yes, list the permits required **Note: Although the answer is no, it was decided to supply some detail regarding the water use permit.**

In terms of the Section 21 of the National Water Act, the developer will not need any water licenses for the proposed development, as the proposed development is not influenced by any 1:50 or 1:100 year flood lines. Furthermore the proposed development is not in close proximity to any rivers or streams.

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

Not Applicable

If yes, have you received approval(s)? (attached in appropriate appendix)

Not Applicable

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 following could be considered:

- Units could be orientated in a northern direction
- 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 source(s) can be considered

Wind turbines

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

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.

Solar

Solar power generation will be encouraged with each individual development however cannot be considered as the prime generation system due to the 24 hour power requirements of the industrial, residential, office/business park etc. projects.

SECTION D: RESOURCE USE AND PROCESS DETAILS

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(Complete only when appropriate)

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

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YES	NO
X	
Not Available	

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

All construction solid waste will be disposed of at the nearest registered dumping site. No solid waste will be dumped on surrounding open areas or adjacent properties.

Will the activity produce solid waste during its operational phase?

YES	NO
X	
Not available	

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

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

All the waste will be collected within the proposed development, where the relevant service provider will collect and dispose the waste once a week.

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

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	NO

The Waste Group landfill Site:

There are +- 5 million m³ of airspace available on phase 1.
 More than sufficient to accommodate the proposed developments in the Sunderland Ridge area.
 The waste group landfill site are the closest, thus they can collect the solid waste as well as recycling reducing therefore the solid waste streams and carbon footprint.
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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	NO
	X

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	NO
	X

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.

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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	NO
	X

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

Not Applicable	
----------------	--

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

Not Applicable	
----------------	--

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

Yes	NO
	X

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

Not Applicable	
----------------	--

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	NO
	X

If yes, provide the particulars of the facility:

Facility name:	
Contact person:	
Postal address:	

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

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:
No Measures will be taken to ensure water re-use or recycling

Liquid effluent (domestic sewage)

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

YES	NO
X	
Not available	
YES	NO
X	
YES	NO
	X

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

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

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

If yes describe how it will be treated and disposed of.

Not Applicable

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO
	X
Not Applicable	

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. Only the additional vehicle traffic, exhaust fumes may have an influence, but is regarded as insignificant.

6. WATER USE

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

Municipal	Directly from water board	groundwater	river, stream, dam or lake	other	the activity will not use water
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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 and Forestry?

YES	NO
	X

If yes, list the permits required **Note: Although the answer is no, it was decided to supply some detail regarding the water use permit.**

In terms of the Section 21 of the National Water Act, the developer will not need any water licenses for the proposed development, as the proposed development is not influenced by any 1:50 or 1:100 year flood lines. Furthermore the proposed development are not in close proximity to any rivers or streams.

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

Not Applicable

Not Applicable

If yes, have you received approval(s)? (attached in appropriate appendix)

7. 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

8. ENERGY EFFICIENCY

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

The following could be considered:

- Units could be orientated in a northern direction
- 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.

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.

Solar

Solar power generation will be encouraged with each individual development however cannot be considered as the prime generation system due to the 24 hour power requirements of the industrial, residential, office/business park etc. projects.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2006, 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.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

The public participation for the Sunderland Ridge Extension 29 was done in order to ensure that all Interested and Affected Parties register.

The proposed project was advertised in the Beeld newspaper on Tuesday, 12 June 2012 (Refer to Appendix Ei – Proof of Newspaper advertisement). Site notices were also erected at prominent points adjacent to the application site on 12 June 2012. (Refer to Appendix Eii – Proof of Site Notice). Furthermore flyers were also distributed to residents, land owners, tenants and stakeholders in the surrounding area (Refer to Appendix Eiii – Written Notices).

No Interested and Affected Parties registered on the project and therefore no comments were received.

It is the opinion of Bokamoso that the Public participation was extensive and transparent enough to ensure any comments or issues in regards to the proposed development to be addressed and to suggest possible mitigation measures.

Summary of response from the practitioner to the issues raised by the interested and affected parties (A full response must be provided in the Comments and Response Report that must be attached to this report):

Not applicable

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

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

The beneficial and adverse impacts of the proposed development have been discussed below.

The impacts are rated based on consideration of the following:

A). Significance:

<input type="checkbox"/>	Improbable	-	Low possibility of impact to occur either because of design or historic experience.
<input type="checkbox"/>	Probable	-	Distinct possibility that impact will occur.
<input type="checkbox"/>	Highly probability	-	Most likely that impact will occur.

<input type="checkbox"/>	Definite	•	Impact will occur, in the case of adverse impacts regardless of any prevention measures.
B). Intensity factor:			
<input type="checkbox"/>	Low intensity	-	natural and manmade functions not affected
<input type="checkbox"/>	Medium intensity	•	environment affected but natural and manmade functions and processes continue
<input type="checkbox"/>	High intensity	••	environment affected to the extent that natural or manmade functions are altered to the extent that it will temporarily or permanently cease
C). Duration:			
<input type="checkbox"/>	Short term	-	<1 to 5 years - Factor 2
<input type="checkbox"/>	Medium term	•	5 to 15 years - Factor 3
<input type="checkbox"/>	Long term	••	impact will only cease after the operational life of the activity, either because of natural process or by human intervention
<input type="checkbox"/>	Permanent	•••	mitigation, either by natural process or by human intervention, will not occur in such a way or in such a time span that the impact can be considered transient.

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.

Alternative 1 (Proposal) – Industrial 1.

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
CONSTRUCTION PHASE			
Beneficial Impacts			
Institutional Environment			

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

The proposed development will be in line with the current and proposed developments in the vicinity.	High	Not applicable	High
Fauna & Flora			
Eradication of invasive species.	High	Eradication of invasive species during the construction phase would benefit the biophysical environment. Not necessary to mitigate.	High
Social & Economic Environment			
Creation of Job opportunities.	Medium	The proposed development would create job opportunities during the construction phase. Should the local community not benefit from these opportunities, it could lead to an influx of people from other areas. Only employing people from the local community could mitigate the potential adverse impact.	Medium
Reduction of areas that have potential for informal settlements and illegal dumping.	High	The proposed township development will prevent informal settlements and illegal dumping on the proposed development areas.	High
Increase in the rates and taxes payable to the City of Tshwane Metropolitan Municipality.	Medium	More rates and taxes will be paid to the City of Tshwane Metropolitan Municipality.	Medium
Services			
Upgrading of existing services and the construction of new services.	High	The upgrading of existing services and the establishment of new services will be essential to support the proposed development. The developer will also maintain the existing and established services during the operational phase of the development.	High
Optimum utilization of services.	High	The proposed development will utilize the existing services which supports development optimally. The developer/ facility manager will also manage and provide for the routine maintenance of such services.	High
Adverse Impacts			
Flora & Fauna			
<p>Construction works will cause the eradication of existing vegetation –</p> <p>Site clearance forms part of any project of this scale. Large areas of exposed soil will cause erosion and dust pollution. Due to the already extensive disturbance within the study area by human activity, large bare soil areas are visible and can create opportunity for extensive erosion on site.</p>	Low	<ul style="list-style-type: none"> • The project should be planned to ensure that only specific areas are cleared as the project progress to ensure that large areas are not exposed over long periods; • Before the removal of vegetation takes place, the area to be cleared must be clearly marked. • Strip topsoil at start of works and store in stockpiles no more than 1.5 m high in designated storage areas. The topsoil should contain the natural grass component as the seeds may help with the re-vegetation of the site during rehabilitation. • As many of the large indigenous tree specimens must be retained on the application site during construction. The trees to be 	None

BASIC ASSESSMENT REPORT [REGULATION 22(1)]

		retained must be marked and may not be disturbed during the construction activities.	
Disturbing a Red Listed plant species that occur outside of the development property as well as large woody species on site.	Medium	<ul style="list-style-type: none"> If it is possible, the large multi-stemmed <i>Searsia lancea</i>, should be preserved and included in an open space area. If the recommended buffer is authorized for the Red Listed plant species on the adjacent property, that northern corner will be treated as sensitive and an open space area. 	Low
Disturbance of fauna species	Low	<ul style="list-style-type: none"> Where possible, work should be restricted to one area at a time, as this will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories. The contractor must ensure that no fauna is disturbed, trapped, hunted or killed during the construction phase. 	None
Uncontrolled fires may cause damage and loss to vegetation and fauna in the area.	Low	<ul style="list-style-type: none"> If fires are required for cooking and heating purposes, these fires will only be permitted in designated areas on site. 	None
Possible spreading of invaders into the natural surrounding areas.	Low	<ul style="list-style-type: none"> No plants, not indigenous to the area, or exotic plant species should be introduced into the landscaping of the proposed development. All invaders and Declared Weeds should be removed from site and the dumping of builders' rubble and other waste in the areas earmarked for exclusion must be prevented, through fencing or other management measures. 	None
Geology & Soils			
<p>Soil erosion due to drainage systems –</p> <p>During the construction phase temporary measures should be implemented to manage storm water and water flow on the application site. If the storm water and water flow is not regulated and managed on site it could cause significant erosion of soil, as well as the pollution and siltation of water bodies.</p>	Medium	<ul style="list-style-type: none"> Only the identified areas should be cleared of vegetation. This should be done in stages as construction works progress; Implement temporary storm water management measures that will help to reduce the speed of the water. This measures must also assist with the prevention of water pollution, erosion and siltation; If excavations or foundations fill up with storm water, these areas should immediately be drained and measures to prevent further water from entering the excavations should be implemented. Biodegradable matting, geotextiles and other means of erosion control should be 	None

		<p>implemented during the construction phase on large exposed areas and where storm water are temporarily channelled;</p> <ul style="list-style-type: none"> • Any storm water outfalls should be designed and measures should be implemented to prevent erosion and water pollution at these points. Areas around buildings, where gutters and outlets are implemented should be paved; • The services which will be installed in the area, should be designed to run in the same direction as the existing services to make installation and maintenance easy; • Trees may not be planted any closer to services than 1.5 times their mature height; 	
<p>If not planned and managed correctly topsoil will be lost.</p>	<p align="center">Medium</p>	<ul style="list-style-type: none"> • A shake down area at the exits of the construction site should be established where the excessive soil on the tires of the construction vehicles can be brushed off and kept aside for later use during rehabilitation works; • The layout of the construction site should be planned before any construction site should be planned before any construction activities take place. The areas where soil will be compacted by construction activities, heavy vehicle movement, site camp, material storage areas and stockpiling areas should be marked out and the topsoil should be removed. • The areas where topsoil will not be removed and which will be conserved during the construction phase should be marked with barrier tape to ensure that vehicles do not move across these areas, and construction activities does not damage the in-situ topsoil • The removed topsoil 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; • The installation of services could leave soils exposed and 	<p align="center">Low</p>

		<p>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;</p> <ul style="list-style-type: none"> 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. 	
Excavations are not kept dry.	Medium	<ul style="list-style-type: none"> Construction works and bulk earth works which involve the construction of excavations must be proposed for the dryer season, 	Low
Incorrect construction could increase the possibility of doline and sinkhole formation due to the underlying dolomitic conditions of the area.	Medium	<p>Due to the underlying dolomitic conditions it is important that the following be adhered to:</p> <ul style="list-style-type: none"> Surface water should be routed away from buildings. Damming and ponding of water should be prevented; The standard precautionary measures for developing on dolomite should be adhered to.. The wet services engineer must ensure that very strict precautionary measures and design and construction practices are implemented during any construction and/ or earth works on site; The recommended foundation design should also be adhered to as indicated within the dolomite stability investigation. Buildings and structures should adhere to the NHBRC standards and norms; Trees should not be planted in close proximity to water bearing services. This will prevent the roots to penetrate the wet services which could cause water leakage; All wet services should be regular inspected to prevent leaking pipes. 	None
Climate			
Construction during the rainy season can cause delays and damage to the environment.	Low	<ul style="list-style-type: none"> It is recommended that the construction phase be scheduled for the winter months especially activities such as the installation of services, foundations, 	None

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		<p>excavations and road construction;</p> <ul style="list-style-type: none"> 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 storm water away from open excavations and foundations. 	
Construction during the dry and windy season could cause excessive dust pollution during construction works.	Low	<ul style="list-style-type: none"> Regular and effective damping down 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 a day. 	None
Hydrology & groundwater			
The use of insufficient drainage systems.	Medium	<ul style="list-style-type: none"> A storm water management plan should be designed by an engineer to ensure sufficient drainage on site. 	None
Excavated materials that are stockpiled in wrong areas can interfere with the natural drainage.	Medium	<ul style="list-style-type: none"> 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. 	Low
Cultural and Archaeology			
<p>Two graves were found underneath a double high voltage power line which will not be affected by the proposed development on the site. These two graves should be fenced off and protected before construction activities takes place. Entrance to the site should be allowed to the family members at all times.</p> <p>According to the Heritage specialist the two graves are younger than sixty years and falls outside the jurisdiction of Act 25 of 1999, but are protected by Provincial Legislation.</p> <p>Furthermore no cultural heritage resources or graves older than sixty years were found on the proposed development are. a but should any such features be discovered during</p>	Medium	<ul style="list-style-type: none"> If archaeological sites are exposed during construction work, it should immediately be reported to a museum, preferably on at which an archaeologist are available so that an investigation and evaluation of the site can be made. Should any other cultural heritage resources or graves be discovered during construction activities and clearing of the application site, the correct procedures for an Environmental incident must be followed. Please refer to the EMP (Environmental Management Plan) under Appendix H. 	None

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construction activities and clearing of the application site, the correct "procedures for an Environmental incident" (at the end of EMP, Appendix H) must be followed.			
Localized Vibration			
The noise created by earthmoving machinery will result in the greatest increase in ambient levels. This will be short term, being generated only during the day.	Medium	<ul style="list-style-type: none"> All construction activities must be restricted during normal working hours from 8:00 in the morning to no later than 18:00 in the afternoons. No construction may take place on Sundays and public holidays. 	Low
Air pollution			
Nuisance to neighbours in terms of dust generation due to construction during the dry and windy season.	Medium	<ul style="list-style-type: none"> The application site must be damped at a regular basis with water (more or less 3 to 4 times on a dry day). A water tanker should be used if possible. 	Low
Roads and Traffic			
Heavy vehicle traffic increase could disrupt the surrounding landowners' daily routines.	Medium	Heavy vehicles must be instructed to only use the main roads during off-peak hours.	Low
Restrictions of access to surrounding properties and the study area during construction phases.	Medium	<ul style="list-style-type: none"> To minimize the impacts or risks, heavy construction vehicles 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 should be allowed. Access to the site for construction 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. 	Low
Damage to roads.	Medium	<ul style="list-style-type: none"> Specific roads must be allocated for the use by construction vehicles. 	Low
Safety and Security			
During the construction phase safety and security problems (especially for the surrounding residents) are likely to occur.	Medium	<ul style="list-style-type: none"> Construction must be completed in as short time as possible. No construction worker or relative may reside on the application site during the construction phase. All construction workers must leave the site at the end of a days work. A security guard should be appointed on site to prevent any security problems. 	Low
Any proposed development offers the potential for unplanned informal settlement (squatting) before	Medium	<ul style="list-style-type: none"> No construction worker, friend or relative may settle/ reside on site. Only security may be 	Low

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construction commences or after construction.		present on site after construction hours.	
Construction activities could cause danger to children and animals of the surrounding residents.	Low	<ul style="list-style-type: none"> Although regarded as a normal practice, it is important to erect proper signs indicating the operation of heavy vehicles in the vicinity of dangerous crossings and access roads or even with in the development site, if necessary; It is also important to indicate all areas where excavations took place/ are taking place and warning signs that clearly indicate areas with excavations must be placed immediately adjacent to excavations; A barrier should be established around dangerous excavation areas; With the exception of appointed security personnel, no other worker, friend or relatives will be allowed to sleep on the construction site (weekends included), in the public open space or on adjacent properties; and No worker should be allowed to enter adjacent private properties without written consent of the legal owners to the contractor. 	None
Visual Impact			
Dumping of builder's rubble on neighbouring properties.	Medium	<ul style="list-style-type: none"> A specific location for building rubble must be allocated on site, to concentrate and collect the building rubble and cart it to a certified landfill site. The allocated area must be out of sight of neighbouring properties to have a less visual impact. 	Low
Stockpile areas for construction materials.	Medium	<ul style="list-style-type: none"> An area on the site must be allocated for the stockpile of construction materials. The area must be situated on the application site, and must be situated to have a minimal visual impact on the neighbouring area. 	Low
Veld fires may cause damage to infrastructure, vegetation and neighbouring properties.	Low	<ul style="list-style-type: none"> A specific area on site must be allocated, which will have the least impact on the environment on the environment and surrounding landowners, for fires of construction workers. This allocated area must be far from any structures and no fires may be lit except in the designated location. 	Low
The construction vehicles, the site camp and other construction related	Medium	<ul style="list-style-type: none"> Before any construction commence on site, an area on 	Low

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facilities will have a negative visual impact during the construction phase.		site must be demarcated for a site camp.	
Waste Management			
Site office, camp and associated waste (visual, air and soil pollution)	Medium	<ul style="list-style-type: none"> • Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks; • These points should not be located in areas highly visible from the properties of the surrounding landowners/ tenants/ in areas where the wind direction will carry bad odours across the properties of adjacent tenants or landowners; • The site camp and the rest of the study area should appear neat at all times; • Waste materials should be removed from the site on a regular basis, to a registered dumping site; and • 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. 	Low
Disposal of building waste & liquids	Medium	<ul style="list-style-type: none"> • All the waste generated by the proposed developments must be dumped at a preselected area on site to be carted to a register landfill site; • THESE AREAS SHALL BE PREDETERMINED AND LOCATED IN AREAS THAT ARE ALREADY DISTURBED; • Small lightweight waste items should be contained in skips with lids to prevent wind littering; • All waste must be removed to a recognized waste disposal site/ 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 • Keep records of waste reuse, recycling and disposal for future reference. 	Low
OPERATIONAL PHASE			
Beneficial Impacts			
Social & Economic Environment			
Creation of temporary and permanent jobs.	Medium	During the operational phase numerous permanent jobs will be created on various levels (house, garden, maintenance, etc.).	Medium

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Increasing security in the area.	High	In the long term the proposed development will improve the security of the area. The monitored access points will improve the security of the proposed site and surrounding areas.	High
Higher quality of livelihoods.	High	The community's quality of life will increase and more people will be economically active.	High
Reduction of areas that have potential for informal settlements and illegal dumping.	High	The proposed township development will prevent informal settlements and illegal dumping on the proposed development area.	High
Increase in rates and taxes payable to the City of Tshwane Metropolitan Municipality.	Medium	More rates and taxes will be paid to the CTMM.	Medium
Increase in surrounding property values	High	If planned and managed correctly, the proposed development could have a positive impact on property values. Due to the proposed theme, the development will generally be in line with the surrounding land uses.	High
Visibility and accessibility of study area.	High	The visibility and accessibility of the study area contributes to the study area's ideal suitability for the proposed land use.	High
Adverse Impacts			
Hydrology			
An increase in surface water runoff to storm water management systems (because of an increase of hard-surfaces such as roofs and paved areas), may have an impact on surface quality and quantities.	Low	<ul style="list-style-type: none"> Storm water through the site should be managed to accommodate the higher quantities of runoff, Sheet flow should be encouraged as far as possible, and channels should be designed sufficiently to address the problem or erosion, and Bio-swale system could be implemented to filter water from paved areas and especially from roads and parking areas to sufficiently clean water of heavy metals and other hazardous materials contained in storm water in a natural manner. This will further provide an opportunity for water to infiltrate the soil, break the energy of storm water and keep the water on site for longer. 	Low
Leaking pipes could cause ground water pollution risks.	Low	<ul style="list-style-type: none"> Pipes should be inspected on a regular basis; 	None
Fauna and Flora			
Disturbing a Red Listed plant species that occur outside of the development property as well as large woody species on site.	Medium	<ul style="list-style-type: none"> If it is possible, the large multi-stemmed <i>Searsia lancea</i>, should be preserved and included in an open space area. If the recommended buffer is authorized for the Red Listed plant species on the adjacent property, that northern corner will be treated as sensitive and an open space area. 	Low
Light pollution			

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<p>Light pollution</p> <p>The proposed development could cause a significant level of light pollution as the light industrial development will need some security lighting.</p>	<p align="center">Low</p>	<ul style="list-style-type: none"> Lighting within the proposed development, including security lighting, could easily glare into surrounding residences if not designed appropriately. It is recommended that all the lighting on site be designed to point downwards and designed in such a way to not cause glare dispersal or unnecessary flickering. 	<p align="center">None</p>
Pollution			
<p>The generation of Air pollution -</p>	<p align="center">Low</p>	<p>The proposed development is located within an area that is characterized by industrial, commercial and residential developments. It is therefore that one can consider the fact that the study area is surrounded by activities that will contribute to regional air pollution. One however, has to note that on a local scale, the proposed development does not include noxious industries, and therefore specifically would not contribute to any air pollution. As mentioned previously the exhaust fumes of additional vehicles may have an influence, but in this particular instance it is deemed as insignificant, and therefore on a local scale would not have any affect.</p>	<p align="center">Low</p>
<p>The generation of noise pollution –</p> <p>Additional traffic generated by the proposed development will have some impact on the ambient noise levels within the area.</p>	<p align="center">Low</p>	<p>As mentioned previously, one has to note that the study area is wedged between many Provincial and National Roads which already generate ambient noise levels that exceed the acceptable levels for urban and residential areas. It is therefore, when one consider the above mentioned, that ambient noise levels generated by this particular development would not be that significant, as the proposed development, is located within an area that already exceed the acceptable noise levels.</p>	<p align="center">Low</p>
Roads & Traffic			
<p>Additional vehicle traffic could have a detrimental impact on the existing roads with in the vicinity of proposed development.</p>	<p align="center">Medium</p>	<p>If required, the road network which surrounds the proposed development will have to be correctly maintained/ upgraded in order to support additional traffic generated.</p>	<p align="center">Low</p>
Visual Impact			
<p>The proposed development will have some visual impact on the surrounding areas.</p>	<p align="center">Medium</p>	<ul style="list-style-type: none"> Due to the development control measures and the fact that residential uses will be developed, it is anticipated that the proposed development will have a great visual impact on the surrounding environment, It is important that the roofs of all the buildings within the proposed development should not reflect any sunlight; The colour scheme for the buildings should be taken from 	<p align="center">Low</p>

		<p>the palette of colours in the natural surroundings;</p> <ul style="list-style-type: none"> Existing trees, if any should be retained as far possible on the site, in order to soften the visual impact of the buildings associated with the development, and to bring the scale of the large buildings in scale with the surrounding environment; It is also proposed that as many additional indigenous trees be planted in areas that were previously disturbed, in order to soften the harsh visual impact of the proposed development. The planting of additional trees will help to develop a certain character for the site which will fit in with the surrounding environment. 	
Impact on the sense of place.	Low	<p>If not managed correctly, the proposed light industrial development will have a negative impact on the sense of place of the surrounding environment, due to the height of the buildings that will form part of the proposed development;</p> <p>In order to "Promote the Sense of Place" of the surrounding area, the colour scheme of the buildings which will form part of the proposed development, should be taken from a palette of colours in the natural surroundings.</p> <p>It is also important that a landscape development plan should be developed and implement for the study area, prior to the operational phase. Landscaped areas which will form part of the proposed development will in essence soften the harsh architectural lines and elements which are associated with the proposed development. Landscaped areas within the proposed development will also bring the scale of the buildings in relation to the surrounding environment.</p>	None

Alternative 2: Mixed uses/ Residential

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
CONSTRUCTION PHASE			
Beneficial Impacts			
Institutional Environment			
The proposed development will be in line with the current and proposed developments in the vicinity.	High	Not applicable	High
Fauna and Flora			
The clearance of the site will lead to the eradication of alien and invasive plant species.	High	Not applicable	High

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Social & Economic Environment			
Creation of job opportunities.	High	Not applicable	High
Reduction of areas that have potential for informal settlements and illegal dumping.	High	The proposed township development will prevent informal settlements and illegal dumping on the proposed development areas.	High
Increase in the rates and taxes payable to the City of Tshwane Metropolitan Municipality.	Medium	More rates and taxes will be paid to the City of Tshwane Metropolitan Municipality.	Medium
Services			
Upgrading of existing services and the construction of new services	High	The upgrading of existing services and the establishment of new services will be essential to support the proposed development. The developer will also maintain the existing and established services during the operational phase of the development.	High
Optimum utilization of services	High	The proposed development will utilize the existing services which supports development optimally. The developer/ facility manager will also manage and provide for the routine maintenance of such services.	High
Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Adverse Impacts			
Flora & fauna			
Construction works will cause the eradication of existing vegetation – Site clearance forms part of any project of this scale. Large areas of exposed soil will cause erosion and dust pollution. Due to the already extensive disturbance within the study area by human activity, large bare soil areas are visible and can create opportunity for extensive erosion on site.	Low	<ul style="list-style-type: none"> The project should be planned to ensure that only specific areas are cleared as the project progress to ensure that large areas are not exposed over long periods; Before the removal of vegetation takes place, the area to be cleared must be clearly marked. Strip topsoil at start of works and store in stockpiles not more than 1.5 m high in designated storage areas. The topsoil should contain the natural grass component as the seeds may help with the re-vegetation of the site during rehabilitation. As many of the large indigenous tree specimens must be retained on the application site during construction. The trees to be retained must be marked and may not be disturbed during the construction activities. 	None
Uncontrolled fires may cause damage and loss to vegetation and fauna in the area.	Low	<ul style="list-style-type: none"> If fires are required for cooking and heating purposes, these fires will only be permitted in designated areas on site; 	None
Possible spreading of invaders into the natural surrounding areas.	Low	<ul style="list-style-type: none"> No plants, not indigenous to the area, or exotic plant species should be introduced into the landscaping of the proposed development. 	None

Geology and Soils			
<p>Soil erosion due to insufficient drainage systems-</p> <p>During the construction phase temporary measures should be implemented to manage storm water and water flow on the application site. If the storm water and water flow is not regulated and managed on site it could cause significant erosion of soil, as well as the pollution and siltation of water bodies.</p>	Medium	<ul style="list-style-type: none"> • Only the identified areas should be cleared of vegetation. This should be done in stages as construction works progress; • Implement temporary storm water management measures that will help to reduce the speed of the water. This measures must also assist with the prevention of water pollution, erosion and siltation; • If excavations or foundations fill up with storm water, these areas should immediately be drained and measures to prevent further water from entering the excavations should be implemented. • Biodegradable matting, geotextiles and other means of erosion control should be implemented during the construction phase on large exposed areas and where storm water are temporarily channelled; • Any storm water outfalls should be designed and measures should be implemented to prevent erosion and water pollution at these points. Areas around buildings, where gutters and outlets are implemented should be paved; • The services which will be installed in the area, should be designed to run in the same direction as the existing services to make installation and maintenance easy; • Trees may not be planted any closer to services than 1.5 times their mature height; 	None
<p>If not planned and managed correctly topsoil will be lost</p>	Medium	<ul style="list-style-type: none"> • A shake down area at the exit of the construction site should be established where the excessive soil on the tires of the construction vehicles can be brushed off and kept aside for later use during rehabilitation works; • The layout of the construction site should be planned before any construction activities take place. The areas where soil will be compacted by construction activities, heavy vehicle movement, site camp, material storage areas and stockpiling areas should be marked out and the topsoil should be removed; • The areas where topsoil will 	Low

		<p>not be removed and which will be conserved during the construction phase should be marked with barrier tape to ensure that vehicles do not move across these areas, and construction activities does not damage the in-situ topsoil.</p> <ul style="list-style-type: none"> • The removed topsoil 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; • The installation of services could leave soils exposed and susceptible to erosion. Soils should be stored adjacent to the excavated trenches that are excavated to install services, and these should be filled up with the in-situ material as the services area 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; • 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. 	
Excavations are not kept dry.	Medium	<ul style="list-style-type: none"> • Construction works and bulk earth works which involve the construction of excavations must be proposed for the dryer season; 	Low
Disturbing a Red Listed plant species that occur outside of the development property as well as large woody species on site.	Medium	<ul style="list-style-type: none"> • If it is possible, the large multi-stemmed <i>Searsia lancea</i>, should be preserved and included in an open space area. • If the recommended buffer is authorized for the Red Listed plant species on the adjacent property, that northern corner will be treated as sensitive and an open space area. 	Low
Disturbance of fauna species	Low	<ul style="list-style-type: none"> • Where possible, work should be restricted to one area at a time, as this will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories. 	None

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		<ul style="list-style-type: none"> The contractor must ensure that no fauna is disturbed, trapped, hunted or killed during the construction phase. 	
Incorrect construction could increase the possibility of doline and sinkhole formation due to the underlying dolomitic conditions of the area.	Medium	<p>Due to the underlying dolomitic conditions it is important that the following be adhered to:</p> <ul style="list-style-type: none"> Surface water should be routed away from buildings. Damming and ponding of water should be prevented; The standard precautionary measures for developing on dolomite should be adhered to. The wet services engineer must ensure that very strict precautionary measures and design and construction practices are implemented during any construction and/ or earth works on site; The recommended foundation design should also be adhered to, as indicated in the attached dolomite stability investigation. Buildings and structures should adhere to the NHBC standards and norms; Trees should not be planted in close proximity to water bearing services. This will prevent the roots to penetrate the wet services which could cause water leakage; All wet services should be regular inspected to prevent leaking pipes. 	None
Climate			
Construction during the rainy season can cause delays and damage to the environment.	Low	<ul style="list-style-type: none"> It is recommended that the construction phase be scheduled for the winter months especially activities such as the installation of services, foundations, excavations and road construction; 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 storm water away from open excavations and foundations. 	None
Construction during the dry and windy season could cause excessive dust pollution during construction works.	Low	<ul style="list-style-type: none"> Regular and effective damping down working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that 	None

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		<p>will have a negative impact on the surrounding environment. When necessary, these working areas should be damped down at least twice a day.</p>	
Hydrology & groundwater			
The use of insufficient drainage systems.	Medium	<ul style="list-style-type: none"> The storm water and drainage systems must be designed by and engineer to ensure sufficient drainage on site. 	None
Excavated materials that are stockpiled in wrong areas can interfere with the natural drainage.	Medium	<ul style="list-style-type: none"> 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, the prevent soil from washing away by rain or any water. 	Low
Surface water flows will be altered during the construction phase.	Medium	<ul style="list-style-type: none"> Due to the excavations that will take place (there will be trenches, topsoil and subsoil mounts in and around the study area), the topography of the study area will temporarily be altered. However this will only be a short term impact, and if the levels are restored to normal, the surface drainage patterns from the new levels should not differ too much from the surface water drainage of the original levels. 	Low
The possibility of ground water pollution.	Medium	<ul style="list-style-type: none"> Develop a central waste temporary holding site to be used during construction (near the access entrance). This site should comply with the following: Skips for the containment and disposal of all waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; THESE AREAS SHALL BE PREDETERMINED AND LOCATED IN AREAS THAT IS ALREADY DISTURBED. THESE AREAS SHALL NOT BE WITHIN 100M FROM THE 1:100 YEAR FLOODLINE AREA. Workers will only be allowed to use temporary chemical toilets on the site. CHEMICAL TOILETS SHALL NOT BE WITHIN 100 M OF THE FLOODLINE AREA. No French drain systems may be installed on site at any time; No bins containing organic solvents such as paints and thinners shall be cleaned on 	None

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		<p>site, unless containers for liquid waste disposal are placed for this purpose on site;</p> <ul style="list-style-type: none"> • No leaking vehicle shall be allowed on site. Before entering the study area, all vehicles and equipment shall be inspected for leaks by a qualified mechanic/ other suitably qualified person and the environmental officer. The mechanic/ the mechanic of the appointed contractor must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof, and • If maintenance on site is absolutely necessary, it should be conducted on a concrete surface in the site camp. Spilled oil should be cleaned up and disposed of appropriately (not dumped on site). This area may not be washed with soaps and dissolvent and allowed to enter the drainage system. 	
Cultural and Archaeology			
Occurrence of cultural historical assets on the proposed development site.	Medium	<ul style="list-style-type: none"> • If archaeological sites are exposed during construction work, it should immediately be reported to a museum, preferably on at which an archaeologist are available, so that an investigation and evaluation of the site can be made. 	None
Localised Vibration			
The noise created by earthmoving machinery will result in the greatest increase in ambient levels. This will be short term, being generated only during the day.	Medium	<ul style="list-style-type: none"> • All construction activities must be restricted during normal working hours from 8:00 in the morning to no later than 18:00 in the afternoons. No construction may take place on Sundays and public holidays. 	Low
Air pollution			
Nuisance to neighbours in terms of dust generation due to construction during the dry and windy season.	Medium	<ul style="list-style-type: none"> • The application site must be damped at a regular basis with water (more or less 3 to 4 times on a dry day). A water tanker should be used if possible. 	Low
Roads and Traffic			
Heavy vehicle traffic increase could disrupt the surrounding landowners' daily routines.	Medium	<ul style="list-style-type: none"> • Heavy vehicles must be instructed to only use the main roads during off-peak hours. 	Low
Restrictions of access to surrounding properties and the study area during construction phases.	Medium	<ul style="list-style-type: none"> • To minimize this impacts or risks, heavy construction vehicles should avoid using the local road network during peak traffic times; • These vehicles should use only specific roads and strictly 	Low

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		<p>keep within the speed limits and abide to all traffic laws. No speeding or reckless driving should be allowed. Access to the site for construction vehicles should be planned to minimize the impact on the surrounding network; and</p> <ul style="list-style-type: none"> 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.	Medium	<ul style="list-style-type: none"> Specific roads must be allocated for the use by construction vehicles. 	Low
Safety and Security			
During the construction phase safety and security problems (especially for the surrounding residents) are likely to occur.	Medium	<ul style="list-style-type: none"> Construction must be completed in as short time as possible. No construction worker or relative may reside on the application site during the construction phase. All construction workers must leave the site at the end of a days' work. A security guard should be appointed on site to prevent any security problems. 	Low
Any proposed development offers the potential for unplanned informal settlement (squatting) before construction commences or after construction.	Medium	<ul style="list-style-type: none"> No construction worker, friend or relative may settle/ reside on site. Only security may be present on site after construction hours. 	Low
Construction activities could cause danger to children and animals of the surrounding residents.	Low	<ul style="list-style-type: none"> Although regarded as a normal practice, it is important to erect proper signs indicating the operation of heavy vehicles in the vicinity of dangerous crossings and access roads or even with in the development site, if necessary; It is also important to indicate all areas where excavations took place/ are taking place and warning signs that clearly indicate areas with excavations must be placed immediately adjacent to excavations; A barrier should be established around dangerous excavation areas, With the exception of appointed security personnel, no other worker, friend or relatives will be allowed to sleep on the construction site (weekends included), in the public open space or on adjacent properties; and No worker should be allowed to enter adjacent private properties without written consent of the legal owners to 	Low

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		the contractor.	
Visual Impact			
Dumping of builder's rubble on neighbouring properties.	Medium	<ul style="list-style-type: none"> A specific location for building rubble must be allocated on site, to concentrate and collect the building rubble and cart it to a certified landfill site. The allocated area must be out of sight of neighbouring properties to have a less visual impact. 	Low
Stockpile areas for construction materials.	Medium	<ul style="list-style-type: none"> An area on the site must be allocated for the stockpile of construction materials. The area must be situated on the application site, and must be situated to have a minimal visual impact on the neighbouring area. 	Low
Veld fires may cause damage to the infrastructure, vegetation and neighbouring properties.	Low	<ul style="list-style-type: none"> A specific area on site must be allocated, which will have the least impact on the environment and surrounding landowners, for fires of construction workers. This allocated area must be far from any structures and no fires may be lit except in the designated location. 	None
The construction vehicles, the site camp and other construction related facilities will have a negative visual impact during the construction phase.	Medium	<ul style="list-style-type: none"> Before any construction commence on site, an area on site must be demarcated for a site camp. 	Low
Waste Management			
Site office, camp and associated waste (Visual, air and soil pollution).	Medium	<ul style="list-style-type: none"> Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks; These points should not be located in areas highly visible from the properties of the surrounding landowners/tenants, in areas where the wind direction will carry bad odours across the properties of adjacent tenants or landowners; The site camp and the rest of the study area should appear neat at all times; Waste materials should be removed from the site on a regular basis, to a registered dumping site; and 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. 	Low
Disposal of building waste & liquid.	Medium	<ul style="list-style-type: none"> All the waste generated by the proposed development must be dumped at a preselected area on site to be carted to a 	Low

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		<ul style="list-style-type: none"> register landfill site; • THESE AREAS SHALL BE PREDETERMINED AND LOCATED IN AREAS THAT ARE ALREADY DISTURBED.; • Small lightweight waste items should be contained in skips with lids to prevent wind littering; • All waste must be removed to a recognized waste disposal site/ 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 • Keep records of waste reuse, recycling and disposal for future reference. 	
OPERATIONAL PHASE			
Beneficial Impacts			
Social & Economic Environment			
The creation of permanent job opportunities – The proposed development will create permanent employment opportunities for the local workforce and entrepreneurs. Several job opportunities will be created for the skilled, semi-skilled and unskilled employees within the surrounding environment.	High	Not applicable	High
The proposed development will provide for a better safe environment as the security with in the vicinity of the proposed development will increase.	High	Not applicable	High
Compatibility of the proposed land use with the frameworks and strategies for the area – The proposed development is compatible with the current and future planning and to the surroundings of the direct vicinity.	High	Not applicable	High
Infrastructure upgrades – The proposed infrastructure and road upgrades will benefit the surrounding community.	Medium	Not applicable	Medium
The proposed development will contribute to the creation of well balanced and attractive Light Industrial properties.	Medium	Not applicable	Medium
The proposed development will have a positive impact on the local economy as well as municipal income.	Medium	Not applicable	Medium
The proposed development will have a positive impact on the "Sense of Place".	Medium	Not applicable	Medium

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Visual Impact		
<p>The proposed development will have some visual impact on the surrounding areas.</p>	Medium	<ul style="list-style-type: none"> It is important that the roofs of all the buildings within the proposed development should not reflect any sunlight; The colour scheme for the buildings should be taken from the palette of colours in the natural surroundings; Existing trees, if any should be retained as far possible on the site, in order to soften the visual impact of the buildings associated with the development, and to bring the scale of the large buildings in scale with the surrounding environment; It is also proposed that as many additional indigenous trees be planted in areas that were previously disturbed, in order to soften the harsh visual impact of the proposed development. The planting of additional trees will help to develop a certain character for the site which will fit in with the surrounding environment.
<p>Impact on the sense of place</p>	Medium	<p>If not managed correctly, the proposed Industrial park will have a negative impact on the sense of place of the surrounding environment, due to the height of the buildings that will form part of the proposed development;</p> <p>In order to "promote the Sense of Place" of the surrounding area, the colour scheme of the buildings which will form part of the proposed development, should be taken from a palette of colours in the natural surroundings.</p> <p>It is also important that a landscape development plan should be developed and implemented for the study area prior to the operational phase. Landscaped areas which will form part of the proposed development will in essence soften the harsh architectural lines and elements which are associated with the proposed development. Landscaped areas within the proposed development will also bring the scale of the buildings in relation to the surrounding environment.</p>

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

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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.

Alternative 1 (Proposal) – Industrial 1.

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Geology & Soils			
Soil erosion, siltation and gully formation.	Medium	Demolition works must be kept to a minimum on site and only be done one section at a time to prevent excessive open soil areas that could lead to soil erosion, siltation and excessive compaction.	Low
If not planned and managed correctly, topsoil will be lost.	Medium	<ul style="list-style-type: none"> ▪ A shake down area at the exit of the site should be established where the excessive soil on the tires of vehicles can be brushed off and kept aside for later use during rehabilitation works; ▪ The site should be planned before any decommissioning activities take place on site. The areas where soil will be compacted, heavy vehicle movement (on site construction routes), site camp, material storage areas and stockpiling areas should be marked out and the topsoil should be removed; ▪ The areas where topsoil will not be removed and that will be conserved should be marked with barrier tape to ensure vehicles do not move across these areas and decommissioning activities do not damage the in situ topsoil; ▪ The removed topsoil 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 purposes after decommissioning has been completed; and ▪ Rehabilitation works must be done immediately after the involved works in an area is completed to prevent erosion. 	Low
Water seepage at shallow depth could cause instability of soil or water pollution.	Medium	Geotechnical and civil engineers must supply mitigation measures and guidelines to prevent problems.	Low
Incorrect construction could increase the possibility of doline and sinkhole formation due to the underlying dolomitic conditions in the area.	High	<ul style="list-style-type: none"> ▪ Due to the underlying dolomitic conditions it is important that the following be adhered to: ▪ Surface water should be routed away from buildings and soils should be kept dry around buildings. Damming or ponding of water should be prevented, ▪ No irrigation system should be 	None

		<p>implemented as part of the Formal Landscaping, as this could increase the risk of doline and sinkhole formation.</p> <ul style="list-style-type: none"> ▪ All dolomite prevention measures should be adhered to as indicated within the Dolomite Stability Report. ▪ Buildings and structures should adhere to the NHBRC standards and norms. ▪ All wet services should be regularly inspected to prevent leaking pipes. ▪ Trees should not be situated in close proximity of any wet services. This will prevent the roots to penetrate the wet service lines and cause water leakage. 	
Hydrology & Groundwater			
Vehicle maintenance.	Medium	Vehicle maintenance may not be done on the application site. Whenever a vehicle needs maintenance it must be taken to a certified workshop for the maintenance.	None
Excavated materials that are stockpiled in the wrong areas can interfere with the natural drainage.	Medium	An area must be allocated for stockpiling of topsoil before any demolishing of buildings take place on the site and must be situated from any water source or drainage channels. A sediment fence or barrier must be constructed around the stockpile to prevent soil from washing away by rain or any water.	Low
Surface water flows will be altered during the decommissioning phase.	Medium	Due to the demolishing that will take place (there will be trenches, topsoil and subsoil mounds in and around the area), the topography of the site will temporarily be altered.	Low
The possibility of ground water pollution.	Medium	<ul style="list-style-type: none"> ▪ Develop a central waste temporary holding site to be used during decommissioning (near the access entrance). This site should comply with the following: <ul style="list-style-type: none"> ○ Skips for the containment and disposal of all waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; ○ Workers will only be allowed to use temporary chemical toilets on the site; ○ No french drain systems may be installed on site at any time; ▪ No leaking vehicle shall be allowed on site. Before entering the area, all vehicles and equipment shall be inspected for leaks by a qualified mechanic/other suitably qualified person and the environmental officer. The mechanic/ the mechanic of the appointed contractor must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof; and ▪ If maintenance on site is absolutely necessary, it should be conducted on a concrete surface in the site 	Low

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		camp. Spilled oil should be cleaned up and disposed off appropriately (not dumped on site). This area may not be washed with soaps and dissolvent and allowed to enter the drainage system.	
Climate			
Demolition works during the rainy season can cause unnecessary delays and damage to the environment, especially damage to existing roads in the area.	Medium	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.	Low
Demolition works during the dry and windy season.	Low	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.	None
Fauna & Flora			
The clearing of the site and the demolishing of buildings will result in the eradication of the existing vegetation.	Medium	It is proposed that only sections to be constructed be cleared at a time to ensure that unnecessary bare soil areas are exposed.	Low
Uncontrolled fires may cause damage or loss to vegetation and fauna in the area.	Medium	If fires are required for cooking and heating purposes, these fires will only be permitted in designated areas on the site. The fire area should be an exposed area (no natural veld grass should be in close proximity of the fire area). Workers should only be allowed to smoke in the fire area and fires should preferably be prevented while strong winds are blowing.	None
Uncontrolled activities and access to sensitive areas in the vicinity.	Medium	<ul style="list-style-type: none"> ▪ Dumping of building rubble and other waste on these areas is strictly prohibited; and ▪ No vehicles must be allowed to move in or across the sensitive areas. This leaves visible scars and destroys habitat. 	Low
Visual Impact			
Remnants of building structures.	High	All building structures must be taken down and dispatched of accordingly.	Medium
Aesthetically unpleasing.	High	The decommissioning of the buildings will be aesthetically unpleasing. Building rubble must be stockpiled where it will have the least visual impact.	Medium
Dumping of builder's rubble on neighbouring properties.	Medium	A specific location for building rubble must be allocated on site, to concentrate and collect the building rubble and cart it to a certified landfill	None

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		site. The allocated area must be out of sight of neighbouring properties to have a less visual impact.	
Veld fires may cause damage to infrastructure, vegetation and neighbouring properties.	Medium	A specific area on site must be allocated, which will have the least impact on the environment and surrounding landowners, for fires of workers. This allocated area must be far from any structures and no fires may be lit except in the designated location.	None
The vehicles, the site camp and other decommissioning related facilities will have a negative visual impact during the decommissioning phase.	Medium	Before any construction work commence on site, an area on site must be demarcated for a site camp.	None
Localised Vibrations			
Noise pollution.	Medium	The activities related with the decommissioning phase will generate noise. Therefore, it must be restricted during working hours.	Low
Air Pollution			
Nuisance to neighbours in terms of dust generation due to demolishing of buildings.	High	The application site must be damped at a regular basis with water (more or less 3 to 4 times on a dry day). A water tanker should be used if possible.	Low
Roads & Traffic			
Heavy vehicle traffic increase could disrupt the surrounding landowners' daily routines.	Medium	Heavy vehicles must be instructed to only use the main roads during off-peak hours.	Low
Restrictions of access to surrounding properties.	Medium	<ul style="list-style-type: none"> ▪ To minimize this impacts or risks, heavy vehicles (trucks, bull dowers, etc.) 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 should be allowed. Access to the site for heavy 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. 	Low
Damage to roads.	Medium	Specific roads must be allocated for the use by heavy vehicles and photos must be taken prior to decommissioning in order to determine if any damage has been done.	None
Safety & Security			
During the decommissioning phase safety and security problems (especially for the surrounding residents) are likely to occur.	Medium	Demolition works must be completed in as short time as possible. No worker or relative may reside on the site. All workers must leave the site at the end of a days work. A security guard should be appointed on site to prevent any security problems.	Low
Decommissioning activities could cause danger to children and animals of the surrounding residents.	Medium	<ul style="list-style-type: none"> ▪ Although regarded as a normal practice, it is important to erect proper signs indicating the operations of heavy vehicles in the 	Low

		<p>vicinity of dangerous crossings and access roads or even on the site if necessary;</p> <ul style="list-style-type: none"> ▪ It is also important to indicate all areas where excavations took place/are taking place and warning signs that clearly indicate areas with excavations must be placed immediately adjacent to excavations; ▪ A barrier should be established around dangerous excavation areas; ▪ With the exception of the appointed security personnel, no other workers, friend or relatives will be allowed to sleep on the site (weekends included), in the public open space or on adjacent properties; and ▪ No workers should be allowed to enter adjacent private properties without written consent of the legal owners to the contractor. 	
Waste Management			
<p>Site office, camp and associated waste (visual, air and soil pollution)</p>	<p>Medium</p>	<ul style="list-style-type: none"> ▪ Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks; ▪ These points should not be located in areas highly visible from the properties of the surrounding landowners/tenants/in areas where the wind direction will carry bad odours across the properties of adjacent tenants or landowners; ▪ The site camp and the rest of the area should appear neat at all times; ▪ Waste materials should be removed from the site on a regular basis, to a registered dumping site; and ▪ The site camp should not be located in a highly visual area on the site, or a screen or barrier should be erected as not have a negative impact on the sense of place. 	<p>Low</p>
<p>Disposal of building waste & liquids.</p>	<p>Medium</p>	<ul style="list-style-type: none"> ▪ All waste generated must be dumped at a pre-selected area on site to be carted to a registered landfill site. THESE AREAS SHALL BE PREDETERMINED; ▪ Small lightweight waste items should be contained in skips with lids to prevent wind littering; ▪ All waste must be removed to a recognized waste disposal 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 ▪ Keep records of waste reuse, 	<p>Low</p>

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		recycling and disposal for future reference.	
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Alternative 2: Mixed use/ Residential.

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Geology & Soils			
Soil erosion, siltation and gully formation.	Medium	Demolition works must be kept to a minimum on site and only be done one section at a time to prevent excessive open soil areas that could lead to soil erosion, siltation and excessive compaction.	Low
If not planned and managed correctly, topsoil will be lost.	Medium	<ul style="list-style-type: none"> ▪ A shake down area at the exit of the site should be established where the excessive soil on the tires of vehicles can be brushed off and kept aside for later use during rehabilitation works; ▪ The site should be planned before any decommissioning activities take place on site. The areas where soil will be compacted, heavy vehicle movement (on site construction routes), site camp, material storage areas and stockpiling areas should be marked out and the topsoil should be removed; ▪ The areas where topsoil will not be removed and that will be conserved should be marked with barrier tape to ensure vehicles do not move across these areas and decommissioning activities do not damage the in situ topsoil; ▪ The removed topsoil 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 purposes after decommissioning has been completed; and ▪ Rehabilitation works must be done immediately after the involved works in an area is completed to prevent erosion. 	Low
Water seepage at shallow depth could cause instability of soil or water pollution.	Medium	Geotechnical and civil engineers must supply mitigation measures and guidelines to prevent problems.	Low
Incorrect construction could increase the possibility of doline and sinkhole formation due to the underlying dolomitic conditions in the area.	High	<ul style="list-style-type: none"> ▪ Due to the underlying dolomitic conditions it is important that the following be adhered to: ▪ Surface water should be routed away from buildings and soils should be kept dry around buildings. Damming or ponding of water should be prevented, ▪ No irrigation system should be implemented as part of the Formal Landscaping, as this could increase the risk of doline and sinkhole formation. 	None

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		<ul style="list-style-type: none"> ▪ All dolomite prevention measures should be adhered to as indicated within the Dolomite Stability Report. ▪ Buildings and structures should adhere to the NHBRC standards and norms. ▪ All wet services should be regularly inspected to prevent leaking pipes. ▪ Trees should not be situated in close proximity of any wet services. This will prevent the roots to penetrate the wet service lines and cause water leakage. 	
Hydrology & Groundwater			
Vehicle maintenance.	Medium	Vehicle maintenance may not be done on the application site. Whenever a vehicle needs maintenance it must be taken to a certified workshop for the maintenance.	None
Excavated materials that are stockpiled in the wrong areas can interfere with the natural drainage.	Medium	An area must be allocated for stockpiling of topsoil before any demolishing of buildings take place on the site and must be situated from any water source or drainage channels. A sediment fence or barrier must be constructed around the stockpile to prevent soil from washing away by rain or any water.	Low
Surface water flows will be altered during the decommissioning phase.	Medium	Due to the demolishing that will take place (there will be trenches, topsoil and subsoil mounds in and around the area), the topography of the site will temporarily be altered.	Low
The possibility of ground water pollution.	Medium	<ul style="list-style-type: none"> ▪ Develop a central waste temporary holding site to be used during decommissioning (near the access entrance). This site should comply with the following: <ul style="list-style-type: none"> ○ Skips for the containment and disposal of all waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; ○ Workers will only be allowed to use temporary chemical toilets on the site; ○ No french drain systems may be installed on site at any time; ▪ No leaking vehicle shall be allowed on site. Before entering the area, all vehicles and equipment shall be inspected for leaks by a qualified mechanic/other suitably qualified person and the environmental officer. The mechanic/ the mechanic of the appointed contractor must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof; and ▪ If maintenance on site is absolutely necessary, it should be conducted on a concrete surface in the site camp. Spilled oil should be cleaned up and disposed off appropriately (not dumped on site). This area may not be washed with soaps and 	Low

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		dissolvent and allowed to enter the drainage system.	
Climate			
Work during the dry and windy season.	Low	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.	None
Fauna & Flora			
The clearing of the site will result in the eradication of the existing vegetation.	Medium	Vegetation should only be removed one section at a time to ensure that vegetation is not unnecessarily removed and bare soil exposed.	Low
Uncontrolled fires may cause damage or loss to vegetation and fauna in the area.	Medium	If fires are required for cooking and heating purposes, these fires will only be permitted in designated areas on the site. The fire area should be an exposed area (no natural veld grass should be in close proximity of the fire area). Workers should only be allowed to smoke in the fire area and fires should preferably be prevented while strong winds are blowing.	None
Uncontrolled activities and access to sensitive areas in the vicinity.	Medium	<ul style="list-style-type: none"> ▪ Dumping of building rubble and other waste on these areas is strictly prohibited; and ▪ No vehicles must be allowed to move in or across the sensitive areas. This leaves visible scars and destroys habitat. 	Low
Visual Impact			
Remnants of building structures.	High	All building structures must be taken down and dispatched of accordingly.	Medium
Dumping of builder's rubble on neighbouring properties.	Medium	A specific location for building rubble must be allocated on site, to concentrate and collect the building rubble and cart it to a certified landfill site. The allocated area must be out of sight of neighbouring properties to have a less visual impact.	None
Veld fires may cause damage to infrastructure, vegetation and neighbouring properties.	Medium	A specific area on site must be allocated, which will have the least impact on the environment and surrounding landowners, for fires of workers. This allocated area must be far from any structures and no fires may be lit except in the designated location.	None
The vehicles, the site camp and other decommissioning related facilities will have a negative visual impact during the decommissioning phase.	Medium	Before any construction work commence on site, an area on site must be demarcated for a site camp.	None
Localized Vibrations			
Noise pollution.	Medium	The activities related with the decommissioning phase will generate noise. Therefore, it must be restricted during working hours.	Low
Air Pollution			
Nuisance to neighbours in terms of dust generation due to demolishing	High	The application site must be damped at a regular basis with water (more or	Low

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of buildings.		less 3 to 4 times on a dry day). A water tanker should be used if possible.	
Roads & Traffic			
Heavy vehicle traffic increase could disrupt the surrounding landowners' daily routines.	Medium	Heavy vehicles must be instructed to only use the main roads during off-peak hours.	Low
Restrictions of access to surrounding properties.	Medium	<ul style="list-style-type: none"> ▪ To minimize this impacts or risks, heavy vehicles (trucks, bulldozers, etc.) 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 should be allowed. Access to the site for heavy 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. 	Low
Damage to roads.	Medium	Specific roads must be allocated for the use by heavy vehicles and photos must be taken prior to decommissioning in order to determine if any damage has been done.	None
Safety & Security			
During the decommissioning phase safety and security problems (especially for the surrounding residents) are likely to occur.	Medium	Work must be completed in as short time as possible. No worker or relative may reside on the site. All workers must leave the site at the end of a days work. A security guard should be appointed on site to prevent any security problems.	Low
Decommissioning activities could cause danger to children and animals of the surrounding residents.	Medium	<ul style="list-style-type: none"> ▪ Although regarded as a normal practice, it is important to erect proper signs indicating the operations of heavy vehicles in the vicinity of dangerous crossings and access roads or even on the site if necessary; ▪ It is also important to indicate all areas where excavations took place/are taking place and warning signs that clearly indicate areas with excavations must be placed immediately adjacent to excavations; ▪ A barrier should be established around dangerous excavation areas; ▪ With the exception of the appointed security personnel, no other workers, friend or relatives will be allowed to sleep on the site (weekends included), in the public open space or on adjacent properties; and ▪ No workers should be allowed to enter adjacent private properties without written consent of the legal owners to the contractor. 	Low
Waste Management			

Site office, camp and associated waste (visual, air and soil pollution)	Medium	<ul style="list-style-type: none"> ▪ Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks; ▪ These points should not be located in areas highly visible from the properties of the surrounding landowners/tenants/in areas where the wind direction will carry bad odours across the properties of adjacent tenants or landowners; ▪ The site camp and the rest of the area should appear neat at all times; ▪ Waste materials should be removed from the site on a regular basis, to a registered dumping site; and ▪ The site camp should not be located in a highly visual area on the site, or a screen or barrier should be erected as not have a negative impact on the sense of place. 	Low
Disposal of building waste & liquids.	Medium	<ul style="list-style-type: none"> ▪ All waste generated must be dumped at a pre-selected area on site to be carted to a registered landfill site. THESE AREAS SHALL BE PREDETERMINED; ▪ Small lightweight waste items should be contained in skips with lids to prevent wind littering; ▪ All waste must be removed to a recognized waste disposal 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 ▪ Keep records of waste reuse, recycling and disposal for future reference. 	Low

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

Biodiversity Assessment (Appendix G1)
Avifaunal Habitat Assessment (Appendix G2)
Herpetofauna Habitat Scan (Appendix G3)
Mammal Habitat Scan (Appendix G4)
Flora Assessment (Appendix G5)

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 development be approved, the majority of cumulative impacts will be related to the construction phase.

- Noise pollution may upset surrounding owners in the area – to prevent

this, construction activities may only take place during the daytime;

- Surface water flows will be altered during the construction phase of the proposed development – a storm water management plan must therefore be implemented;
- The construction vehicles and facilities will have a negative impact on the study area and surrounding views – this impact may be minimized by locating the site camp in an area with low visibility from surrounding developments and road networks;
- The loss of biodiversity will occur as the connection between the natural environment and the surrounding environment would be ruined – to mitigate this, open space areas are recommended to allow for the movement of fauna species as well as the pollination of plant species;
- Dust pollution could cause nuisance to surrounding residents – dust can be effectively controlled through the wetting of exposed surfaces, especially in the winter months;
- During the construction phase some safety problems (especially for the surrounding residents) are likely to occur – in order to minimise 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.

Subsequently, the above mentioned cumulative impacts can be mitigated if activities are correctly planned and measures are implemented to manage activities which could cause any negative cumulative impacts.

One has to note, that the greatest cumulative impact on the site would be if no development take place. Currently the illegal dumping, un-controlled activities and the continued degradation on the study area, have a great negative impact on the safety of the surrounding urban community. It is therefore recommended that the proposed development is allowed to take place. With development, the illegal nature of activities on site will stop which in turn would provide for the safety and wellbeing of the surrounding urban environment.

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.

Alternative 1 (Proposal)

The major impacts that is likely to occur during the construction and operational phase:

- **Natural Environment** – The natural environment will be temporarily

affected by the moving of large construction vehicles and the construction of mixed uses.

Valuable topsoil may also be lost during the construction process. The loss of topsoil can however be minimised through the storage of topsoil in designated stockpiles on site and the re-use thereof within the landscape component of the development.

- **Primary Natural Grassland** – Natural grassland was found on the surrounding properties and is considered pristine. This is habitat for a number of Orange and Red Listed plant species but none were found on the proposed development site. The vegetation of the Mixed *Eragrostis* Grassland on shallow dolomite study unit was considered sensitive and, according to the specialist, it must be connected to other natural grassland areas on the neighbouring properties to facilitate connectivity. The Ecologist suggested a 200-meter buffer around the population of the Red List *Drimia sanguinea*. However this suggested 200m buffer was not considered feasible as the Future Road PWV9 will encroach this buffer and the alignment runs through the population of the red data plant species. This will leave the species with far less than a 100m buffer. Therefore it is thought best to relocate the red data plant species out of the proposed development area and future development to a location where the habitat is associated with this species and the species is protected and monitored in order to conserve the species.

For the fauna, the Near-Threatened Melodius Lark (*Mirafra cheniana*) is likely to occur on the site as the habitat is considered suitable by the specialist. The Herpetofauna Habitat Scan found the study site too disturbed for the occurrence of Red Listed reptile species. However, the Giant Bullfrog do occur within the surrounding area and the habitat on site is considered ideal for foraging and breeding by this species and therefore it is likely to encounter this species on site. Maintaining corridors/connections with the natural systems on adjacent properties will allow for the movement of fauna species, should any occur on site. It should be noted that the surrounding developments have already been approved therefore the connectivity is already jeopardised. The proposed PWV9 road will also pose a threat to the giant bullfrog. It is recommended that a specialist conduct a site inspection prior to the clearing of vegetation or start of construction.

- **The Social Environment**

The Public Participation were done by means of a newspaper notice,

site notices placed on prominent points on the application site, hand delivered notices to surrounding tenants and landowners and the distributing of notices to stakeholders such as the Local Authorities, Councillors by means of faxes and e-mails.

Dangerous excavations can cause injury/ even death to people if proper precautions are not taken. Crime can also impact the surrounding community from the temporary workers. Social importance. new human activity in the area.

Construction vehicles and equipment can be temporarily visually unpleasant for residents.

The proposed mixed uses development will contribute to the upgrading of the existing sub-standard road infrastructure. External services such as the bulk sewage and water supply pipes will also be established and in some instances upgraded in order to support development.

▪ **Economic Environment:**

The proposed development will create a significant number of employment opportunities for skilled and un-skilled workers, Through the development of the study an increase in the rates and taxes for the local authority will take place.

- **Noise** – The construction phase will cause noise pollution and disturb the receiving community, but can be mitigated with the limitation construction hours from 8:00 to 18:00 to cause minimal disturbance to the community.

- **Visual** – Construction vehicles and equipment can be visually unpleasant for residents. Furthermore the proposed development should be designed to be aesthetically pleasing and blend in with the adjacent neighbouring properties.

Alternative 2

The establishment of a Mixed uses/ Residential development will be less feasible than Industrial 1 uses due to the Sunderland Ridge area being earmarked for future Industrial/ Warehousing developments.

Noise pollution will increase considerably over time due to the future development of the proposed PWV9 Road that will run adjacent to the site.

Considering the entire infrastructure associated with Mixed uses/ Residential developments it will not be financially viable for the developer to construct

Mixed/ Residential uses.

In light of the above-mentioned it is clear that Industrial uses will be more acceptable and feasible in the Sunderland Ridge area than Residential uses.

No-go (compulsory)

The no-go option entails that the development area stay in the current state.

The current state of the application site is highly disturbed by means of human activity. No structures or buildings are present on the site and no sensitive features such as ridges, wetlands or drainage lines occur.

The proposed development will also limit the disturbance to the environment as illegal squatting and dumping is usually in accordance with vacant, undeveloped and un-maintained land. Invader and Alien plant species could also become a significant factor to consider, as these species usually infest areas of disturbance and neglect.

It is not recommended that the no-go option is followed as the current state of the study area is much more detrimental to the environment than the proposed development alternative. The proposed development will have no impact on the Bio-physical environment, but will have a significant positive impact on the Socio-economic Environment as the proposed Development will contribute and promote economic growth of the surrounding environment and the Local Authority.

The Development offer economic turnover as it will provide various employment opportunities to a number of skilled, semi-skilled and unskilled employees during the construction and operational phases.

The proposed development is supported by several strategies and frameworks for the area including the Tshwane Regional Spatial Development Framework (RSDF), Southern Region and the Intensification and Densification Strategy.

6. IMPACT SUMMARY OF PREFERRED PROPOSAL

Identify preferred proposal

Alternative 1 (Proposal)

Having assessed the significance of impacts of the proposal and various alternatives, please provide an overall summary and reasons for selecting the preferred project proposal.

It's evident that based on the biophysical and sociological characteristics, the site is suitable for the proposed development (only if the project is planned and managed in accordance with an approved Environmental Management Plan). The development will fit in with the surrounding area and create numerous job opportunities during the constructional and operational phases.

As already indicated, most of the construction related activities could be mitigated to an acceptable level. Furthermore no detrimental ecological impacts are anticipated; in fact the construction and operational activities of the proposed development can lead to an improvement of the ecological conditions on the site. It is confirmed that the proposed development will have access to all necessary services and that sufficient capacity does exist within the existing surrounding systems.

If the proposed development is managed according to a standard and a quality architectural theme and finishing are proposed for the development it will sufficiently address the potential or possible visual impacts of the development on the receiving environment. If designed with the surrounding environment in mind, it will enhance the "Sense of Place" and overall character of the area.

The proposed development will create several job opportunities during the construction phase and will also promote job opportunities during the operational phase. The proposed development is supported by several national, local and government policies, frameworks and documents.

No Cultural/Historically significant areas were identified on the application site and thus no areas of historical or cultural value will be affected.

If managed correctly, the proposed project could (mainly in the long term) have a significant positive impact on the social and economical environments. The proposed development could also have a positive impact on the ecological environment (especially through the creation of habitats, the re-vegetation of the site, the removal of exotic invaders and weeds from the study area).

In the long term the impact of the proposed development (especially on the sustainability of the open spaces of the study area and the larger system to which it is linked) will be more positive than negative because.

- The exotic invaders and weeds will be removed from the study area on a continuous basis;
- The local residents will enjoy the improved safety, tranquil atmosphere

of the proposed development;

- New habitats will be created – these habitats could be planned to attract fauna species that are able to adapt to the surrounding human activities;
- If new habitats are created and if suitable plant species and fauna species are introduced into the formal landscaping spaces of the study area, new and more sustainable eco-systems (without erosion and siltation) will eventually form in the open spaces of the study area.

Furthermore, from the findings of this Basic Assessment the following can be concluded:

- The proposed development will fit in with the surrounding land uses and the general character of the area, and will add some diversity to land-uses of the area. Therefore, the proposed development is in line with the policies and legislation and highly compatible with the present and future land uses in the area;
- The mitigations and adaptive monitoring outlined in this Basic Assessment and the EMP with respect to potential adverse impacts should result in limited adverse impacts on local and regional, natural and socio-economic resources. Balanced with the overall beneficial positive economic and environmental impacts identified, the potential net adverse effects attributable to the proposed development do not constitute a threat to local and regional ecological resources and social systems; and
- No “fatal flaws” or adverse impacts that cannot be mitigated are anticipated to be associated with the proposed residential development.

As a result of the above mentioned information, Bokamoso is of the opinion that the proposed development (only if planned, implemented and managed correctly) will in the long term have a significant positive impact on the larger regional system to which it is linked. The development will also (mainly in the long and medium term) have a significant positive impact on the social and economical environments (on a local, regional and provincial scale).

It is therefore requested that the development be allowed to proceed, so long as the mitigation measures contained in this report and in the Environmental Management Plan (**Annexure H**) are implemented, so as to achieve maximum advantage from beneficial impacts, and sufficient mitigation of adverse impacts.

7. RECOMMENDATION OF PRACTITIONER

Are 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).

YES X	NO
-----------------	----

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process 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:

As a result of the above mentioned information, Bokamoso request that the above development be approved as long as the following are followed:

- The EMP attached must be adhered to at all times and the appointed ECO must ensure the developer comply with the EMP.
- Mitigation measures, as set out in the EMP, must be implemented during the construction and operational phases as these were recommended by specialist;
- External environmental monitoring must be conducted to ensure overall compliance with legislative requirements and the EMP;
- It is important that a proper storm water management plan should be developed by the appointed engineers, and implemented during the construction and operational phases of the proposed development, in order to manage the storm water effectively as a result of heavy precipitation. The Storm water Management Plan should be made a condition of the Record of Decision (ROD);
- It is recommended that the following should be made a recommendation of the ROD:
Once the relocation of the Red Listed *Drimia sanguinea* individuals has been approved these options should be investigated in depth and a suitable location should be allocated and submitted to GDARD for approval.
- It is recommended that a specialist conduct a site inspection before the vegetation is cleared for construction. Should Giant Bullfrogs occur on site during the development's construction phase, these individuals should be relocated to natural grassland areas in the surrounding area. Any other herpetological specimens that are encountered during the construction phase should be removed and relocated,
- Alien and invasive species should be removed continuously;
- Rehabilitation must be done correctly and timeously, particularly in terms of erosion control and the prevention of exposed soils,
- Concentrated water ingress into the ground should be avoided at all times prior, during or after construction.
- If during construction any new evidence of archaeological sites of 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 in to careful consideration during the construction phase.
- It is recommended that the Geotechnical report be made a condition of the ROD. Before construction commences the Geotechnical report should be submitted to GDARD, CoT and DWA for approval.
- It is recommended that the Storm water Management Plan be made a recommendation of the ROD and that it should be approved by CoT, DWA and GDARD prior to construction on site.

8. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

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

EMP attached

YES X

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

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)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

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

Appendix G: Specialist reports

Appendix H: EMP

Appendix I: Other information

Site plan(s)



Appendix A

**Photographs
(Not yet available)**



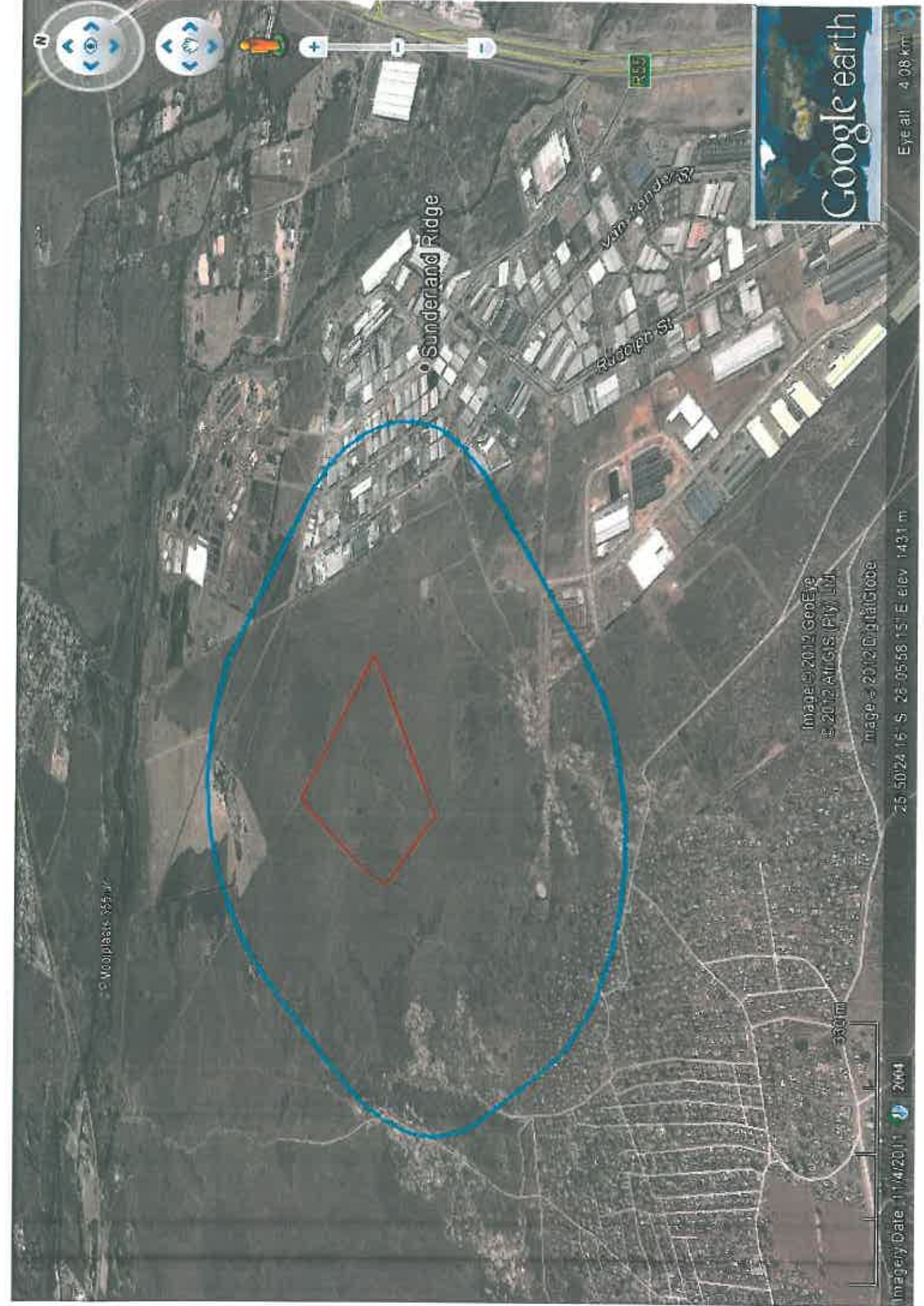
**Facility Illustration(s)
(Not yet available)**



Route Position Information



Appendix D



Sunderland Ridge

van Konyk St

Avonport St

R55

Google earth

Eye alt 4.08 km

Image © 2012 GeoEye
© 2012 AIRGIS (Pty) Ltd
Image © 2012 DigitalGlobe

25° 50' 24.16" S 26° 05' 58.15" E elev 1431 m

Imagery Date 11/4/2011 2:04

© 2009 Google

500m

2km

Public Participation Information



Appendix E

Proof of Site Notice



NOTICE OF BASIC ASSESSMENT PROCESS

Notice is given of an application for a **Basic Assessment Process** that was submitted to the Gauteng Department of Agriculture and Rural Development, in terms of Regulation No. R543 published in the Government Notice No. 33306 of 18 June 2010 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing **Basic Assessment Procedures (Listing Notice: 1 and 3 – Governing Notice R544 & R546)** for the following activity:

Reference No: GAUT: 002/12-13/E0047

Project Name: Sunderland Ridge Extension 29

Property Description: A Part of the Remainder of Portion 70 (A Portion of Portion 29) of the Farm Mooiplaats 355-JR

Proposed Zoning Information: The proposed development will consist of the following zonings and land-uses: "Industrial 1"

Listing Activities Applied for:

GNR 544 (Listing Notice 1), 18 June 2010	Activity 9
GNR 544 (Listing Notice 1), 18 June 2010	Activity 23
GNR 544 (Listing Notice 1), 18 June 2010	Activity 24
GNR 546 (Listing Notice 3), 18 June 2010	Activity 4

Proponent Name: Rugged Property Investments (ONE) Pty Ltd

Location: Is situated West of the R55 Road, to the South-East of the Road M26 and directly to the West of the Sunderland Ridge Industrial area.

Date of Notice: 12 June 2012

Queries regarding this matter should be referred to:

Bokamoso Landscape Architects and Environmental Consultants

Juanita De Beer
P.O. Box 11375
Maroelana 0161
www.bokamoso.net

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

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 given above **within 40 days of this Notice**.



**Written Notices Issued to Those Persons
Detailed in 1(b) to 1(f) above**



LIST OF REGISTERED LETTERS
Lys van GEREgistreerde Briewe

(With an insurance option/met 'n versekeringsopsie)



Full tracking and tracing/Volledige volg en spoor

Name and address of sender: Bobameso P.O. Box 11 375,
 Naam en adres van afsender: Marcelona 0161
Sunderland Ridge X18, X28, X30, X31, X32, X33 + Pech
Tree X18

Insurance Service
 Toll free number
 Toliery nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-Klantisakrif
1	Pieter Maritz P.O. Box 50581, Wierdapark, 0149					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 211 ZA CUSTOMER COPY 301028R
2	Sarel van Biljon P.O. Box 765, Rivonia, 2128					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 021 ZA CUSTOMER COPY 301028R
3	Zeenath Mohamed Ismail 546 Eling Street, Erasmid, 0183					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 035 ZA CUSTOMER COPY 301028R
4	Khali Mohammed Ismail 546 Helind Street, Erasmid, 0183					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 049 ZA CUSTOMER COPY 301028R
5	Nayima Mohammed Ismail P.O. Box 14332, Laudium, 0037					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 052 ZA CUSTOMER COPY 301028R
6	Lutchansamy Naidoo P.O. Box 53211, Centurion, 0046					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 106 ZA CUSTOMER COPY 301028R
7	Hester Maritz P.O. Box 34109, Erasmid, 0023					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 110 ZA CUSTOMER COPY 301028R
8	Julia Geiser P.O. Box 70546, Bryanston, 2021					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 083 ZA CUSTOMER COPY 301028R
9	Nicholas Jacobus van der Westhuizen P.O. Box 34045, Erasmid, 0023					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 097 ZA CUSTOMER COPY 301028R
10	Lesiba Daniel Sindane P.O. Box 140, Ldezonid, 0026					REGISTERED LETTER (with a domestic insurance option) ShareCall 0800 111 502 www.sapo.co.za RD 693 135 066 ZA CUSTOMER COPY 301028R
Total Totaal		R	R	R	R	

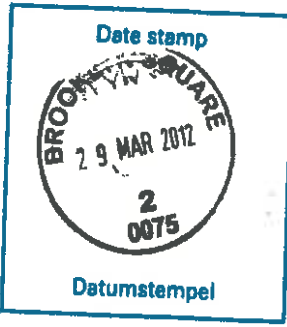
Number of letters posted
 Getal briewe gepos

Signature of client
 Handtekening van klient

Signature of accepting officer
 Handtekening van aanneembeampte

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.



LIST OF REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE

(With an insurance option/met 'n versekeringsopsie)



Full tracking and tracing/Volledige volg en spoor

Name and address of sender Bobamase PO Box 11375,
 Naam en adres van afsender Marcelona 0161
Sunderland Ridge X18, X28, X30, X31, X32, X33 Peach
Tree X18

For enquiries
 Toll free number
 Tofree nommer
0800 111 502

No	Name and address of addressee Naam en adres van geadresseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-kliëntafskrif REGISTERED LETTER <small>(with a domestic insurance option) ShurCall 0800 111 502 www.sapo.co.za RD 693 135 070 ZA</small> CUSTOMER COPY 301028R
1	Christine Muller P.O. Box 31274, Kydlami, Halfway house, 1684					REGISTERED LETTER <small>(with a domestic insurance option) ShurCall 0800 111 502 www.sapo.co.za RD 693 135 145 ZA</small> CUSTOMER COPY 301028R
2	Jozsef Borbely P.O. Box 85, Ldezonid, centurion, 0026					
3						
4						
5						
6						
7						
8						
9						
10						
Total Totaal		R	R	R	R	

Number of letters posted
 Getal briewe gepos

Signature of client
 Handtekening van kliënt.....

Signature of accepting officer
 Handtekening van aanneembeampte.....

The value of the contents of these letters is as indicated and compensation is not payable for a letter received unconditionally. Compensation is limited to R100,00. No compensation is payable without documentary proof. Optional insurance of up to R2 000,00 is available and applies to domestic registered letters only.

Die waarde van die inhoud van hierdie briewe is soos aangedui en vergoeding sal nie betaal word vir 'n brief wat sonder voorbehoud ontvang word nie. Vergoeding is beperk tot R100,00. Geen vergoeding is sonder dokumentêre bewys betaalbaar nie. Opsionele versekering van tot R2 000,00 is beskikbaar en is slegs op binnelandse geregistreerde briewe van toepassing.



Proof of Newspaper Advertisement



S (ONGENOTEER)

ak deur nuwe reëls

86%

Alexander Forbes se nabelaste bedryfswins is op R52 miljoen 86% groter as in die vorige boekjaar.

gistreer is.

Omdat die groep nou baie meer kapitaal moet hou, sal dit sy vermoë raak om sy skuld af te betaal.

Teen die agtergrond hiervan word die groep se kapitaal- en skuldstruktuur hersien om seker te maak dat hy in die toekoms aan dié vereistes sal kan voldoen.

Die afdeling vir finansiële dienste het R336 miljoen tot die bedryfswins bygedra danksy groei in die aftreefonds- en gesondheidsorgafdeling en beter onderskrywingsresultate van Alexander Forbes Life.

By Investment Solutions het die bates onder bestuur

R229 miljoen gemaak.

Sy afdeling in Brittanje het 'n bedryfswins van £60 000 gemaak en die bates onder bestuur het tot £1,57 miljard toegeneem.

By die versekeraar Guardrisk het die bedryfswins met 10% toegeneem tot R136 miljoen danksy sterk groei in nuwe sake.

Die bruto nuwe premies van die versekeringsafdeling het met 15% toegeneem tot R926 miljoen en die inkomste uit sy bedrywighede in Afrika met 11% tot R181 miljoen.

Die bedryfswins van bogenoemde twee afdelings is onderskeidelik R289 miljoen en R31 miljoen.

Alexander Forbes se internasionale bedrywighede word steeds geraak deur die onstuimigheid in Europa en die swak ekonomiese toestand in Brittanje – die bedryfswins is 10% swakker op £14 miljoen.

Alexander Forbes is nie meer op die JSE genoteer nie en AFEH maak sy finansiële resultate bekend om die houders van sy genoteerde voorkeuraandele in te lig oor die vertoning van die groep.

Die voorkeuraandelhouders het 'n belang van 26,5% in

SUNDERLAND RIDGE X25 NOTICE OF BASIC ASSESSMENT PROCESS

Notice is given of an application for a Basic Assessment Process that was submitted to the Gauteng Department of Agriculture and Rural Development, in terms of Regulation No. R543 published in the Government Notice No. 33306 of 16 June 2010 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing Basic Assessment Procedures (Listing Notice: 1 and 3. Governing Notice R544 & R545) for the following activity: Reference No. GAUT/002/12-13/E0047. Project Name: Sunderland Ridge Extension 2B. Property Description: A Part of the Remainder of Portion 7D (A Portion of Portion 2B) of the Farm Mooiplaats 365-JR. Proposed Zoning Information: The proposed development will consist of the following zonings and land-uses: Industrial 1. Listing Notices Applied For: GMR 544 (Listing Notice 1), 18 June 2010 - Activity 3, 23 and 24 GMR 546 (Listing Notice 3), 18 June 2010 - Activity 4. Proponent Name: Stuffed Property Investments (ONE) Pty Ltd. Location: Is situated West of the R56 Road and South-East from the M29 road and directly West from Sunderland Ridge Industrial area. Date of Notice: 14 June 2012. Queries regarding this matter should be referred to: Bokamoso Landscape Architects and Environmental Consultants, Juanita De Beer, P.O. Box 11375 Marabella 0161. Tel: (012) 348 3810; Fax: (085) 570 5665, E-mail: lizeleg@nwab.co.za, www.bokamoso.net. 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 given above within 40 days of this Notice. 002/12-13/E0047 JUN 14/9/126

VELMORE ESTATE (SUNDERLAND RIDGE X25) NOTICE OF DFA REGULATION 31 SCOPING PROCESS

(AMENDMENT OF LAND DEVELOPMENT APPLICATION IN TERMS OF SECTION 35 (READ IN CONJUNCTION WITH ARTICLE 26) OF THE DFA, 1995 (ACT 67 OF 1995), SUNDERLAND RIDGE X25)

Notice is given in terms of Regulation 31 of the Development Facilitation Act, 1995 (Act No. 87 of 1995) of an Environmental Scoping Process. Application is made for the Amendment of the Land Development Area (LDA) in terms of Section 35 (Read in conjunction with Article 26) of the DFA (Project Name: Velmure Estate/Hotel Amendment Application (Sunderland Ridge X25). Property Description: Situated on Portion 98 of the farm Mooiplaats 365-JR, Registration Division: JR, Gauteng Province. Proposed Amendment Information: The proposed of the application is to acquire the necessary land use rights in order to increase the allowed floor area of the hotel(s) to 3700m² with the number of guest rooms not exceeding 100, and thus accommodate the existing new Velmure Hotel (Velmure Grande Hotel). This will expand the existing rights of the land development area by adding the rights of an additional hotel to the application. Furthermore, this application serves to correct the areas of the different buildings on the property as indicated in the approved Annexure PUA101, Amendment Scheme 50PU, to be in line with the as built structures. Finally, it is proposed that certain conditions for Erf 447, Sunderland Ridge X25, as stipulated in the approved Annexure PUA100, Amendment Scheme 50PU, to be amended. Please note that the applicant do not request any release of environmental legislation, and hereby request that the Conditions of Establishment be amended in order to make it possible for the development to proceed. Proponent Name: NAPAJ Trading (Pty) Ltd. Location: Portion 98 of the farm Mooiplaats, 365-JR is located between the Hennops River, to the North, and Road P39-1 (M26), to the South, in close proximity to the built-up areas of Erasmus. Road P39-1 (M26) links Erasmus and Road R56 in the East with Gerardsville Agricultural Holdings and Road R511 in the West.

**Communications to and from Persons
Detailed in Point 2 and 3 above**



From: User3 <user3@bokamoso.net>

Sent: Maan 2012/06/11 11:48 AM

To: andre@ward101.co.za

Cc:

Bcc: bokamosobackup@gmail.com

Subject: Interested and Affected Party Member - Public Notice - Sunderland Ridge X29

Message . Public Notice BA.pdf

Landowner & Tenants Letter.doc

To whom it may concern,

Please look at the following Public Notice and Landowners & Tenants Letter attachments for the proposed Sunderland Ridge X29 Project.

Please don't hesitate to contact me for any questions and queries.

Hope this finds you well.

Kind Regards

Juanita De Beer



**Environmental Consultants &
Landscape Architects**

T: (27) (2) 346 3810 F: 27 86 570 5659 E: info@bokamoso.co.za
36 Lebombo Road Asalea Gardens, Pietermaritzburg

LEBOMBO GARDEN BUILDING
36 LEBOMBO ROAD
ASHLEA GARDENS
0081

P.O. BOX 11375
MARCELANA
0181

Tel: 0821 44 33 11
Fax: 082 571 5030

Email: info@bokamoso.co.za
Web: <http://www.bokamoso.co.za>



Dear Landowner

12 June 2012

You are hereby informed that Bokamoso Environmental Consultants were appointed (as EAP) by Rugged Property Investments(One) (Pty) Ltd to conduct a Basic Assessment Process in terms of the amended 2010 NEMA EIA Regulations for the proposed Sunderland Ridge X29 "Industrial 1" Development to be established on a Part of the Remainder of Portion 70 (A Portion of Portion 29) of the Farm Mooiplaats 355-JR

The proposed Land-uses for the study area are as follows:

- "Industrial 1"

In terms of Regulation No. R543 published in the Government Notice No. 33306 of 18 June 2010 of the National Environment Management Act, 1998 (Act No. 107 of 1998) governing Basic Assessment Procedures (Notice 1 and 3 – Governing Notice R544 & R546) of the 2010 amended NEMA Regulations, the EAP must inform all landowners and tenants within 100m from the study area of the proposed development.

Bokamoso already supplied you (a landowner) of the proposed development with Notification Letter and request that you supply the contact details of any tenants or other interested and affected parties that reside or work on your property to Bokamoso. Bokamoso will then also 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 your tenants, workers etc. Another option is to act as representative on behalf of these parties.

Please confirm (via email/Fax) that you received the Landowners Notification and this Letter. Also indicate in this Confirmation Letter whether you have tenants on your property and you're preferred method of tenant/worker notification

Regards

A handwritten signature in black ink that reads "Jd Beer". The signature is written in a cursive style with a horizontal line underneath the name.

.....
Lizelle Gregory/Juanita De Beer

**Minutes of Any Public and/or
Stakeholders Meetings
(Not available)**



Appendix E5

Comments and Responses Report



**BASIC ASSESSMENT REPORT FOR THE PROPOSED SUNDERLAND RIDGE
EXTENSION 29, PART OF THE REMAINDER OF PORTION 70 (A PORTION OF
PORTION 29) OF THE FARM MOOIPLAATS 335 - JR**

Gaut: 002/12 – 13 /E0047

Issue	Commentator	Date	Response
<p>Recommendations:</p> <p>The Department recommends that the following issues be taken into consideration:</p> <p>a. The fauna and flora assessment study must be conducted and submitted to this Department for review before the final Basic Assessment Report is submitted to GDARD.</p> <p>b. The layout plan indicating the development footprint in relation with the site's sensitive ecological features must be included in the final Basic Assessment Report.</p> <p>c. The ecological sensitivity of the proposed application site must be determined and clearly mapped out. It is recommended that a composite sensitivity plan be superimposed on the site plan to guide the layout of the proposed development.</p> <p>d. A detailed Geotechnical Investigation should be conducted for the proposed application site. The investigation should focus on the dolomite stability of the application site.</p>	<p>Environmental Management Department – City of Tshwane – Rudzani Mukheli</p>	<p>12/11/2012</p>	<p>a. A fauna and flora assessment study was conducted and forms part of the Final Basic Assessment Report (Refer to Appendix G1 to G4).</p> <p>b. A layout plan indicating the footprint in relation with this site's sensitive ecological features are included in the final Basic Assessment Report. (Refer to Appendix A as well as the Status Quo)</p> <p>c. The ecological sensitivity of the proposed application site is overlaid with the layout map. Please refer to Appendix A and the Status Quo.</p> <p>d. It is recommended that this is made a condition of ROD.</p>
<p>Reference is made to the above-mentioned proposed development; this office would like to acknowledge receipt of the above mentioned document and would like to respond as follows:</p> <p>1. It is mentioned in the report that the study area is not affected by any floodlines, natural streams or water courses and as such the developer will not be required to apply for any water use license according to section 21 of the National Water Act, 1998 (Act 36 of 1998) (NWWA), however please note that the proposed activity must comply with all sections and regulations of the NWA.</p> <p>2. It is also mentioned in the report that the study area is underlain by dolomite. Please note that a detailed</p>	<p>Department of Water Affairs. Mr T.L. Mathebe</p>	<p>24/10/2012</p>	<p>1. The Developer will ensure that the proposed activity will comply with all sections and regulations of the NWA, although the study area is not affected by any floodlines, natural streams or water courses.</p> <p>2. It is recommended that this is made a condition of ROD.</p>

<p>geotechnical investigation and dolomite stability investigation must be conducted and be part of the Environmental Impact Assessment (EIA) Report which will be submitted to this Department.</p>			
<p>3. It is also stated that liquid effluent will be produced and will be disposed of in a municipal sewage system. Please note that the developer must obtain a letter from the municipality indicating that there is available capacity at the wastewater treatment works to cater for the sewage effluent to be generated by the development, and furnish such information to this Department.</p>			<p>3. A confirmation letter will be obtained from the appointed engineer/ municipality and will be submitted to the DWA on receipt thereof. If not possible to obtain written confirmation from the local authority, the applicant's engineer will supply the contact numbers of the relevant service engineers at the local authority with whom he consulted/ discussed the proposed services. It is recommended this be made a recommendation of the ROD.</p>
<p>4. The proposed activity will produce solid waste during the construction and operational phases, the management of which will be the responsibility of the developer. The developer must obtain a confirmation letter from the relevant municipality or service provider to confirm that sufficient air space exist to cater for the treating / disposing of such solid waste generated by the activity.</p>			<p>4. The management of the production of solid waste during the construction and operational phases will be the responsibility of the developer. The developer will also obtain a confirmation letter from the relevant municipality or service provider in order to confirm that sufficient air space exists to cater for the treating / disposing of the solid waste that will be generated by the activity.</p>
<p>5. Storm water management plans must be submitted to the relevant municipality for approval. Such approval must be submitted to this Department together with a copy of the original storm water management plans.</p>			<p>5. Storm water plans will be submitted to the relevant municipality for approval. Such approval will also be submitted to your Department together with a copy of the original storm water management plans. This is to be made a recommendation of the ROD.</p>
<p>6. The developer must ensure that no wastewater may run freely into any of the surrounding streets or naturally vegetated areas and also ensure the correct positioning of construction camps and their sanitation facilities.</p>			<p>6. The developer will ensure that no wastewater will run freely into any of the surrounding streets or naturally vegetated areas. The developer will also ensure the correct positioning of construction camps and their sanitation facilities.</p>
<p>7. No construction or dumping activities should take place within the 1:50 year or 1:100 year floodline or a horizontal distance of 100m from a water resource unless authorized by this Department.</p>			<p>7. The developer will ensure that no dumping activities will take place within the 1:50 year or 1:100 year floodline or in a horizontal distance of 100m from any water resource unless so authorized by your Department.</p>
<p>8. The storage and use of fuel and other chemicals on site must be adequately managed to prevent soil and water pollution. The developer must provide containment areas for potential pollutants at refueling depots, and</p>			<p>8. The developer will ensure that the management and storage of fuel and other chemicals will be adequately executed. The developer will provide the containment areas for potential pollutants at the refueling depots. The</p>

<p>must ensure that transport, storage, handling and disposal of hazardous substances is adequately controlled and managed.</p> <p>9. If any pollution incident is experienced, this office must be notified immediately.</p> <p>10. Mitigatory measures must be made on site to prevent pollution of the water resources including ground water component from occurring as per requirement of section 19 of the National Water Act, 1998 (Act 36 of 1998). Any query regarding the content of this letter can be directed to the above-mentioned contact details.</p>			<p>developer will also ensure that transport, storage, handling and disposal of hazardous substances will be adequately controlled and managed.</p> <p>9. Your Office and Department will be immediately notified if any pollution incident does occur.</p> <p>10. Strict prevention measures will be in place and adhered to in order to prevent any water or ground water pollution.</p>
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Comments from I&Ap's on Draft Basic Assessment Report





water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE REGIONAL CHIEF DIRECTOR: NORTH WEST
Bothongo Plaza East, 285 Schoeman Street, Pretoria

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		PRETORIA	(012) 392 1406
E	mathebet@dwa.gov.za	0001	16/2/7/A210/N110

Bokamoso Environmental Consultants
P.O Box 11375
Maroelana
0161

For Attention: Ane Agenbacht

DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED SUNDERLAND RIDGE EXTENSION 29 ON THE REMINDER OF PORTION 70 (A PORTION OF PORTION 29) OF THE FARM MOOPLAATS 355-JR.

Reference is made to the above-mentioned proposed development; this office would like to acknowledge receipt of the above mentioned document and would like to respond as follows.

1. It is mentioned in the report that the study area is not affected by any floodlines, natural streams or water courses and as such the developer will not be required to apply for any water use license according to section 21 of the National Water Act, 1998 (Act 36 of 1998) [NWA], however please note that the proposed activity must comply with all sections and regulations of the NWA.
2. It is also mentioned in the report that the study area is underlain by dolomite. Please note that a detailed geotechnical investigation and dolomite stability investigation must be conducted and be part of the Environmental Impact Assessment (EIA) Report which will be submitted to this Department.
3. It is also stated that liquid effluent will be produced and will be disposed of in a municipal sewage system. Please note that the developer must obtain a letter from the municipality indicating that there is available capacity at the wastewater treatment works to cater for the sewage effluent to be generated by the development, and furnish such information to this Department.
4. The proposed activity will produce solid waste during the construction and operational phases, the management of which will be the responsibility of the developer. The developer must obtain confirmation letter from the relevant

municipality or service provider to confirm that sufficient air space exist to cater for the treating/ disposing of such solid waste generated by the activity.

5. Stormwater management plans must be submitted to the relevant municipality for approval. Such approval must be submitted to this Department together with a copy of the original stormwater management plans.
6. The developer must ensure that no wastewater may run freely into any of the surrounding streets or naturally vegetated areas and also ensure the correct positioning of construction camps and their sanitation facilities.
7. No construction or dumping activities should take place within the 1:50 year or 1:100 year floodline or a horizontal distance of 100m from a water resource unless authorized by this Department.
8. The storage and use of fuel and other chemicals on site must be adequately managed to prevent soil and water pollution. The developer must provide containment areas for potential pollutants at refueling depots, and must ensure that transport, storage, handling and disposal of hazardous substances is adequately controlled and managed.
9. If any pollution incident is experienced, this office must be notified immediately.
10. Mitigatory measures must be made on site to prevent pollution of the water resources including ground water component from occurring as per requirement of section 19 of the National Water Act, 1998 (Act 36 of 1998).

Any query regarding the content of this letter can be directed to the above-mentioned contact details.

Yours Faithfully


Regional Head: North West

DATE: 24/10/2012

**Comments from I&Ap's on
Amendments to the BA Report
(Not yet available)**

A horizontal banner at the bottom of the page features a sunset background with silhouettes of trees and mountains. The text "Appendix E8" is overlaid in a large, white, outlined font.

Appendix E8

Copy of the Register of I&AP's



Nr	Registered Parties	Contact details	Address
1	Council Geo-Science	gheath@geoscience.org.za	
2	SAHRA	asalomon@sahra.org.za mdobochani@sahra.org.za	
3	PHRAG	maphata.ramphele@gauteng.gov.za	
4	DWA	justicem@dwaf.gov.za keetm@dwaf.gov.za	
5	Eskom	central@eskom.co.za paia@eskom.co.za	
6	Sanral	scnick@nra.co.za	
7	Gautrans	kumen.govender@gauteng.gov.za	
8	Randwater	customerservice@randwater.co.za	
9	City of Tshwane	rudzanim@tshwane.gov.za	
10	Spoornet	daniel.ramokone@transnet.net	
11	DA Councillor Roads	casperm@tshwane.gov.za	
12	Andries Ward Councillor	andre@ward101.co.za	

**Comments from I&AP's
on the Application
(Not available)**

A horizontal banner at the bottom of the page features a sunset background with silhouettes of trees and mountains. The text "Appendix E10" is overlaid in a large, white, outlined font.

Appendix E10

**Water Use Liscence(s), SAHRA Information,
Service Letters from Municipalities &
Water Supply Information
(Not Available)**

A horizontal banner at the bottom of the page. The background is a sunset or sunrise scene with a gradient of orange, yellow, and red in the sky. Silhouettes of trees and a distant mountain range are visible against the horizon. The text "Appendix F" is overlaid on the right side of the banner in a large, white, sans-serif font with a thin black outline.

Appendix F

Specialist Reports



Appendix G

Flora Assessment



Appendix G1

GALAGO ENVIRONMENTAL



Biodiversity & Aquatic Specialists

638 Turf Street

Wingate Park, 0181

Tel: 012-345 4891

Fax: 086 675 6136

Email: Vanessam@lantic.net

Flora Assessment

of

**Sunderland Ridge X 29
on Portion 29 of the farm Mooiplaats 355-JR**

February 2013

Report author: Mrs. P. Lemmer (Cert. Sci. Nat: B.Sc.)
Report verified/reviewed by: Dr. L.A. Coetzer (D.Sc., Prof. Nat. Sci.)

VERIFICATION STATEMENT

Petro Lemmer is a Certified Natural Scientist with the S.A. Council for Natural Scientific Professions. This communication serves to verify that the flora report compiled by Petro Lemmer has been prepared under my supervision, and I have verified the contents thereof.

Declaration of Independence: I, Dr. L.A. Coetzer (421009 5029 089) declare that I:

- am committed to biodiversity conservation but concomitantly recognize 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 for Natural Scientific Professions
- act as an independent specialist consultant in the field of botany
- am subcontracted as specialist consultant by Galago Environmental CC for the proposed Sunderland Ridge Ext 29 development project described 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 Galago Environmental CC 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, 2006.



Dr. L.A. Coetzer

DECLARATION OF INDEPENDENCE

I, Petro Lemmer (440129 0025 085) declare that I:

- am committed to biodiversity conservation but concomitantly recognize 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 for Natural Scientific Professions
- act as an independent specialist consultant in the field of botany
- am subcontracted as specialist consultant by Galago Environmental CC for the proposed Sunderland Ridge Ext 29 development project described 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 Galago Environmental CC 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, 2006.



Petro Lemmer

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1. INTRODUCTION

Galago Environmental was appointed to conduct a vegetation survey on Portion 29 of the farm Mooiplaats 355-JR (also known as Sunderland Ridge X 29), scheduled for industrial development. The objective was to determine which species might still occur on the site. Special attention had to be given to the habitat requirements of all the Red List species that may occur in the area. This survey focuses on the current status of threatened plant species occurring, or which are likely to occur on the study site, and a description of the available and sensitive habitats on the site and within 200 meters of the boundary of the site.

2. OBJECTIVES OF THE STUDY

- To assess the current status of the habitat component and current general conservation status of the area;
- To list the perceptible flora of the site and to recommend steps to be taken should endangered, vulnerable or rare species be found;
- To highlight potential impacts of the development on the flora of the proposed site; and
- To provide management recommendations to mitigate negative and enhance positive impacts should the proposed development be approved.

3. SCOPE OF STUDY

This report:

- Lists the more noticeable trees, shrubs, herbs, geophytes and grasses observed during the study and offers recommendations about the protection of the sensitive areas on the study site;
- Indicates medicinal plants recorded and lists alien species;
- Comments on connectivity with natural vegetation on adjacent sites;
- Comments on ecological sensitive areas;
- Evaluates the conservation importance and significance of the site with special emphasis on the current status of resident threatened species; and
- Offers recommendations to reduce or minimise impacts, should the proposed development be approved

4. STUDY AREA

4.1 Regional vegetation

The study site lies in the quarter degree grid cell 2528CC (Centurion). Mucina & Rutherford (2006) classified the area as Carltonville Dolomite Grassland, a species-rich grassland with shallow soil and slightly undulating plains on dolomite dissected by prominent rocky chert ridges. This grassland falls within a warm-temperate summer-rainfall region with high summer temperatures and severe frequent winter frosts.

This vegetation unit is considered vulnerable. Its conservation target is 24%. Small parts of this unit are conserved in statutory reserves and a few private conservation areas. Almost a quarter of the unit is already transformed by cultivation, urbanization, mining and the building of two dams.

4.2 The study site

The 15,0524 ha study site is situated southwest of Erasmia Township and lies on Portion 29, along the northeastern boundary line of portion 28 of the farm Mooiplaats 355-JR. Deep pockets of red Kalahari sand have collected in depressions in the dolomite forming suitable habitat for specific Red List plant species.

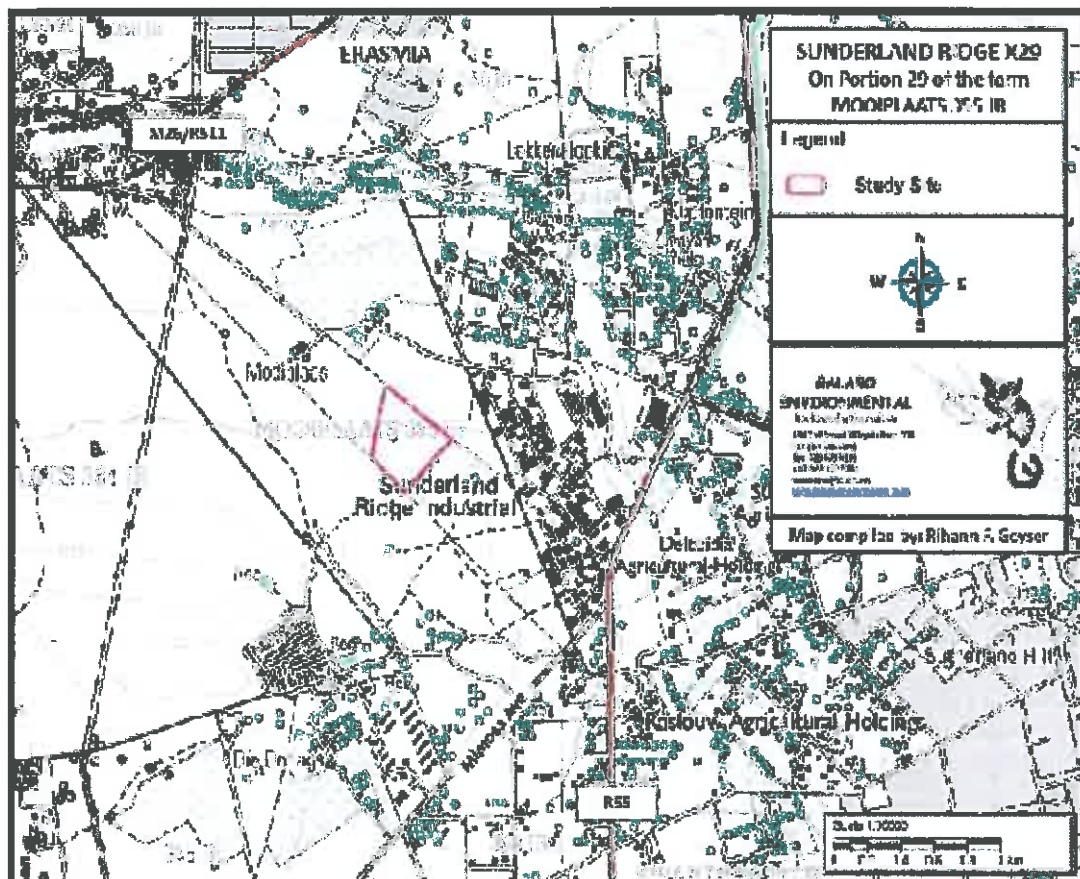


Figure 1: Locality map of the study area

5. METHOD

A desktop study of the habitats of the Red List and Orange List species known to occur in the area was done before the site visit. Information about the Red List and Orange List plant species that occur in the area was obtained from GDARD. The Guidelines issued by GDARD to plant specialists as well as various publications (see Section 11) were consulted about the habitat preferences of the Red- and Orange List species concerned.

The list of plants recorded in the 2528CC quarter degree grid cell was obtained from SANBI and consulted to verify the record of occurrence of the plant species seen on the site. The vegetation map published in Mucina and Rutherford (2006) was consulted about the composition of Carltonville Dolomite Grassland.

The study site was examined on 23 January 2013 to determine whether suitable habitat for the Red List species known to occur in the quarter degree grid cell existed and to survey the flora present on the site.

The study site was inspected to determine the study unit (see Figure 2) and four plots were selected at random for detailed study. Each plot, which measured about 10m x 10m, was surveyed in a random crisscross fashion and the plants recorded. Areas where the habitat was

suitable for the Red List species known to occur in the quarter degree grid cell were examined in detail. On 26 March 2013 the site and the surrounding area within 200 meters of the boundaries of the site was inspected for the presence of the autumn-flowering Red List species expected to occur on the site.

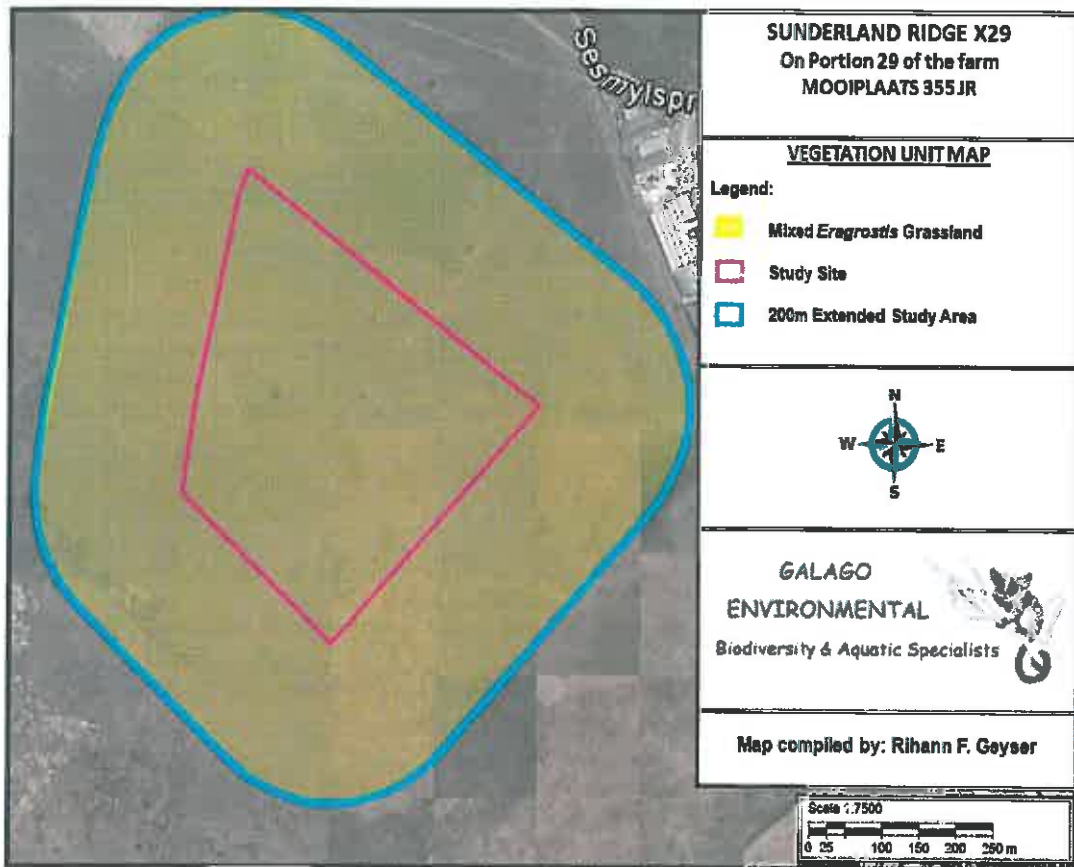


Figure 2: Vegetation study units identified on the study site

6. RESULTS

6.1 Vegetation study units

The entire study site comprised a single vegetation study unit, designated Mixed *Eragrostis* grassland (see Figure 2). Table 1 lists the trees, shrubs, geophytes, herbs and grasses actually found on the surveyed areas of the site.

6.2 Mixed *Eragrostis* grassland

6.2.1 Compositional aspects and Connectivity

The entire site comprised a single study unit that consisted of natural primary grassland with pockets of red Kalahari sand in depressions between the dolomite outcrops. Two large specimens of *Searsia lancea* were observed on the site. Connectivity with natural grassland existed in all directions but will be limited by pending development of the surrounding properties. The species diversity of the Mixed *Eragrostis* grassland study unit was high. Of the 136 plant species recorded in the study unit, 123 were indigenous species. The following number of species in each life form was noted:

LIFE FORM	NUMBER OF SPECIES
Annual & perennial herbaceous species	65
Tree species	7
Shrubs and dwarf shrubs	9
Grasses	36
Geophytes	18
Sedges	0
Succulents	1
Total No of species	136

6.6.2 Orange List species

The habitat was suitable for three of the seven Orange List plant species known to occur in the 2528CC quarter degree grid cell. Two of these species, *Boophone disticha* and *Hypoxis hemerocallidea*, were found sparsely scattered in the Mixed *Eragrostis* grassland study unit. (See Annexure A for a list of the Orange- and Red List species known to occur in the quarter degree grid cell)

6.6.3 Red List species

Fifteen Red List plant species are known to occur in the 2528CC quarter degree grid cell, six of these within 5 km of the study site. The habitat of the study site was suitable for three of the 15 species (see Annexure A). Although none were found during the 23 January 2013 study, the spring-flowering hyacinth *Drimys sanguinea*, with its distinctive red bulb was found during the 26 March 2013 site visit. Neither the orchid *Habenaria kraenzliniana* nor the capparid *Cleome conrathii* were found during the 26 March 2013 site visit.

GDARD requested that biodiversity studies be carried out for *Cheilanthes deltoidea* subsp *silicola*, *Habenaria kraenzliniana* and *Cucumis humifructus*. The habitat was not suitable for *C. deltoidea* subsp *silicola* and *Cucumis humifructus* (this plant had never been recorded in the 2528CC q.d.s. and the habitat was certainly not suitable for this species; see Annexure B).

6.6.4 Medicinal plants

The names of known medicinal plants are marked with numbers to the footnotes in Table 1 and the footnotes themselves appear at the end of the table. Of the 136 plant species recorded in the Mixed *Eragrostis* grassland study unit, 23 species with medicinal properties were found.

6.6.5 Alien plants

Alien plants are not listed separately, but are included in the list as they form part of the study unit. Their names are marked with an asterisk in Table 1. Thirteen alien plant species, of which three were Category 1 Declared weeds, one was a Category 2 Declared invader and one was a Category 3 Declared invader, were recorded on the site. Most of the alien species were confined to the shady areas surrounding the few large trees.

The alien plant names printed in bold in the plant table are those of Category 1 Declared Weeds and the removal of these plants is *compulsory* in terms of the regulations formulated under "The Conservation of Agricultural Resources Act" (Act No. 43 of 1983), as amended.

In terms of these regulations, Category 2 Declared invaders may not occur on any land other than a demarcated area and should likewise be removed.

Although the regulations formulated under the "The Conservation of Agricultural Resources Act" (Act No. 43 of 1983), as amended, require that Category 3 Declared invader plants may not

occur on any land or inland water surface other than in a biological control reserve, these provisions shall not apply in respect of category 3 plants already in existence at the time of the commencement of said regulations. If this is the case, a land user must take all reasonable steps to curtail the spreading of propagating material of Category 3 plants.

6.6.6 Sensitivity

Owing to the pristine nature of the Mixed *Eragrostis* grassland study unit, it was considered sensitive. A buffer of 200 meters should be maintained around the colony of Red List *Drimia sanguinea*, as prescribed by the GDARD Minimum requirements for Biodiversity Assessments, 2012.

The large multistemmed *Searsia lancea*, recorded at waypoint S 25° 43' 02,2" / E 28° 15' 39,2" should preferably be included in an open space area.

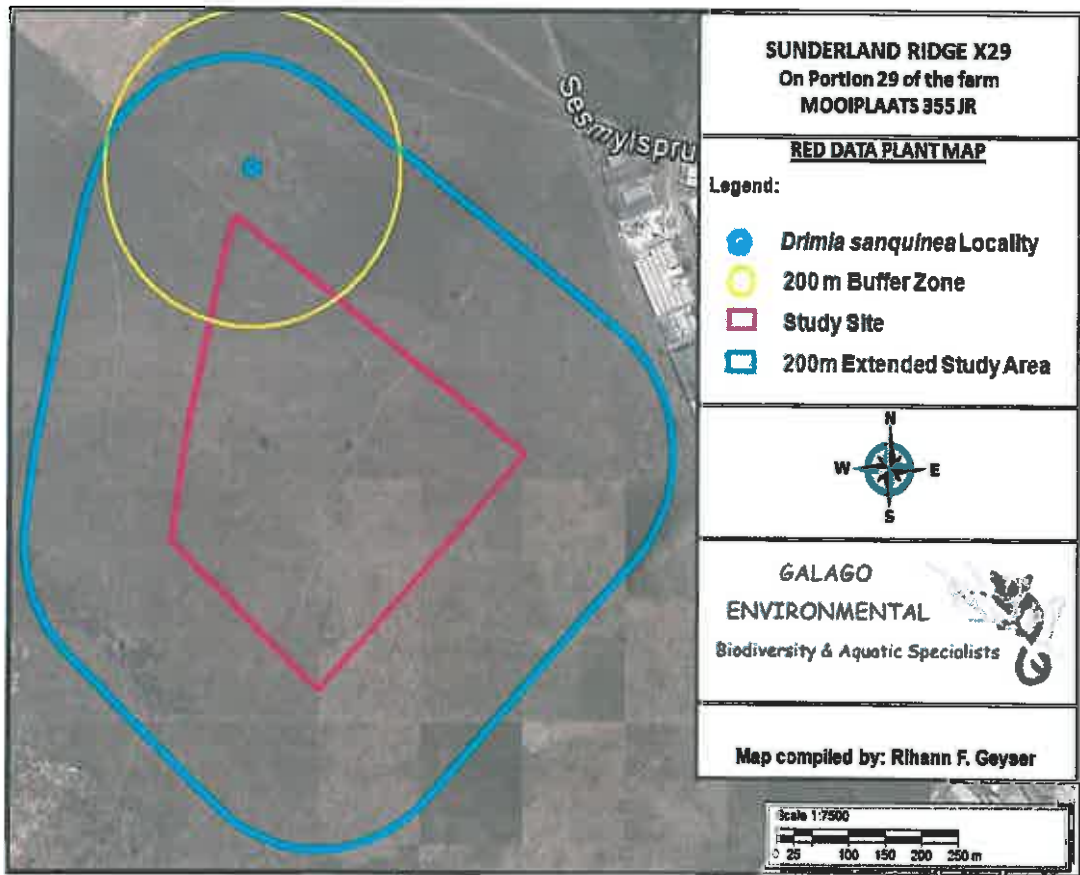


Figure 3: Map showing the red listed *Drimia sanguinea*



Figure 4: Mixed *Eragrostis* grassland study unit with large *Searsia lancea*.



Figure 5: The multi-stemmed *Searsia lancea*.

Table 1: Plants recorded in the Mixed *Eragrostis* grassland study unit.

SCIENTIFIC NAME	INV CAT	COMMON NAMES
<i>Albica setosa</i>		Slymuintjie
<i>Alloteropsis semialata</i> cf <i>subsp eckloniana</i>		
<i>Aloe greatheadii</i> var <i>davyana</i> ^{1,2}		Kleinaalwyn
<i>Alysicarpus rugosus</i> subsp <i>perennirufus</i>		Pioneer fodder plant
<i>Antheophora pubescens</i>		Wool grass / Borseltjiegras
<i>Anthospermum rigidum</i> subsp <i>rigidum</i>		
<i>Aristida adscensionis</i>		Annual three-awn / Eenjarige steekgras
<i>Aristida canescens</i> subsp <i>canescens</i>		Pale three-awn / Vaalsteekgras
<i>Aristida congesta</i> subsp <i>barbicollis</i>		Spreading three-awn grass / Witsteekgras
<i>Aristida diffusa</i> subsp <i>burkei</i>		Iron grass / Ystergras
<i>Aristida stipitata</i> subsp <i>graciliflora</i>		Long awned three-awn / Langnaaldsteekgras
<i>Asparagus suaveolens</i>		Wild asparagus / Katdoring
<i>Asparagus transvaalensis</i>		
<i>Babiana bainesii</i>		Bobbejaanuintjie
<i>Barleria macrostegia</i>		

SCIENTIFIC NAME	INV CAT	COMMON NAMES
<i>Bewisia biflora</i>		False love grass / Vals eragrostis
<i>Bidens bipinnata</i> *		Spanish blackjack / Spaanse knapsekérel
<i>Bidens pilosa</i> *		Blackjack / Knapsekérel
<i>Blepharis innocua</i>		
<i>Blepharis squarrosa</i>		
<i>Boophane disticha</i> ^{1,2,3}		Cape poison bulb / Seeroogblom, gifbol
<i>Brachiaria serrata</i>		Velvet grass / Fluweelgras
<i>Bulbine capitata</i>		
<i>Campuloclinium macrocephalum</i>*	1	Pom pom weed / Pompombossie
<i>Celtis africana</i>		White stinkwood / Witstinkhout
<i>Chaetacanthus costatus</i>		
<i>Chamaecrista comosa</i> var <i>capricornia</i>		
<i>Chascanum hederaceum</i> var <i>hederaceum</i>		
<i>Chascanum pinnatifidum</i> var <i>pinnatifidum</i>		
<i>Chlorophytum fasciculatum</i>		
<i>Clematis brachiata</i> ²		Traveler's joy / Klimop
<i>Convolvulus sagittatus</i>		
<i>Conyza albida</i> *		Tall fleabane / Vaalskraalthans
<i>Conyza podocephala</i>		
<i>Corchorus confusus</i>		
<i>Crabbea angustifolia</i> *		
<i>Crabbea hirsuta</i> ^{2,3}		Prickle head
<i>Crinum graminicola</i>		Graslelie
<i>Cucumis hirsutus</i>		Wild cucumber / Suurkomkommer
<i>Cucumis zeyheri</i>		Wild cucumber / Wilde agurkie
<i>Cyanotis speciosa</i>		Doll's powder puff / Bloupoeierkwassie
<i>Cymbopogon pospischilii</i> *		Turpentine grass / Terpentyngras
<i>Cynodon dactylon</i>		Couch grass / Kweek
<i>Dicoma anomala</i> subsp <i>anomala</i> ^{1,2,3}		Maagbitterwortel
<i>Digitaria eriantha</i>		Finger grass / Vingergras
<i>Digitaria monodactyla</i>		One-finger grass / Eervingergras
<i>Diheteropogon amplexans</i> var. <i>amplexans</i>		Broadleaved bluestem / Breëblaar blougras
<i>Diospyros lycioides</i> subsp <i>guerkei</i>		Bushveld bluebush / Bosveldbloubos
<i>Dipcadi viride</i>		Slymuntjie
<i>Ehretia rigida</i> cf. subsp <i>nervifolia</i> ^{2,4}		Puzzle bush / Deurmekaarbos
<i>Elyonurus muticus</i>		Wire grass / Draadgras
<i>Eragrostis capensis</i>		Heartseed love grass / Hartjiesgras
<i>Eragrostis chloromelas</i>		Curly leaf / Krulblaar
<i>Eragrostis gumiflua</i>		Gum grass / Gomgras
<i>Eragrostis racemosa</i>		Narrow heart love grass / Smalhartjiesgras
<i>Eragrostis rigidior</i>		Broadleaved curly leaf / Breëkrulgras
<i>Eragrostis superba</i>		Sawtooth love grass / Weeluisgras
<i>Eriospermum cooperi</i> var <i>cooperi</i>		
<i>Euphorbia prostrata</i> *		Hairy creeping milkweed
<i>Eustachys paspaloides</i>		Fan grass / Bruin hoenderspoor
<i>Felicia muricata</i> subsp <i>muricata</i> ^{1,2,3}		White felicia
<i>Fraxinus americana</i> *		American white ash
<i>Gazania krebsiana</i> subsp <i>serrulata</i> ³		
<i>Geigeria burkei</i> subsp <i>burkei</i> var <i>intermedia</i>		Vermeersiektebossie
<i>Gladolus permeabilis</i> subsp <i>edulis</i>		
<i>Gnidia capitata</i> ^{1,2}		Kerrieblom
<i>Gnidia sericocephala</i>		
<i>Grewia flava</i> ²		Velvet raisin bush / Fluweelrosyntjiesbos
<i>Helichrysum caespitium</i>		Speelwonderboom
<i>Helichrysum cerastioides</i> var <i>cerastioides</i>		Wolbossie
<i>Helichrysum rugulosum</i> ^{2,3}		
<i>Hermannia cordata</i>		
<i>Hermannia depressa</i> ^{2,3}		Creeping red Hermannia / Rooiopslag
<i>Heteropogon contortus</i>		Spear grass / Assegaaigras

SCIENTIFIC NAME	INV CAT	COMMON NAMES
<i>Hibiscus trionum</i> *		Bladder hibiscus / Terblansbossie
<i>Hilliardiella oligocephala</i> ^{1,2}		Cape vermonia / Blounaaldetee bossie
<i>Hyparrhenia hirta</i>		Common thatching grass / Dekgras
<i>Hypoxis hemerocallidea</i> ^{1,2,3}		Star flower / Gifbol
<i>Hypoxis iridifolia</i>		
<i>Hypoxis obtusa</i>		
<i>Indigofera daleoides</i> var <i>daleoides</i>		
<i>Ipomoea bathycolpos</i>		
<i>Ipomoea omaneyi</i> ²		Beespatat
<i>Justicia anagalloides</i>		
<i>Ledebouria luteola</i>		
<i>Ledebouria ovatifolia</i>		
<i>Ledebouria revoluta</i> ³		Common ledebouria
<i>Lopholaena coriifolia</i>		Pluisbossie
<i>Lotononis calycina</i>		Hairy lotononis
<i>Loudetia simplex</i>		Russet grass / Stingelgras
<i>Melinis nerviglumis</i>		Bristle leaf red top / Steekblaarblinkgras
<i>Melinis repens</i> subsp <i>repens</i>		Red top grass
<i>Merremia palmata</i>		
<i>Microchloa caffra</i>		Pincushion grass / Elsgras
<i>Monsonia angustifolia</i>		Crane's bill / Angelbossie
<i>Morus alba</i> *	3	Common mulberry / Gewone moerbeï
<i>Neorautanenia ficifolia</i>		
<i>Nidorella hottentotica</i>		
<i>Ornithoglossum vulgare</i>		Common poison onion / Gewone slangkop
<i>Osteospermum muricatum</i> subsp <i>muricatum</i>		
<i>Oxalis obliquifolia</i>		Sorrel / Suring
<i>Pachycarpus schinzianus</i> ²		Bitterwortel
<i>Panicum maximum</i>		Gurua grass / Gewone buffelsgras
<i>Pearsonia sessilifolia</i> subsp <i>sessilifolia</i>		Silwerertjeteë
<i>Pelargonium luridum</i> ^{1,2}		Stalkflowered pelargonium / Wildemalva
<i>Pentarrhinum insipidum</i>		Donkieperske
<i>Pinus</i> sp*	2	Pine / Denneboom
<i>Pogonarthria squarrosa</i>		Herring bone grass / Sekelgras
<i>Pollichia campestris</i>		Waxberry / Teesukerbossie
<i>Polygala hottentotta</i> ³		Small purple broom
<i>Pygmaeothamnus zeyheri</i> var <i>zeyheri</i>		Sand apple / Goorappel
<i>Raphionacme hirsuta</i> ²		Khadi root / Khadiwortel
<i>Scabiosa columbaria</i> ^{1,2,3}		Wild scabiosa / Bitterbos
<i>Schizachyrium sanguineum</i>		Red autumn grass / Rooi herfsgras
<i>Searsia lancea</i>		Karee / Karee
<i>Searsia pyroides</i> var <i>pyroides</i> ³		Common wild currant / Taaibos
<i>Selago densiflora</i>		Koningstapyt
<i>Senecio affinis</i>		
<i>Setaria sphacelata</i> var <i>sphacelata</i>		Small creeping foxtail / Kleinkruipmannagras
<i>Sida dregei</i>		Spider-leg
<i>Solanum ichtensteini</i>		Giant bitter apple / Bitterappel
<i>Solanum mauritianum</i>*	1	Bugweed / Luisboom
<i>Solanum sisymbriifolium</i>*	1	Wild tomato / Doringbitterappel
<i>Sonchus wilmsii</i>		Milk thistle / Melkdissel
<i>Sporobolus stapfianus</i>		Fibrous dropseed / Veselfynsaadgras
<i>Stipagrostis uniplumis</i> var <i>neesii</i>		Silky bushman grass / Blinkblaar boesmangras
<i>Striga asiatica</i>		
<i>Tagetes minuta</i> *		Khaki weed / Kakiebos
<i>Tephrosia semiglabra</i>		
<i>Themeda triandra</i>		Red grass / Rooigras
<i>Trichoneura grandiglumis</i>		Small rolling grass / Klein rolgras
<i>Triumfetta sonderi</i>		Maagbossie

SCIENTIFIC NAME	INV CAT	COMMON NAMES
<i>Tylosema esculentum</i>		Gemsbok bean / Gemsbokboontjie
<i>Vigna unguiculata subsp stenophylla</i>		
<i>Wahlenbergia denticulata var transvaalensis</i>		
<i>Zornia linearis</i>		

¹⁾ Van Wyk, B-E., Van Oudtshoorn, B. & Gericke, N. 2002.

²⁾ Watt, J.M. & Breyer-Brandwijk, M.G. 1962.

³⁾ Pooley, E. 1998.

⁴⁾ Van Wyk, B. & Van Wyk P. 1997.

7. LIMITATIONS, ASSUMPTIONS AND GAPS IN KNOWLEDGE

Sufficient information was received and sufficient rain had fallen to accomplish the survey that was done during optimum growing conditions.

8. FINDINGS AND POTENTIAL IMPLICATIONS

The Mixed *Eragrostis* grassland study unit on the site was pristine with connectivity in all directions. The pockets of red Kalahari sand form suitable habitat for the Red List capparid species *Cleome conrathii* that was found in December 2010 on the neighbouring farm Hoekplaats 384-JR in an unrelated survey. The Red List *Drimia sanguinea* was found during the 26 March 2013 site visit. Neither the orchid *Habenaria kraenzliniana* nor the capparid *Cleome conrathii* were found during the 26 March 2013 site visit.

9. RECOMMENDED MITIGATION MEASURES

The following mitigation measures are proposed by the specialist:

- If possible, the large multi-stemmed *Searsia lancea* should be preserved and included in an open space area.
- Dumping of builders' rubble and other waste in the areas earmarked for exclusion must be prevented, through fencing or other management measures. These areas must be properly managed throughout the lifespan of the project in terms of fire, eradication of exotics etc. to ensure continuous biodiversity.
- All Declared Weeds and invaders and other alien species must be removed from the site.

The following mitigation measures were developed by GDARD (Directorate of Nature Conservation, GDACE, 2008 and 2009) and are applicable to the study site. Where appropriate, Galago Environmental's specific elaborations are given in brackets.

- An appropriate management authority (e.g. the body corporate) that must be contractually bound to implement the Environmental Management Plan (EMP) and Record of Decision (ROD) during the operational phase of the development should be identified and informed of their responsibilities in terms of the EMP and ROD.
- All areas designated as sensitive in a sensitivity mapping exercise should be incorporated into an open space system. Development should be located on the areas of lowest sensitivity.
- The open space system should be managed in accordance with an Ecological Management Plan that complies with the *Minimum Requirements for Ecological Management Plans* and forms part of the EMP.
- The Ecological Management Plan should:
 - o include a fire management programme to ensure persistence of grassland

- o include an ongoing monitoring and eradication programme for all non-indigenous species, with specific emphasis on invasive and weedy species
- o ensure the persistence of all Red and Orange List species
- o include a monitoring programme for all Red and Orange List species
- o facilitate/augment natural ecological processes
- o provide for the habitat and life history needs of important pollinators
- o minimize artificial edge effects (e.g. water runoff from developed areas & application of chemicals)
- o result in a report back to the Directorate of Nature Conservation on an annual basis
- The open space system should be fenced off prior to construction commencing (including site clearing and pegging). 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. Access of vehicles to the open space system should be prevented and access of people should be controlled, both during the construction and operational phases. Movement of indigenous fauna should however be allowed (i.e. no solid walls, e.g. through the erection of palisade fencing).
- Information boards should be erected within the development to inform residents of the presence of Red / Orange List species, their identification, conservation status and importance, biology, habitat requirements and management requirements.
- Only indigenous plant species, preferably species that are indigenous to the natural vegetation of the area, should be used for landscaping in communal areas. 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.
- In order to minimize artificially generated surface stormwater 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

The habitat was suitable for three Red List species known to occur in the quarter degree square. The Red List *Drimia sanguinea* was found within 200 meters of the boundary of the site during the 26 March 2013 site visit. Neither the orchid *Habenaria kraenzliniana* nor the capparid *Cleome conrathii* were found during the 26 March 2013 site visit.

The study site, comprising a single vegetation study unit was considered sensitive and as much as possible of the area should be excluded from the development and where possible, these areas must be connected to other natural grassland areas on the neighbouring properties to facilitate connectivity. A 200 meter buffer should be maintained around the *Drimia sanguinea* colony.

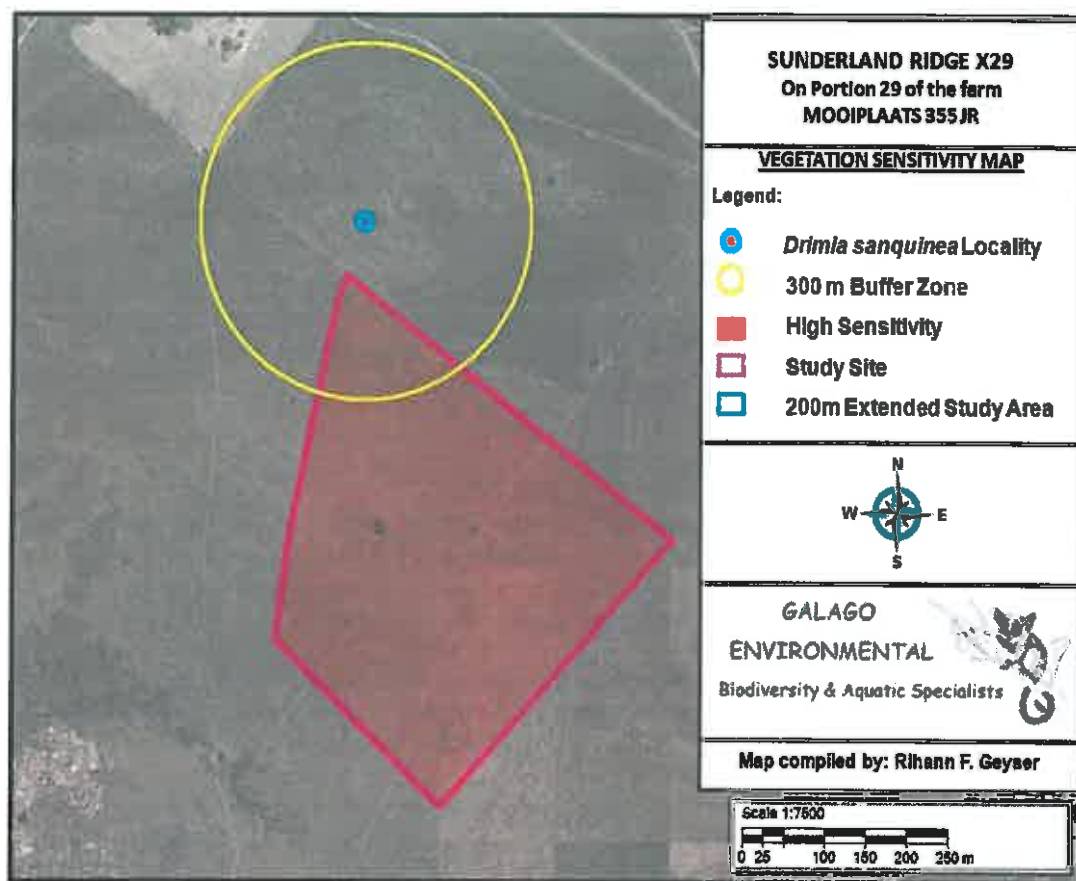


Figure 6: Vegetation sensitivity map

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ANNEXURE A: Red- and Orange List* plants of the 2528CC q.d.s.

Species	Flower season	Suitable habitat	Priority group	Conserv status	PRESENT ON SITE
<i>Adromischus umbraticola</i> subsp. <i>umbraticola</i>	Sep-Jan	Rock crevices on rocky ridges, usually south-facing, or in shallow gravel on top of rocks.	A2	Near threatened ¹	Habitat not suitable
<i>Boophae disticha</i>	Oct-Jan	Dry grassland and rocky areas.	N/A	Dedining ²	FOUND
<i>Bowiea volubilis</i> subsp. <i>volubilis</i>	Sep-Apr	Shady places, under large boulders in bush or low forest.	B	Vulnerable ²	Habitat not suitable
<i>Brachycorythis conica</i> subsp. <i>transvaalensis</i>	Jan-Mrt	Short grassland, hillsides, on sandy gravel overlying dolomite, sometimes also on quartzites, occasionally open woodland.	A3	Vulnerable ¹	Habitat not suitable
<i>Callilepis leptophylla</i>	Aug-Jan & May	Grassland or open woodland, often on rocky outcrops or rocky hillslopes.	N/A	Dedining ²	Habitat suitable
<i>Ceropegia decidua</i> subsp. <i>pretoriensis</i>	Nov-Apr	Direct sunning or shaded situations, rocky outcrops of the quartzitic Magaliesberg mountain series.	A1	Vulnerable ¹	Habitat not suitable
<i>Cheilanthes deltoidea</i> subsp. <i>silicicola</i>	Nov-Jun	Southwest-facing soil pockets and rock crevices in chert rocks.	A2	Vulnerable ¹	Habitat not suitable
<i>Cleome conrathii</i>	Dec-Jan Mar-May	Stony quartzite slopes, usually in red sandy soil, grassland all aspects.	A3	Near Threatened ¹	Habitat suitable
<i>Crinum macowanii</i>	Oct-Jan	Grassland along rivers in gravelly soil or on sandy flats	N/A	Dedining ²	Habitat not suitable
<i>Dicliptera magaliesbergensis</i>	Feb-Apr	Forest, savanna (Riverine forest and bush).	A1	Vulnerable ¹	Habitat not suitable
<i>Drimia sanguinea</i>	Aug-Dec	Open veld and scrubby woodland in a variety of soil types	B	Near threatened ²	FOUND
<i>Eucomis autumnalis</i>	Nov-Apr	Damp open grassland and sheltered places.	N/A	Dedining ²	Habitat not suitable
<i>Gunnera perpensa</i>	Oct-Mar	In cold or cool continually moist localities, mainly along upland streambanks.	N/A	Dedining ²	Habitat not suitable
<i>Habenaria barbertonii</i>	Feb-Mar	In grassland on rocky hillsides.	A2	Near threatened ¹	Habitat not suitable
<i>Habenaria kraenzliniana</i>	Feb-Apr	Terrestrial in stony, grassy hillsides, recorded from 1000 to 1400m.	A3	Near Threatened ¹	Habitat suitable
<i>Habenaria mossii</i>	Mar-Apr	Open grassland on dolomite or in black sandy soil.	A1	Endangered ¹	Habitat not suitable
<i>Holothrix randii</i>	Sep-Jan	Grassy slopes & rock ledges, usually southern aspects.	B	Near Threatened ²	Habitat not suitable
<i>Hypoxis hemerocallidea</i>	Sep-Mar	Occurs in a wide range of habitats. Grassland and mixed woodland.	N/A	Dedining ²	FOUND
<i>Ilex mitis</i> var. <i>mitis</i>	Oct-Dec	River banks, stream beds, evergreen forests.	N/A	Dedining ²	Habitat not suitable
<i>Lithops lesliei</i> subsp. <i>lesliei</i>	Mar-Jun	Arid grasslands in the interior of SA where it usually occurs in rocky places.	B	Near threatened ²	Habitat not suitable
<i>Melolobium subspicatum</i>	Sep-May	Grassland.	A1	Vulnerable ¹	Habitat not suitable
<i>Pearsonia bracteata</i>	Dec-Apr	Plants in Gauteng and North West occur in gently sloping Highveld grassland.	A3	Near Threatened ¹	Habitat not suitable

¹) global status

²) national status

* Orange listed plants have no priority grouping and are designated 'N/A'

▲ Has been recorded from the farm on which the study site is situated / within 5km of the study site. Should suitable habitat be present, it is highly likely that this species occur on the study site.

**ANNEXURE B: Red List plant outside the 2528CC q.d.s.for which
biodiversity studies was required by GDARD**

Species	Flower season	Suitable habitat	Priority group	Conserv status	PRESENT ON SITE
<i>Cucumis humifructus</i>	Jan & Apr	Woodland and grassland, on deep sand.	B	Vulnerable ²	Habitat not suitable

Mammals Assessment



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Mammal Habitat Scan

of

**Sunderland Ridge X 29
on Portion 29 of the farm Mooiplaats 355-JR**

January 2013

Report author: Dr I.L. Rautenbach Pr.Sci.Nat. # 400300/05, T.H.E.D., Ph.D,

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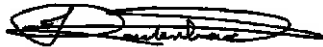
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Declaration of Independence:

I, Ignatius Lourens Rautenbach (421201 5012 08 8) declare that I:

- am committed to biodiversity conservation but concomitantly recognize 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 for Natural Scientific Professions
- act as an independent specialist consultant in the field of zoology
- am subcontracted as specialist consultant by Galago Environmental CC for the project "Mammal Habitat Scan of Portion 29 Farm Mooiplaas 355JR, Sutherland Ridge" described 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 the Galago Environmental CC 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 2006
- My intellectual property in this report will only be transferred to the client (the party/ company that commissioned the work) on full payment of the contract fee. Upon transfer of the intellectual property, I recognise that written consent of the client will be required for release of any part of this report to third parties.



I.L. Rautenbach

1. INTRODUCTION

Galago Environmental CC. was appointed to undertake a mammal habitat scan on Portion 29 of the Farm Mooiplaas, which is scheduled for industrial development under the suburban name of Sutherland Ridge X 29.

This report focuses on the reigning status of threatened and sensitive mammals likely to occur on the proposed development site. Special attention was paid to the qualitative and quantitative habitat conditions for Red Data species deemed present on the site, and mitigation measures to ameliorate the effect of the development that is suggested. A secondary objective is to advise and motivate whether a full survey is required.

2. SCOPE AND OBJECTIVES OF THE STUDY

- To qualitatively and quantitatively assess Red Data mammal habitat components, current physical conservation status of the property, and extrapolate the occurrences of endangered species;
- Identify and comment on ecological sensitive areas;
- To advise whether a full survey should be undertaken;
- Comment on connectivity with natural vegetation and habitats on adjacent sites;
- To highlight potential impacts of the proposed development on the mammals of the study site, and
- If necessary, provide management recommendations to mitigate negative and enhance positive impacts should the proposed development be approved.

3. STUDY AREA

The study site is 15 hectares and falls in the Carletonville Dolomite Grassland, and is spatially defined by 25° 50' 13"S, 28° 05' 46" E. The 500 meters of adjoining properties are similar in environmental appearance and land-use status. Beyond the 500 meters buffer are some industrial developments to the east, rural developments to the west and a sewage plant to the north-east.

Currently the site is undeveloped and not used for any particular purpose. During the time of the site visit the basal cover (consisting predominantly of *Eragrostis* and *Themeda* grass species) was well developed, although it is clear that it burnt during the winter of 2012.

The topography is clearly undulating grassland plains characteristic of the Highveld of the interior (Figure 2). The substrate consists of a brown, soft soil which is in patches imbedded with gravel. The site overlies dolomite strata, which in places protrude above the surface. A number of termitaria were recorded.

The conservation condition can be ranked as average (if accepting that fires are part of the ecological functioning of a grassland), but the small collective size of the site and adjoining areas detracts from the conservation appeal.

Bat daytime roosting sites in whichever form, are absent.

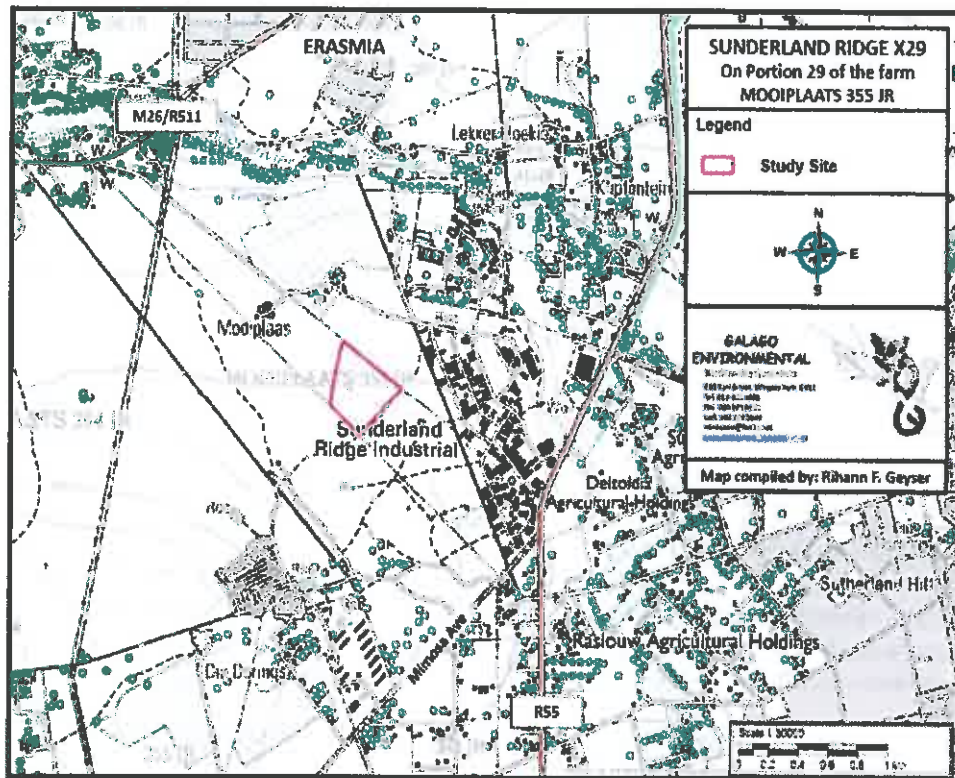


Figure 1: Locality map of the study area

4. METHODS

A three hour site visit was made on 24 January 2013. Mammal habitats were identified. The observed and derived presence of mammals associated with the recognized habitat types of the study site, were noted. This was done with due regard to the well recorded global distributions of Southern African mammals, coupled to the qualitative and quantitative nature of recognized habitats.

The 500 meters of adjoining properties was scanned for important fauna habitats.

4.1 Field Surveys

During the site visit mammals were identified by visual sightings through random transect walks. No trapping or mist netting was conducted, as the terms of reference did not require such intensive work. In addition, mammals were also identified by means of spoor, droppings, burrows or roosting sites.

Three criteria were used to gauge the probability of occurrence of mammals on the study site. These include known distribution range, habitat preference and the qualitative and quantitative presence of suitable habitat.

4.2 Desktop Surveys

As the majority of mammals are secretive, nocturnal, hibernators and/or seasonal, distributional ranges and the presence of suitable habitats were used to deduce the presence or absence of these species based on authoritative tomes, scientific literature, field guides, atlases and databases. This can be done irrespective of

season. During the field work phase of the project, this derived list of occurrences is audited.

The probability of occurrences of mammal species was based on their respective geographical distributional ranges and the suitability of on-site habitat. In other words, *high* probability would be applicable to a species with a distributional range overlying the study site as well as the presence of prime habitat occurring on the study site. Another consideration for inclusion in this category is the inclination of a species to be common, i.e. normally occurring at high population densities.

Medium probability pertains to a mammal species with its distributional range peripherally overlapping the study site, or required habitat on the site being sub-optimal. The size of the site as it relates to its likelihood to sustain a viable breeding population, as well as its geographical isolation is also taken into consideration. Species categorised as *medium* normally do not occur at high population numbers, but cannot be deemed as rare.

A *low* probability of occurrence will mean that the species' distributional range is peripheral to the study site and habitat is sub-optimal. Furthermore, some mammals categorised as *low* are generally deemed rare.

4.3 Specific Requirements

The primary objective of the visit was to ascertain the presence of Red Data and/or wetland-associated species such as:

Juliana's golden mole (*Neamblosomus juliana*), Highveld golden mole (*Amblysomus septentrionalis*), Rough-haired golden mole (*Chrysospalax villosus*), African marsh rat (*Dasymys incomtus*), Angoni vlei rat (*Otomys angoniensis*), Vlei rat (*Otomys irroratus*), White-tailed rat (*Mystromys albicaudatus*), a number of shrews such as the Forest shrew (*Myosorex varius*), Southern African hedgehog (*Atelerix frontalis*), a number of bats such as the Short-eared trident bat (*Cloeotis percivali*), African clawless otter (*Aonyx capensis*), Spotted-necked otter (*Lutra maculicollis*), Marsh mongoose (*Atilax paludinosus*), Brown hyena (*Parahyaena brunnea*), etc.

5. RESULTS

Mammal Habitat Assessment

The study site has a rural character which is slowly eroded by encroaching development some distance away (informal settlement, industrial buildings, sewage treatment plant, small holding homestead, etc). Concomitantly to development encroachment, species richness is eroded.

The entire site comprises of unvarying terrestrial habitat consisting of a seasonally lush stand of *Eragrostis* and *Themeda* grasses growing on soft brown soils, which at places is imbedded with gravel. The site overlies a dolomite stratum, elements of which protrude at places. The grass stratum at the time of the investigation provided excellent refuge, protection against raptor predation and nourishment. Termitaria are present. The grass cover is disturbed, predominantly as result of regular winter fires.

The site lacks functional arboreal, rupicolous and wetland habitats and species narrowly adapted to these are *a priori* omitted from consideration. No bat roosting sites occur.



Figure 2: A south-westerly view over the study site, which amply illustrate the basal cover on an undeveloped but somewhat disturbed Highveld plain. The trees in the distance are all exotic.

Expected and Observed Mammal Species Richness

The mammal species assemblage expected to occur on the study site have been recorded for adjacent and nearby sites. The species of the resident diversity are common and widespread. Species richness is unremarkable, especially since the continued extirpation of charismatic and even some medium-sized mammals. Reticent species still persist such as steenbok, duiker, black-backed jackals, rodent moles, scrub hares and yellow mongooses.

Low species diversity is primarily due to undiversified habitat diversity, small site size and adjoining areas, and a lack of concern for conservation (viz. a fire regime).

Threatened and Red Listed Mammal Species

Moribund termitaria are good indicators of the presence of dwarf shrew species since they have a predilection for such structures for refuge. Earlier overviews and fieldwork in the area predict that the Southern African hedgehog, greater dwarf shrew, least dwarf shrew, reddish-grey musk shrew and lesser red musk shrew are likely residents. However, veld fires during winter are definitely survival bottlenecks, and therefore population numbers can be expected to be low.

Hedgehogs "Near Threatened" are capable to withstand predation with their passive defence mechanisms. They became endangered directly as result of predation by humans and their pets, which is not a consideration in this instance. Considering the undisturbed and extensive nature of the site and surrounding properties, its continued presence is most likely *sans* predation by humans and domesticated carnivore pets.

Insufficient field data are available to quantitatively assess the conservation status of the four Red Listed shrew species (Table 1). Hence they are as a precaution ranked as "Data Deficient". It should, however, be kept in mind that the shrews and hedgehog all operate at the apex of the feeding chain. As such they are numerically less than herbivorous mammals of equal size in order to sustain their prey biomass

at a sustainable level. As insectivores they are furthermore not readily attracted to traps using conventional rolled-oats bait and are therefore easily under-represented in sampling by means of traps as opposed to the less-used census technique of drift fences and pitfalls.

All five insectivores have wide distributional ranges (mostly in rural areas with higher ecological ratings) and their displacement from this site will statistically be insignificant when viewed against the isolation and ecological decline of the site.

No other Red Data or sensitive species are deemed present on the site, either since the site is too disturbed, falls outside the distributional ranges of some species, or does not offer suitable habitat(s).

6. FINDINGS AND POTENTIAL IMPLICATIONS

Species richness: Depauperate and inevitably in a downwards spiral of decline.

Endangered species: Five species are residents and are discussed above under 6.3.

Sensitive species and/or areas (Conservation ranking): The conservation ranking of the site is ranked of moderate but so small as to border on insignificance. The intended development will not result in a loss of ecological sensitive and important habitat units, ecosystem function (e.g. reduction in water quality, soil pollution), significant loss of sensitive mammal habitat.

Habitat(s) quality and extent: The site is entirely terrestrial in character, and is annually destroyed by fires.

Impact on species richness and conservation: The intended development will displace all extant terrestrial mammals, but on a global scale that will be of little consequence.

Connectivity: The connectivity between the site and adjoining areas are excellent.

Management recommendation: In the face of urban development no recommendations are offered.

General: Terrestrial mammals will all be displaced by the intended development. However, it is likely that *Crodura* species will, true to form, re-invade lush gardens. Vespertilionid bats common in the Pretoria area are likely to find roosting opportunities in buildings, and prey around street lights.

7. LIMITATIONS, ASSUMPTIONS AND GAPS IN INFORMATION

The Galago Environmental staff is amply qualified and experienced to gauge absences or presences of species on a location such as this. The team has access to ample data bases and information resources, and has earlier conducted numerous intensive field surveys allowing the extrapolation of habitat diversity and quality into species occurrences. In this instance an intensive survey would be enjoyable and lucrative, but is deemed an expensive and fruitless experience with no or little chance of altering the opinion presented here.

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time and budget. Discussions and proposed mitigations are to some extent made on reasonable and informed assumptions built on *bone fide* information sources, as well as deductive reasoning. Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons 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. Galago Environmental can thus not accept responsibility for conclusions and mitigation measures made in good faith based on own databases or on the information provided at the time of the directive. This report should therefore be viewed and acted upon with these limitations in mind.

8. RECOMMENDED MITIGATION MEASURES

The following mitigation measures are proposed by the specialist

- Should hedgehogs be encountered during the development, these should be relocated to natural grassland areas in the vicinity.
- The contractor must ensure that no fauna species are disturbed, trapped, hunted or killed during the construction phase. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance.
- The normal procedures and practices commensurate to urban development will be applicable.

9. CONCLUSIONS

A full survey is deemed unnecessary since it is unlikely to alter the conclusions presented here. The proposed development will result in a degree of environmental and faunal loss, but that is regarded as of no significance, since the site is deemed low in mammal sensitivity.

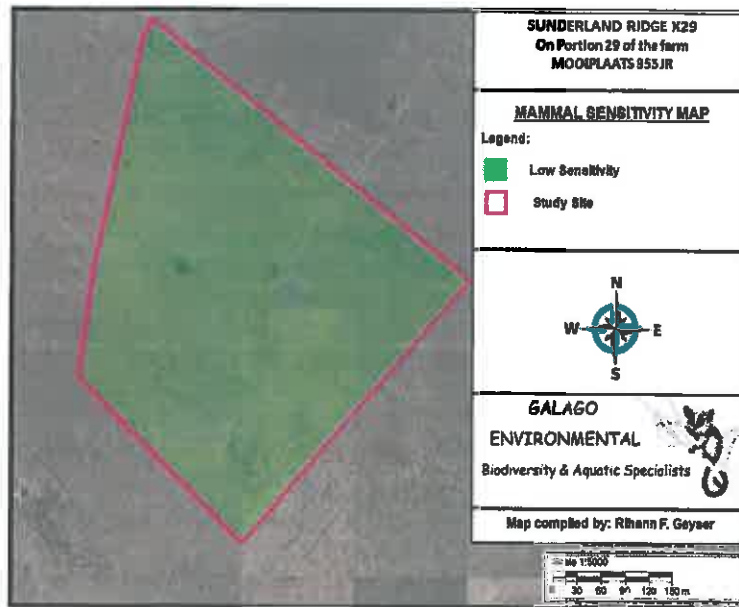


Figure 3: Mammal sensitivity map

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Avifauna Assessment



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Avifaunal Habitat Assessment

of

**Sunderland Ridge X 29
on Portion 29 of the farm Mooiplaats 355-JR**

February 2013

Report author: Mr. R.F. Geysler

Report verified/reviewed by: Dr. A.C. Kemp (Ph.D., Pr.Sci. Nat. (Zoology & Ecology))

VERIFICATION STATEMENT

Mr R. Geysler is not registered as a Professional Natural Scientist with the S.A. Council for Natural Scientific Professions. This communication serves to verify that the bird report compiled by Mr R.F. Geysler has been prepared under my supervision, and I have verified the contents thereof.

Declaration of Independence: I, Alan Charles Kemp (4405075033081), declare that I:

- am committed to biodiversity conservation but concomitantly recognize 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 for Natural Scientific Professions
- act as an independent specialist consultant in the field of zoology
- am subcontracted as specialist consultant by Galago Environmental CC for the proposed Sunderland Ridge X29 on Portion 29 of the farm Mooiplaats 355 JR described in this report
- have no financial interest in the proposed development other than remuneration for work performed
- neither have nor will have any vested or conflicting interests in the proposed development
- undertake to disclose to Galago Environmental CC and its client, and the competent authority, any material information that has or may have the potential to influence decisions by the competent authority as required in terms of the Environmental Impact Assessment Regulations 2006



Dr. A.C. Kemp

DECLARATION OF INDEPENDENCE:

I, Rihann F. Geysler (690304 5248 084), declare that I:

- am committed to biodiversity conservation but concomitantly recognize 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
- act as an independent specialist consultant in the field of zoology
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Rihann F. Geysler

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1. INTRODUCTION

Galago Environmental CC. was appointed to undertake an avifaunal habitat survey for Sunderland Ridge X29 on Portion 29 of the farm Mooiplaats 355 JR (hereinafter referred to as the study site), which is scheduled for residential development. This is in accordance with the 2010 EIA Regulations (No. R. 543-546, Department of Environmental Affairs and Tourism, 18 June 2010) emanating from Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

The primary objective was to determine the presence of Red Data avifaunal species and to identify suitable habitat for these species. Direct observations and published data apart, qualitative and quantitative habitat assessments were used to derive the presence / absence of Red Data avifaunal species. A list of avifaunal species likely to be affected by the new development is compiled.

2. SCOPE AND OBJECTIVES OF THE STUDY

- To qualitatively and quantitatively assess the significance of the avifaunal habitat components, and current general conservation status of the property;
- To comment on ecologically sensitive areas;
- To comment on connectivity with natural vegetation and habitats on adjacent sites;
- To provide a list of avifauna that occur or that are likely to occur, and to identify species of conservation importance;
- To highlight potential impacts of the proposed development on the avifauna of the study site, and
- To provide management recommendations to mitigate negative and enhance positive impacts should the proposed development be approved.

3. STUDY AREA

3.1 Locality

The study site, ±15.0524 ha in extent (excluding the 500 m extended study area), is situated within the 2528CC quarter degree grid cell (q.d.g.c.) and 2545_2805 pentad (SABAP2 protocol), within Gauteng Province, ±1.2 km south of Erasmia. The study site is situated at an altitude of about 1 400 metres above sea level (m a.s.l.) sloping gradually downwards to the north toward the Hennops River.

3.2 Land Use

The largest portion of the study site consists of open grassland. There is no visible land use for the property.

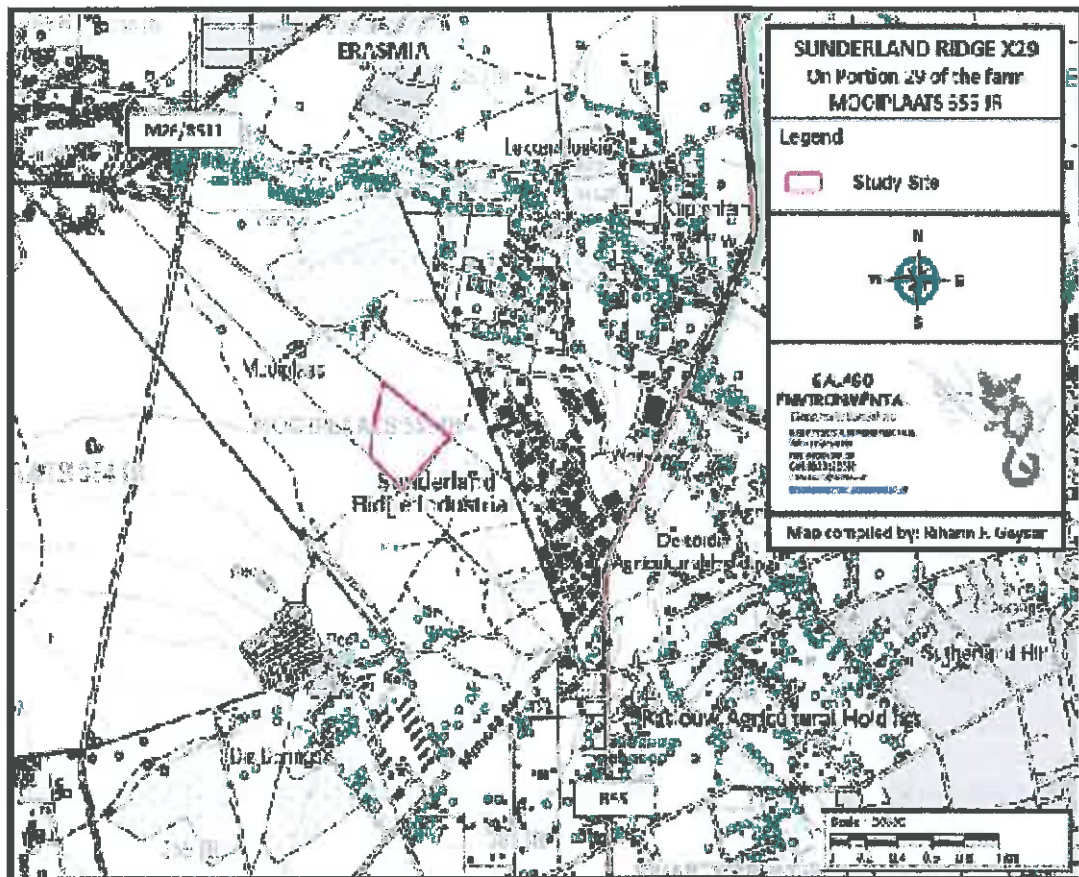


Figure 1: Locality map of the study area

3.3 Biophysical Information

3.3.1 Vegetation type and landscape

The study site is situated within the Dry Highveld Grassland Bioregion of the Grassland Biome and more specifically within the Carletonville Dolomite Grassland vegetation type according to Mucina and Rutherford (2006).

The landscape is highly variable with extensive sloping plains and rocky ridges that are elevated slightly above the undulating surrounding plains. The plants within this vegetation type are species-rich, wiry, sour grassland, with small shrubs growing on the rocky ridges and outcrops that occur in isolated areas within this vegetation type. Dominant grasses on the plains belong to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Eilonurus*. Another typical feature of this vegetation type is the high diversity of herbs, many of which belong to the Asteraceae, that grow between the grasses on the open plains. The open plains and rocky outcrops and ridges carry small pockets of sparse woodlands with *Protea caffra* and *P. welwitschii*, *Acacia caffra* and *Celtis africana* trees, and with shrubs such as the genus *Searsia* (*Rhus*) that grow between these trees.

3.3.2 Climate

Summer-rainfall ranging between 570 mm to 730 mm per annum with warm summers and very cold winter temperatures.

3.3.4 Conservation status of habitat

This vegetation type is considered as endangered with a target of 24% and poorly conserved (1%). Small conservation areas can be found within this vegetation type such as Rietvlei Nature Reserve (NR), Bronkhorstspruit NR, Boskop Dam NR and some small conservation areas such as Doornkop, Ezemvelo and Renosterpoort. Almost half of this vegetation type has been transformed, mostly by agricultural croplands, plantations such as wattle, urbanisation and dam-building.

4. METHODS

A four-hour site visit was conducted on 23 January 2013 to record the presence of avifaunal species associated with the habitat systems on and within 500 m surrounding the study site and to identify possible sensitive areas. During this visit the observed and derived presence of avifaunal species associated with the recognized habitat types of the study site, were recorded. This was done with due regard to the well recorded global distributions of Southern African avifauna, coupled to the qualitative and quantitative nature of recognized habitats.

4.1 Field Surveys

Avifaunal species were identified visually, using 10X42 Bushnell Legend binoculars and a 20X-60X Pentax spotting scope, and by call, and where necessary were verified from Sasol Birds of Southern Africa (Sinclair *et al.*, 2011) and Southern African Bird Sounds (Gibbon, 1991).

The 500 m of adjoining properties was scanned for important avifaunal species and habitats.

During the site visit, avifaunal species were identified by visual sightings or aural records along random transect walks. No trapping or mist netting was conducted, since the terms of reference did not require such intensive work. In addition, avifaunal species were also identified by means of feathers, nests, signs, droppings, burrows or roosting sites. Locals were interviewed to confirm occurrences or absences of species.

4.2 Desktop Surveys

The presence of suitable habitats was used to deduce the likelihood of presence or absence of avifaunal species, based on authoritative tomes, scientific literature, field guides, atlases and databases. This can be done irrespective of season.

The likely occurrence of key avifaunal species was verified according to distribution records obtained during the Southern African Bird Atlas Project 1 (SABAP1) period from 1981 to 1993 (Harrison *et al.* 1997). Earlier records of only Red Data avifaunal species were obtained from the period between 1974 and 1987 according to Tarboton *et al.* (1987). The most recent avifaunal distribution data were obtained from the current SABAP2 project which commenced on 1 July 2007.

The occurrence and historic distribution of likely avifaunal species, especially all Red Data avifaunal species recorded for the q.d.g.c. 2528CC, were verified from SABAP1 (southern Africa Bird Atlas Project 1) data (Harrison *et al.* 1997), Tarboton *et al.* (1987) and the current SABAP2 project (SABAP2 data for the 2528CC q.d.g.c. and for the 2545_2805 pentad).

An avifaunal biodiversity index (ABI), which gives an indication of the habitat system on the study site that will hold the richest avifaunal species diversity, was calculated as the sum of the probability of occurrence of bird species within a specific habitat system on site. For each species and habitat, the probability of occurrence was ranked as: 5 = present on site, 4 = not observed on site but has a high probability of occurring there, 3 = medium probability, 2 = low probability, 1 = very low probability and 0 = not likely to occur.

4.3 Specific Requirements

During the site visit, the study site was surveyed visually and its habitats assessed for the potential occurrence of priority Red Data avifauna, according to GDARD's requirements for Biodiversity Assessments, Version 2 (June 2012) and C-Plan Version 3.3 (2011), as well as for any other Red Data avifaunal species: The priority Red Data avifaunal species for Gauteng are (in Roberts VII order and nomenclature, Hockey *et al.* 2005):

- Half-collared Kingfisher (*Alcedo semitorquata*)
- African Grass-Owl (*Tyto capensis*)
- White-bellied Kormoran (*Eupodotis senegalensis*)
- Blue Crane (*Anthropoides paradiseus*)
- African Finfoot (*Podica senegalensis*)
- Cape Vulture (*Gyps coprotheres*)
- African Marsh-Harrier (*Circus ranivorus*)
- Martial Eagle (*Polemaetus bellicosus*)
- Secretarybird (*Sagittarius serpentarius*)
- Lesser Kestrel (*Falco naumanni*)
- Greater Flamingo (*Phoenicopterus ruber*)
- Lesser Flamingo (*Phoenicopterus minor*)
- White-backed Night-Heron (*Gorsachius leuconotus*)
- Black Stork (*Ciconia nigra*)

No particular reference was made for the occurrence any Red Data avifaunal species on or surrounding the study site.

5. RESULTS

Avifaunal Habitat Assessment:

Two major avifaunal habitat systems were identified on and within 500 m surrounding the study site. A short description of each habitat type follows, ranked from most to least important. Figure 2 illustrates the major habitat systems identified as likely to be used by bird species expected to occur on the study site.

Open grassland:

66.9% (± 115.517 ha) of the total surface area of the study area (including the 500 m extended study area) consists of open mixed *Eragrostis* grassland with isolated and scattered shrub and trees (Figure 3).

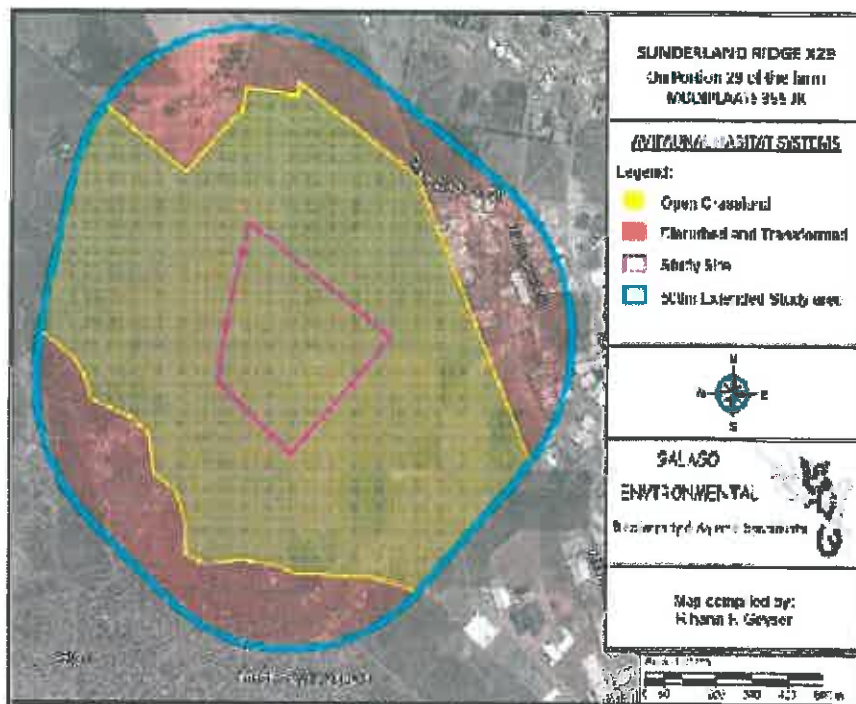


Figure 2: Avifaunal species habitat systems identified on and within 500 m surrounding the study site.



Figure 3: Open grassland with scattered trees and shrubs.

The presence and abundance of bird species in this habitat will vary from season to season - lush and green in summer after summer rains and dry, brown, frosted or burnt during winter. The habitat favours ground-living bird species, such as lapwings, francolins, pipits, longclaws, larks and chats. These birds hunt for insects and/or breed on the ground, in burrows in the ground, or between the grasses. Weavers and widowbirds make use of such habitat for feeding on ripe seeds during late summer and early winter when the grass is not burnt, and widowbirds and cisticolas will also breed in the tall grass during summer. Species such as weavers and bishops that breed in the wetland habitat during summer will also make use of the open grassland habitat for feeding during winter after the grasses have seeded. Aerial feeding birds such as martins, swifts and swallows will also hunt for insects over the grasslands.

Disturbed and Transformed:

33.1% (± 57.1451 ha) of the total surface area of the study area (including the 500 m extended study area) is disturbed and transformed.

Only the more common avifaunal species that are able to adapt to areas changed by man are likely to make use of these disturbed and transformed areas.

Threatened and Red Listed Bird Species

The following Red Data avifaunal species were recorded for the 2528CC q.d.g.c. according to Tarboton *et al.* (1987), the SABAP1 data (Harrison *et al.* 1997), the SABAP2 data for the 2528CC q.d.g.c. and more specifically the 2545_2805 pentad (Table 1).

Table 1: Red Data avifaunal species recorded for the 2528CC q.d.g.c.

SCIENTIFIC NAMES	ENGLISH NAMES	Reporting Rate (%)*			
		Tarboton	SABAP1	SABAP2	Pentad
<i>Nettion auritus</i>	African Pygmy-Goose (NT)	Present	0	0	0
<i>Aicedo semitorquata</i>	Half-collared Kingfisher (NT)	Present	1	1.4	0
<i>Tyto capensis</i>	African Grass-Owl (VU)	Br	2	0.4	0
<i>Neotis denhami</i>	Denham's Bustard (VU)	Present	0	0	0
<i>Eupodotis caerulescens</i>	Blue Korhaan (NT)	Br	0	0	0
<i>Eupodotis senegalensis</i>	White-bellied Korhaan (VU)	Present	<1	0	0
<i>Anthropoides paradiseus</i>	Blue Crane (VU)	Br	3	1.4	0
<i>Podica senegalensis</i>	African Finfoot (VU)	Present	<1	0.1	0
<i>Crex crex</i>	Corn Crake (VU)	Present	0	0	0
<i>Rostratula benghalensis</i>	Greater Painted-snipe (NT)	Present	0	0	0
<i>Gareola nordmanni</i>	Black-winged Pratincole (NT)	Present	0	0	0
<i>Gyps coprotheres</i>	Cape Vulture (VU)	Present	<1	0	0
<i>Aegypius tracheliotus</i>	Lappet-faced Vulture (VU)	Present	0	0	0
<i>Circus ranivorus</i>	African Marsh-Harrier (VU)	Br	<1	0	0
<i>Circus macrourus</i>	Pallid Harrier (NT)	Present	0	0	0
<i>Aquila ayresii</i>	Ayres's Hawk-Eagle (NT)	Present	<1	0	0
<i>Polemaetus bellicosus</i>	Martial Eagle (VU)	Present	<1	0	0
<i>Sagittarius serpentarius</i>	Secretarybird (NT)	Br	0	0.2	0
<i>Falco naumanni</i>	Lesser Kestrel (VU)	Present	1	0.3	0
<i>Falco biarmicus</i>	Lanner Falcon (NT)	Br	1	0.7	0
<i>Falco peregrinus</i>	Peregrine Falcon (NT)	no records	0	0.2	7.1
<i>Gorsachius leuconotus</i>	White-backed Night-Heron (VU)	Present	0	0	0
<i>Pelecanus onocrotalus</i>	Great White Pelican (NT)	Present	0	0	0
<i>Pelecanus rufescens</i>	Pink-backed Pelican (VU)	Present	0	0	0
<i>Mycteria ibis</i>	Yellow-billed Stork (NT)	Present	<1	0.2	0
<i>Ciconia nigra</i>	Black Stork (NT)	Present	<1	0	0
<i>Mirafra cheniana</i>	Melodious Lark (NT)	Present	<1	5.2	0
TOTAL:		26	14	8	1

*The reporting rate is calculated as follows: Total number of cards on which a species was reported X 100 + total number of cards for a particular quarter degree grid cell.

Red Data Species Categories for the birds (Barnes, 2000)

RE = Regionally extinct, CR = Critically Endangered EN = Endangered, VU = Vulnerable, NT = Near-threatened.

A total of 26 Red Data avifaunal species have been recorded within the 2528CC q.d.g.c. (Tarboton *et al.* 1987; Harrison *et al.* 1997). Thirteen of these Red Data avifaunal species appear to have disappeared from the area or were not subsequently recorded for this q.d.g.c. during the time of SABAP1. It is unlikely that they will ever recur in this region, except maybe on rare occasions in protected areas. Six of these species used to breed within the said q.d.g.c. (Tarboton, 1987) and only one, the African Grass-Owl, was recorded as a breeding species for the q.d.g.c. during the period of SABAP1. This decline in breeding species is probably due to the large extent of development that has taken place during a short space of time. All SABAP1 data indicate a very low reporting rate. One species, the Peregrine Falcon was not observed for the 2528CC q.d.g.c. according to Tarboton *et al.* (1987) and SABAP1 (Harrison *et al.* 1997) but was observed for the q.d.g.c. according to the SABAP2 data. If comparing the data according to Tarboton *et al.* (1987) and the current SABAP2 data it shows a clear decline of Red Data avifaunal species from 26 to 8 species. Within regards to the specific pentad (2545_2805) in which the study site is situated only one Red Data avifaunal species were recorded and none of the Red Data avifaunal species recorded for the 2528CC q.d.g.c. were recorded on or within 500m surrounding the study site.

Table 2: Summary of Red data species and their habitat

SCIENTIFIC NAME	PRESENCE OF SUITABLE HABITAT AND HABITAT REQUIREMENTS	LIKELIHOOD OF OCCURRENCE ON STUDY SITE
<i>Alcedo semitorquata</i> * (Half-collared Kingfisher) (NT)	None on site: Requires fast-flowing streams, rivers and estuaries, usually with dense marginal vegetation (Macleay, 1993), especially perennial streams and smaller rivers with overhanging riparian vegetation on their banks. Nests in sand/earth banks (Tarboton <i>et al.</i> 1987) and requires riverbanks in which to excavate nest tunnels (Harrison <i>et al.</i> 1997a). Most typically occurs along fast-flowing streams with clear water and well-wooded riparian growth, often near rapids. It most frequently favours broken escarpment terrain and requires at least 1 km up and down stream of undisturbed river and riparian vegetation while breeding. It occurs from sea-level to 2000 m.a.s.l. in southern Africa. Usually perches low down on the banks of rivers and streams, often on exposed roots, as well as exposed rock and low overhanging tree branches.	Highly unlikely Due to a lack of suitable breeding a foraging habitat. Suitable habitat exists for this species along the Hennops River to the north of the study site
<i>Tyto capensis</i> * (African Grass-Owl) (VU)	None on site: Occurs predominately in rank grass, typically but not always at fairly high altitudes. Breeds mainly in permanent and seasonal vleis, which it vacates while hunting or during post-breeding although it will sometimes breed in any area of long grass, sedges or even weeds (Van Rooyen, pers comm.) and not necessarily associated with wetlands (Tarboton <i>et al.</i> 1987) although this is more the exception than the rule. Foraging mainly confined to tall grassland next to their wetland vegetation and rarely hunts in short grassland, wetlands or croplands nearby (Barnes, 2000). Mainly restricted to wet areas (marshes and vleis) where tall dense grass and/or sedges occur. Prefers permanent or seasonal vleis and vacates the latter when these dried up or are burnt. Roosts and breeds in vleis but often hunt elsewhere e.g. old lands and disturbed grassland although this is suboptimal habitat conditions (Tarboton <i>et al.</i> 1987). May rarely occur in sparse <i>Acacia</i> woodland where patches of dense grass cover are present (Harrison <i>et al.</i> 1997a).	Highly unlikely No suitable breeding, roosting and foraging habitat were identified on and surrounding the study site

SCIENTIFIC NAME	PRESENCE OF SUITABLE HABITAT AND HABITAT REQUIREMENTS	LIKELIHOOD OF OCCURRENCE ON STUDY SITE
<i>Eupodotis senegalensis</i> * (White-bellied Korhaan) (VU)	None on site: Occurs in fairly tall, dense grassland, especially sour and mixed grassland, in open or lightly wooded, undulating to hilly country. In winter, occasionally on modified pastures and burnt ground (Harrison <i>et al.</i> 1997a).	Highly unlikely Due to high human presence on site and disturbance surrounding the study site. Scarce in Gauteng and secretive resident; widespread (Marais & Peacock, 2008)
<i>Anthropoides paradiseus</i> * (Blue Crane) (VU)	None on site: Midlands and highland grassland, edge of karoo, cultivated land and edges of vleis (Maclean, 1993). Nests in both moist situations in vleis which have short grass cover and in dry sites far from water, usually exposed places such as on hillsides; forages in grassland and cultivated and fallow lands; roosts communally in the shallow water of pans and dams (Tarboton <i>et al.</i> 1987). Short dry grassland, being more abundant and evenly disturbed in the eastern "sour" grassland, where natural grazing of livestock is the predominant land use. Prefers to nest in areas of open grassland (Barnes, 2000) In the fynbos biome it inhabit cereal croplands and cultivated pastures and avoids natural vegetation. By contrast, it is found in natural vegetation in the Karoo and grassland biomes, but it also feeds in crop fields (Harrison <i>et al.</i> 1997a).	Highly unlikely Due to the small extent of the grassland, disturbance surrounding the study site and high human presence on the study site. Localised but common in the south-eastern Gauteng (Marais & Peacock, 2008)
<i>Podica senegalensis</i> * (African Finfoot) (VU)	None on site: Occurs mostly along quiet, wooded streams and rivers flanked by thick riparian vegetation and overhanging trees. Also dam verges, especially where there is sufficient overhanging vegetation and reed cover. Avoids both stagnant and very fast-flowing watercourses, with a preference for clear, rather than silted water (Hockey <i>et al.</i> , 2005).	Highly unlikely Due to a lack of suitable breeding, roosting and foraging habitat. Suitable habitat exists for this species along the Hennops River to the north of the study site. Scarce in Gauteng and secretive resident; widespread (Marais & Peacock, 2008)
<i>Gyps coprotheres</i> * (Cape Vulture) (VU)	They mostly occur in mountainous country, or open county with inselbergs and escarpments; less commonly as visitors to savannah or desert (Maclean, 1993). Forage over open grassland, woodland and agricultural areas; usually roosts on cliffs, but will also roost on trees and pylons (Barnes, 2000). It is reliant on tall cliffs for breeding but it wanders widely away from these when foraging. It occurs and breeds from sea level to 3 100 m.a.s.l. Current distribution is closely associated with subsistence communal grazing areas characterised by high stock losses and low use of poisons and, to a lesser extent, with protected areas (Harrison <i>et al.</i> 1997a), but their presence is ultimately dependent	Highly unlikely Due to a lack of suitable foraging and breeding habitat. Breeds in Magaliesberg; uncommon wanderer elsewhere; mostly SW & NW Gauteng (Marais & Peacock, 2008)

SCIENTIFIC NAME	PRESENCE OF SUITABLE HABITAT AND HABITAT REQUIREMENTS	LIKELIHOOD OF OCCURRENCE ON STUDY SITE
	on the availability of food.	
<i>Circus ranivorus</i> * (African Marsh-Harrier) (VU)	None on site: Almost exclusively inland and coastal wetlands (Hockey <i>et al.</i> 2005). Wetland and surrounding grasslands. Most highveld wetlands > 100 ha support a breeding pair (Tarboton & Allan 1984). Nests in extensive reed beds often high above water. Forages over reeds, lake margins, floodplains and occasionally even woodland. Almost entirely absent from areas below 300 mm of rainfall (Harrison <i>et al.</i> , 1997a). Marsh, vlei, grassland (usually near water); may hunt over grassland, cultivated lands and open savanna (Maclean, 1993). Dependant on wetlands, particularly permanent wetlands for breeding, roosting and feeding. May utilise small wetlands 1-2 ha in extent for foraging, but larger wetlands are required for breeding (Barnes, 2000).	Highly unlikely There are no suitable foraging, breeding or roosting habitat for this species on the study site. Declining resident of large vleis, occurs mainly in south-eastern Gauteng (Marais & Peacock, 2008)
<i>Aquila ayresii</i> (Ayres's Hawk-Eagle) (NT)	None on site: Non-breeding summer visitor to South Africa, favouring dense woodland and forest edge, often in hilly country. Regular in larger northern cities and towns (Johannesburg, Pretoria, Mokopane/Pietersburg), where it often roosts in <i>Eucalyptus</i> stands or other tall trees within its prime distribution range (Hockey <i>et al.</i> 2005).	Highly unlikely There is no suitable habitat for this species on the study site. Rare in Gauteng (Marais & Peacock, 2008)
<i>Polemaetus bellicosus</i> * (Martial Eagle) (VU)	None on site: Tolerates a wide range of vegetation types, being found in open grassland, scrub, Karoo, agricultural lands and woodland, it relies on large trees (or electricity pylons) to provide nest sites (Barnes, 2000) as well as windmills and even cliffs in treeless areas. It occurs mainly in flat country and is rarer in mountains, and it also avoids extreme desert, and densely wooded and forested areas (Harrison <i>et al.</i> 1997a & Barnes, 2000).	Highly unlikely Due to a lack of suitable habitat and disturbance caused by the large scale development surrounding the study site. Uncommon local resident (Marais & Peacock, 2008)
<i>Sagittarius serpentarius</i> * (Secretarybird) (NT)	None on site: Open grassland with scattered trees, shrubland, open <i>Acacia</i> and <i>Combretum</i> savanna (Hockey <i>et al.</i> 2005). Restricted to large conservation areas in the region. Avoids densely wooded areas, rocky hills and mountainous areas (Hockey <i>et al.</i> 2005 & Barnes, 2000). Requires small to medium-sized trees with a flat crown for nesting, and often roosts in similar locations. Nesting density only about 150 km ² /pair (n = 4, Kemp, 1995).	Highly unlikely Due to the small extent of the study site and the disturbance such as high human presence and hunting practises surrounding it. Uncommon in open areas within Gauteng (Marais & Peacock, 2008)
<i>Falco naumanni</i> * (Lesser Kestrel) (VU)	Yes: Non-breeding Palearctic migrant. Forages preferentially in pristine open grassland but also hunts in converted grassland such as small scale pastures provided the conversion is not as total as in plantation forestry or in areas of consolidated agricultural monoculture (Barnes, 2000; Hockey <i>et al.</i> 2005) such as maize, sorghum, peanuts, wheat,	Unlikely Only on rare occasions Localised summer migrant (Marais & Peacock, 2008)

SCIENTIFIC NAME	PRESENCE OF SUITABLE HABITAT AND HABITAT REQUIREMENTS	LIKELIHOOD OF OCCURRENCE ON STUDY SITE
	beans and other crops (Tarboton & Allan 1984) where they hunt for large insects and small rodents, but avoid wooded areas except on migration. They roost communally in tall trees, mainly <i>Eucalyptus</i> , in urban areas (Barnes, 2000), often in towns or villages, but also in farm lands (pers. obs). Favour a warm, dry, open or lightly wooded environment, and are concentrated in the grassy Karoo, western fringes of the grassland biome and southeast Kalahari. Generally avoids foraging in transformed habitats but occurs in some agricultural areas, including croplands, in fynbos and renosterveld of the Western Cape (Hockey <i>et al.</i> 2005). Large numbers congregate in sweet and mixed grasslands of the highveld regions.	
<i>Falco biarmicus</i> * (Lanner Falcon) (NT)	None on site. Most frequent in open grassland, open or cleared woodland, and agricultural areas. Breeding pairs generally favour habitats where cliffs are available as nest and roost sites, but will use alternative sites such as trees, electricity pylons and building ledges if cliffs are absent (Hockey <i>et al.</i> 2005). Mountains or open country, from semi desert to woodland and agricultural land, also cities (Maclean, 1993), even on forest-grassland ecotones. Generally a cliff nesting species and its wider distribution is closely associated with mountains with suitable cliffs. Able to breed on lower rock faces than Peregrine Falcon <i>Falco peregrinus</i> and also utilises the disused nests of other species, such as crows, other raptors and storks, on cliffs, in trees and on power pylons, and also quarry walls (Tarboton <i>et al.</i> 1987). Generally prefers open habitats e.g. alpine grassland and the Kalahari, but exploits a wide range of habitats – grassland, open savanna, agricultural lands, suburban and urban areas, rural settlements – in both flat and hilly or mountainous country. Also breeds in wooded and forested areas where cliffs occur (Harrison <i>et al.</i> 1997a).	Highly unlikely Due to a lack of suitable breeding habitat. Could move through the area or rare occasions Uncommon resident in open areas in Gauteng (Marais & Peacock, 2008)
<i>Falco peregrinus</i> (Peregrine Falcon) (NT)	None on site. Resident <i>F. p. minor</i> mostly restricted to mountainous riparian or coastal habitats, where high cliffs provides breeding and roosting sites. Breeding pairs prefer habitats that favour specialised, high speed, aerial hunting, e.g. high cliffs overhanging vegetation with raised and/or discontinuous canopy (e.g. forest, fynbos, woodland), or expanses of open water. Also uses quarries and dam walls, and frequents city centres, e.g. Cape Town, where tall buildings substitute for rock faces. Migrant <i>F. p. calidus</i> in more open country, often coastal, even roosting on ground on almost unvegetated salt flats.	Highly unlikely Due to a lack of suitable breeding habitat. Could move through the area or rare occasions. Uncommon resident and summer migrant in Gauteng (Marais & Peacock, 2008)
<i>Mycteria ibis</i> (Yellow-billed Stork) (NT)	None on site. Utilises diverse wetlands and permanent and seasonal habitats, including alkaline and freshwater lakes, river, dams, pans, flood plains, large marshes, swamps, estuaries, margins of lakes or rivers, flooded grassland and small pools or streams where there are areas of shallow water free of emergent vegetation (Tarboton <i>et al.</i> , 1987); less often marine mudflats and estuaries (Hockey <i>et al.</i> , 2005).	Highly unlikely Due to a lack of suitable habitat Common at large wetlands within Gauteng; erratic elsewhere (Marais & Peacock, 2008)

SCIENTIFIC NAME	PRESENCE OF SUITABLE HABITAT AND HABITAT REQUIREMENTS	LIKELIHOOD OF OCCURRENCE ON STUDY SITE
	Nests colonially on large trees adjacent to productive wetlands, but only locally and erratically during ideal conditions.	
<i>Ciconia nigra</i> * (Black Stork) (NT)	None on site: Dams, pans, flood plains, shallows of rivers, pools in dry riverbeds, estuaries and sometimes on marshland and flooded grassland; uncommon at seasonal pans lacking fish. Associated with mountainous regions (Hockey <i>et al.</i> , 2005) where they nest (Maclean, 1993) on cliffs (Harrison <i>et al.</i> 1997a). Feeds in shallow water, but occasionally on dry land, in streams and rivers, marshes, floodplains, coastal estuaries and large and small dams; it is typically seen at pools in large rivers.	Highly unlikely Due to a lack of suitable breeding and foraging habitat
<i>Mirafra cheniana</i> (Melodious Lark) (NT)	Yes: Occurs in grassland dominated by <i>Themeda triandra</i> grass in South Africa. Occasionally in planted pastures of <i>Eragrostis curvula</i> and <i>E. tef</i> . Avoids wet lowlands, favouring fairly short grassland (< 0.5 m), with open spaces between tussocks, at 550 – 1 750 m.a.s.l. with annual rainfall of between 400 – 800 mm p/a (Hockey <i>et al.</i> , 2005).	Likely The open grassland on and surrounding the study site could favour this species. Localised resident in Gauteng (Marais & Peacock, 2008) where suitable habitat occur

*Priority Red Data bird species according to GDARD.

6. FINDINGS AND POTENTIAL IMPLICATIONS

6.1 Red Data avifaunal species confirmed from the study site (excluding the 500 m extended study area) for which suitable foraging, breeding and roosting habitat was confirmed:

None

6.2 Red Data avifaunal species confirmed within the 500 m extended study site for which suitable foraging, breeding and roosting habitat was confirmed:

None

6.3 Red Data avifaunal species confirmed outside the 500 m extended study site for which suitable foraging, breeding and roosting habitat was confirmed:

None

6.4 Red Data avifaunal species for which suitable foraging habitat was confirmed from the study site and within the 500 m extended study site:

Melodious Lark (*Mirafra cheniana*):

Criteria for IUCN threatened category: A1c; A2c Status: Near-Threatened

Habitat and Ecology: Open climax grassland or dry grasslands dominated by *Themeda triandra* grass with scattered trees and shrubs, sometimes with rocky outcrops, also cultivated fields or *Eragrostis tef* and fallow fields (Maclean 1993). Also open grassland dominated by *Hyperrhenia hirta* with lower grass basal cover (pers. obs). Usually on sandy or stony soils with rather low grass basal cover (Tarboton *et al.* 1987). Habitat

usually at 550-1750 m.a.s.l, with mean annual rainfall between 400 and 800 mm p/a. **Threat:** Sensitive to disturbance and overgrazing and land-use change (Barnes. 2000). Habitat loss through development and other land-use will have a negative affect on this species.

On site conclusion: Suitable open grassland habitat exists on the study site for this species, both for breeding and foraging purposes. They have been observed in several localities surrounding the study site in the past (per sobs). This is however a non-priority Red Data avifaunal species according to GDARD.

7. LIMITATIONS, ASSUMPTIONS AND GAPS IN KNOWLEDGE

The Galago Environmental team has appropriate training and registration, as well as extensive practical experience and access to wide-ranging data bases to consider the derived species lists with high limits of accuracy. In this instance the biodiversity of all Alignments has to a greater or lesser extent been jeopardized, which renders the need for field surveys unnecessary. In instances where uncertainty exists regarding the presence of a species it is listed as a potential occupant, which renders the suggested mitigation measures and conclusions more robust.

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time and budget. Discussions and proposed mitigations are to some extent made on reasonable and informed assumptions built on *bone fide* information sources, as well as deductive reasoning. Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons 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. Galago Environmental can thus not accept responsibility for conclusions and mitigation measures made in good faith based on own databases or on the information provided at the time of the directive. This report should therefore be viewed and acted upon with these limitations in mind.

The general assessment of species rests mainly on the 1987 atlas for birds of the then-Transvaal (Tarboton *et al.* 1987) and comparison with the 1997 SABAP atlas (Harrison *et al.* 1997) and the current SABAP2 atlas data, so any limitations in either of those studies will by implication also affect this survey and conclusions.

Furthermore the number of atlas cards received and the diversity of habitat systems surveyed for avifaunal species within a q.d.g.c. or pentad or lack thereof could also have an effect on the avifaunal diversity that could potentially occur on the study site. 627 atlas cards were received for the 2528CC q.d.g.c. over the SABAP1 project period, 910 cards for the entire 2528CC q.d.g.c. over the current SABAP2 project period and 14 cards for the 2545_2805 pentad since 1 July 2007.

8. RECOMMENDED MITIGATION MEASURES

The following mitigation measures are proposed by the specialist:

- Where possible, work should be restricted to one area at a time, as this will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories.
- With proper cultivation of specific indigenous plant species, the bird numbers and species in the area could even increase. Indigenous plant species that attract birds to gardens or that are natural to the area could be obtained from the local

nurseries surrounding the area. The area must however be kept as natural as possible.

- It is important to note that birds inhabiting one of the named microhabitats on site will not move, in most cases, into a different habitat. In other words, birds found in the open grassland will not now, with the development, move into the disturbed and transformed areas or the wetland area. If the objective is to keep these species on site, suitable open woodland must be kept for these species.
- The contractor must ensure that no fauna is disturbed, trapped, hunted or killed during the construction phase. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance.
- During the construction phase, noise must be kept to a minimum to reduce the impact of the development on the fauna residing on the site.
- Alien and invasive plants must be removed.

9. CONCLUSIONS

Only one Red Data avifaunal species, the Melodious Lark is likely to make use of the open grassland habitat on and surrounding the study site. However this is a non-priority Red Data species according to GDARD (2012). None of the other Red Data avifaunal species recorded for the 2528CC q.d.g.c. during the SABAP1 and SABAP2 period are likely to occur on or surrounding the study site. The proposed development will however result in habitat loss for typical grassland avifaunal species that occur within undisturbed open grassland

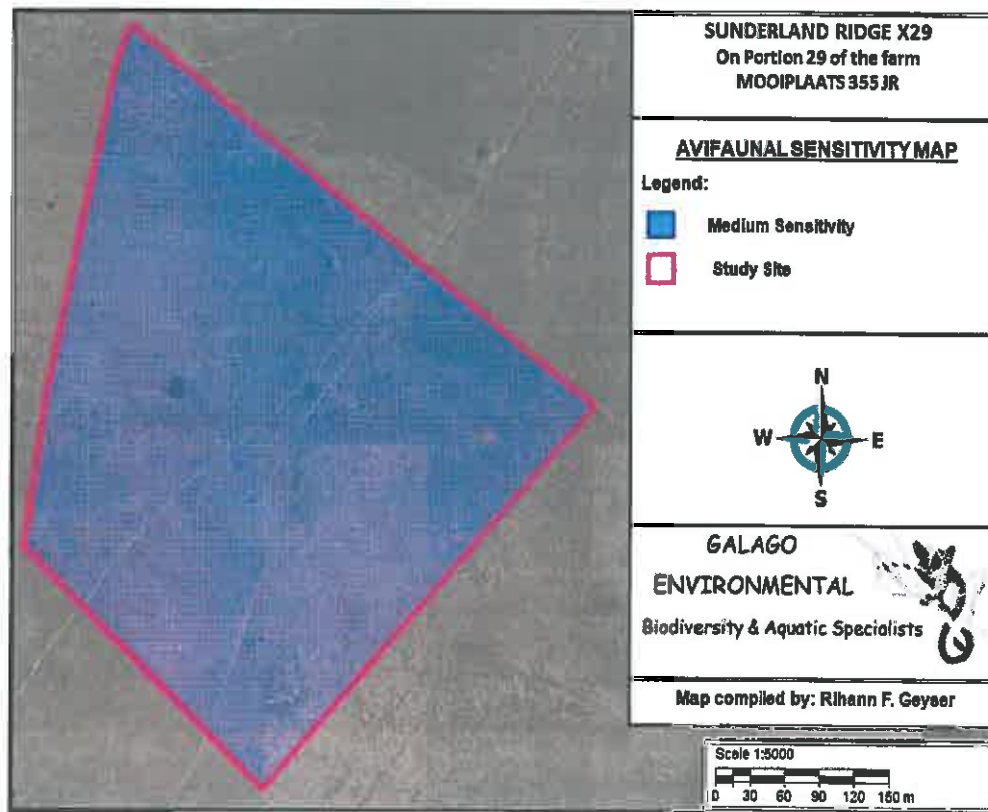


Figure 4: Avifauna sensitivity map

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Herpetofuana Assessment



Appendix G4

GALAGO ENVIRONMENTAL



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Herpetofauna Habitat Scan

of

**Sunderland Ridge X 29
on Portion 29 of the farm Mooiplaats 355-JR**

February 2013

Report author: Mr. J.C.P van Wyk (Pri. Sci. Nat: M.Sc)

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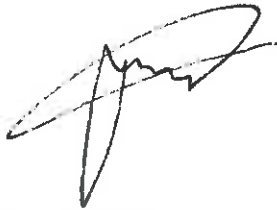
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Declaration of Independence:

I, Jacobus Casparus Petrus van Wyk (68080450410845) declare that I:

- am committed to biodiversity conservation but concomitantly recognize 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 for Natural Scientific Professions
- act as an independent specialist consultant in the field of zoology
- am subcontracted as specialist consultant by Galago Environmental CC for the project "Herpetofauna Habitat Assessment of Portion 29 of Farm Mooiplaas 355JR" described 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 the Galago Environmental CC 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 2006
- intellectual property in this report will only be transferred to the client (the party/ company that commissioned the work) on full payment of the contract fee. Upon transfer of the intellectual property, we recognise that written consent of the client will be required for release of any part of this report to third parties.



JCP VAN WYK

1. INTRODUCTION

Galago Environmental CC was appointed to undertake a reptile and amphibian habitat survey for Portion 29 of the Farm Mooiplaas 355JR (elsewhere referred to as the study site), scheduled for the development of an industrial area.

The objective was to determine which species might still reside on the site. Special attention had to be given to the habitat requirements of all the Red Data species, which may occur in the area. This survey focuses on the current status of threatened herpetofauna species occurring, or which are likely to occur on the proposed development site, and a description of the available and sensitive habitats on the site.

2. SCOPE AND OBJECTIVES OF THE STUDY

- To qualitatively and quantitatively assess the significance of the herpetofauna (reptiles and amphibians) habitat components, current physical conservation status of the property, and extrapolate the occurrences of endangered species;
- Identify and comment on ecological sensitive areas;
- To advise whether a full survey should be undertaken;
- Comment on connectivity with natural vegetation and habitats on adjacent sites;
- To provide a list of herpetofauna which occur or might occur, and to identify species of conservation importance;
- To highlight potential impacts of the proposed development on the herpetofauna of the study site, and
- If necessary, provide management recommendations to mitigate negative and enhance positive impacts should the proposed development be approved.

3. STUDY AREA

This study site lies in the quarter degree grid cell 2528CC Sutherland Ridge, Pretoria, Gauteng Province. The entire area is about 15 hectares in extent. The study site falls in the Carletonville Dolomite Grassland (Mucina and Rutherford, 2006). The 500 metres of adjoining properties are similar in environmental appearance and land-use status. Beyond the 500 metres buffer are some industrial developments to the east, rural developments to the west and a sewage plant to the north-east.

Currently the site is undeveloped and not used for any particular purpose. During the time of the site visit the basal cover (consisting predominantly of *Eragrostis* and *Themeda* grass species) was well developed, although it is clear that it burnt during the winter of 2012. At present the study site experiences regular human traffic, mainly on foot from the squatter camp on the ridge top to the southeast.

The topography is clearly undulating grassland plains characteristic of the Highveld of the interior (Figure 2). The substrate consists of a brown, soft soil which is embedded

with gravel in patches. The site overlies dolomite strata, which in places protrude above the surface. A number of termitaria were recorded.

The conservation condition can be ranked as average (if accepting that fires are part of the ecological functioning of a grassland), but the small collective size of the site and adjoining areas detracts from the conservation appeal.

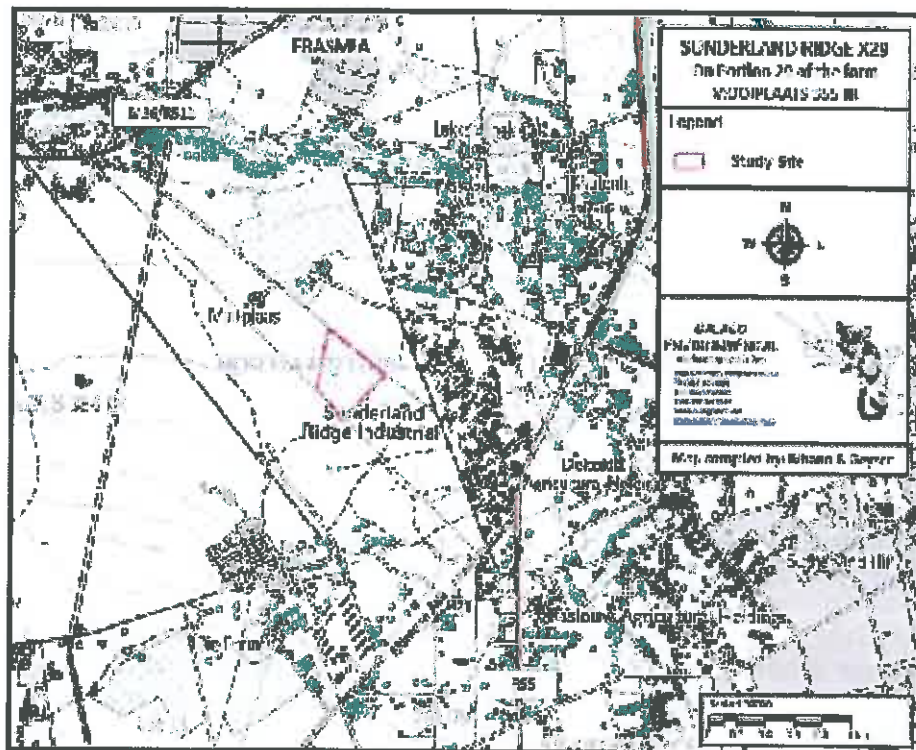


Figure 1: Locality map of the study area

4. METHOD

A site visit was conducted on 24 January 2013. During this visit the observed and derived presence of reptiles and amphibians associated with the recognised habitat types of the study site was recorded. This was done with due regard to the well-recorded global distributions of Southern African herpetofauna, coupled with the qualitative and quantitative nature of recognised habitats.

The 500 metres of adjoining properties were scanned for important fauna habitats.

5.1 Field Surveys

During the site visits, reptiles and amphibians were identified by visual sightings through random transect walks. No trapping was conducted, as the terms of reference did not require such intensive work.

5.2 Desktop Surveys

As the majority of reptiles and amphibians are secretive, nocturnal and/or poikilothermic or seasonal, distributional ranges and the presence of suitable habitats were used to deduce the presence or absence of these species based on authoritative tomes, scientific literature, field guides, atlases and databases. This can be done irrespective of season.

The probability of the occurrence of reptile and amphibian species was based on their respective geographical distributional ranges and the suitability of on-site habitats. In other words, *high* probability would be applicable to a species with a distributional range overlying the study site as well as the presence of prime habitat occurring on the study site. Another consideration for inclusion in this category is the inclination of a species to be common to the area, i.e. normally occurring at high population densities.

Medium probability pertains to a herpetofaunal species with its distributional range peripherally overlapping the study site, or required habitat on the site being sub-optimal. The size of the site as it relates to its likelihood to sustain a viable breeding population, as well as its geographical isolation is also taken into consideration. Species categorised as *medium* normally do not occur at high population numbers, but cannot be deemed as rare.

A *low* probability of occurrence will imply that the species' distributional range is peripheral to the study site and habitat is sub-optimal. Furthermore, some reptiles and amphibians categorised as *low* are generally deemed to be rare.

Based on the impressions gathered during the site visit, as well as publications, such as FitzSimons' Snakes of Southern Africa (Broadley, 1990), Field Guide to Snakes and other Reptiles of Southern Africa (Branch, 1998), A Guide to the Reptiles of Southern Africa (Alexander and Marais, 2007), Amphibians of Central and Southern Africa (Channing 2001), Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland (Minter, *et al*, 2004) and A Complete Guide to the Frogs of Southern Africa (Du Preez & Carruthers, 2009), a list of species which may occur on the site was compiled. The latest taxonomic nomenclature was used. The vegetation type was defined according to the standard handbook by Mucina and Rutherford (eds) (2006).

5.3 Specific Requirements

During the visit the site was surveyed and assessed for the potential occurrence of Red Data species such as:

- Giant Bullfrogs (*Pyxicephalus adspersus*);
- The Striped Harlequin Snake (*Homoroselaps dorsalis*);
- The Southern African Python (*Python natalensis*).

5. RESULTS

Herpetofauna Habitat Assessment

The local occurrences of reptiles and amphibians are closely dependent on broadly defined habitat types, in particular terrestrial, arboreal (tree-living), rupicolous (rock-dwelling) and wetland-associated vegetation cover. It is thus possible to deduce the presence or absence of reptile and amphibian species by evaluating the habitat types within the context of global distribution ranges.

From a herpetological habitat perspective, it was established that two of the four major habitats are naturally present on the study site, namely terrestrial and, to a lesser extent rupicolous habitat. A few moribund termitaria occur, which are commonly selected as favoured refuges for many herpetofauna. There are only a few natural rupicolous habitats on the study site in the form of scattered stones and rocks.



Figure 2: A southerly view of the terrestrial habitat of the study site. Note the water reservoir with scattered trees in the background and termite mound in the foreground.



Figure 3: Natural rupicolous habitat for herpetofauna on the study site.

Noticeable absentees from the study site are indigenous trees. Most of the very few scattered trees present are exotics. Due to the absence of almost no indigenous trees and the fact that there are only a few exotic trees on the study site, there are very few dead logs, which could have provided shelter and food for some herpetofauna. There are no open water or wetland features on the study site.

The site consists mostly of transformed grassland. The grasslands have been over grazed and burnt in most places and are thus ecologically disturbed.

The low diversity on the study site is due to limited habitat diversity, small site size, substandard conservation on adjoining areas and a high level of environmental disturbance.

The 500 metres zone of adjoining properties is in a similar state and connectivity between the site and surrounding properties is good.

Sight records were also used to compile this herpetofauna report.

Threatened and Red listed Reptile Species

The study site falls outside the natural range of the Southern African python and this species should not occur on the study site.

The striped harlequin snake has been recorded on this quarter degree square (TVL Museum Records). Only a few moribund termitaria, where this species is most likely to be found, are present on the study site. It is very difficult to confirm whether this cryptic snake is present on any study site, but it is highly unlikely that it occurs on this particular study site due the small size of the study site, the few moribund termitaria and a high level of environmental disturbance.

No Red Data or sensitive reptile species are deemed present on the site, either since the site is too disturbed, falls outside the distributional ranges of some species, or does not offer suitable habitat(s).

Threatened and Red listed Amphibian Species

The giant bullfrog has been recorded on this quarter degree square (TVL Museum Records), but no temporary water bodies, where bullfrogs are most likely to breed, occurred on the study site during the scan. From the available maps there is also no indication of temporary water bodies in the surrounding 500 metres buffer area. Bullfrogs prefer these temporary pans in order to avoid predation from fish, and for tadpoles to swim in schools and stay in the warm, shallow water during the day for rapid development (Van Wyk *et al.*, 1992).

Despite the lack of water, the sandy red soil of the study is suitable as a dispersal area, which combines feeding and aestivation. It is essential that the soil should be suitable for burrowing on a daily basis during the short activity period at the beginning of the rainy season and for deeper retreats during the resting periods.

The notice boards of the Flying Unlimited flying school warn to drive slowly due to the presence of the giant bullfrogs in the area. One of the directors of the Flying Unlimited, Riaan Struwig, counted 29 bullfrogs in water pools in the short gravel road to the flying school, which lies just north of the study site (pers.com). He also mentioned that on one occasion he found three dead giant bullfrogs due to road kills.



Figure 4: A notice board, warning motorists to be on the lookout for giant bullfrogs.

A huge possibility exists that at least a few individuals may use the study site for feeding or aestivation.

It is important to note that in the latest literature (Measey (ed.), 2011 and Carruthers & Du Preez, 2011); the giant bullfrog's status has changed officially from Near Threatened (Minter *et al.*, 2004) to Least Concern in South Africa.

6. FINDINGS AND POTENTIAL IMPLICATIONS

Species richness: Fair to poor and inevitably in a downwards spiral of decline.

Endangered species: The giant bullfrog is present on the study site and is discussed under 6.3.

Sensitive species and/or areas (Conservation ranking): The conservation ranking of the site is ranked moderate but so small as to border on insignificance. The intended

development will not result in a loss of ecologically sensitive and important habitat units, ecosystem function (e.g. reduction in water quality, soil pollution), or significant loss of sensitive herpetofauna habitat.

Habitat(s) quality and extent: The site is entirely terrestrial in character, and is annually destroyed by fires.

Impact on species richness and conservation: The intended development will displace all extant terrestrial mammals, but on a global scale that will be of little consequence.

Connectivity: The connectivity between the site and adjoining areas are excellent.

Management recommendation: A full bullfrog survey of the area is recommended.

General: Most terrestrial herpetofauna will be displaced by the intended development. However, it is likely that rupicolous species, like skinks, will benefit from the buildings.

7. LIMITATIONS, ASSUMPTIONS AND GAPS IN KNOWLEDGE

Specialists are committed to the conservation of biodiversity but concomitantly recognise the need for economic development. Whereas we appreciate the opportunity to learn through the processes of constructive criticism and debate, we reserve the right to form and hold our own opinions and therefore will not willingly submit to the interest of other parties or change statements to appease them.

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time and budget. To some extent discussions and proposed mitigations are made on reasonable and informed assumptions built on *bone fide* information sources, as well as deductive reasoning. Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons 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. Galago Environmental Fauna and Flora Specialists can therefore not accept responsibility for conclusions and mitigation measures made in good faith based on own databases or on the information provided at the time of the directive. This report should therefore be viewed and acted upon with these limitations in mind.

8. RECOMMENDED MITIGATION MEASURES

The following mitigation measures are proposed by the specialist.

- Should giant bullfrogs be encountered on site during the construction phase of the development, these should be relocated to natural grassland areas in the vicinity. Staff should be trained not to destroy herpetological specimens unnecessarily. Herpetofauna that are exposed during the construction phase should be removed and translocated.
- It is important to note that the trenches for the water pipeline and even those for sewage lines do not need to be wide, which means that the environmental damage caused by the actual digging can be reduced to a minimum. However, while they are open, their presence will mean that herpetofauna of any size may fall into them, from where it will be difficult to escape and death may be caused

by drowning, excessive exposure to the sun or by being buried alive during the final construction work.

- Environmental damage caused by these trenches may be kept to a minimum by good forward planning and thereby reducing the actual length of time that trenches are left open. Possible damage to herpetofauna is in direct proportion to the time that these trenches are left open and may destroy amphibian and reptilian species.
- The design of the storm water lines is not known. If cement pipes of large diameter are used and the trenches are filled in again, potential danger is substantially becomes reduced. Open storm water channels are dangerous, as they will continuously contribute to herpetofauna destruction.

9. CONCLUSION

The study site falls outside the natural range of the python and although the striped harlequin snake has been recorded from this quarter degree cell, very few moribund termitaria, where this species are most likely to be found, are present on the site. It is highly unlikely that this snake species occurs on the study site.

The study found that the giant bullfrog definitely occurs in the area and that the study site is ideal for foraging and aestivation of these frogs. The site is therefore considered sensitive in terms of amphibians and as much as possible of the grassland should be preserved next to natural movement corridors for these bullfrogs.

An important indirect effect is the likely impact that the proposed development might have on the surface water runoff and water quality downstream. This could have a negative impact on the herpetofauna, but the effects could be ameliorated by the construction of retention ponds, which will retard discharge into the Hennops River stream and improve water quality of the discharge.

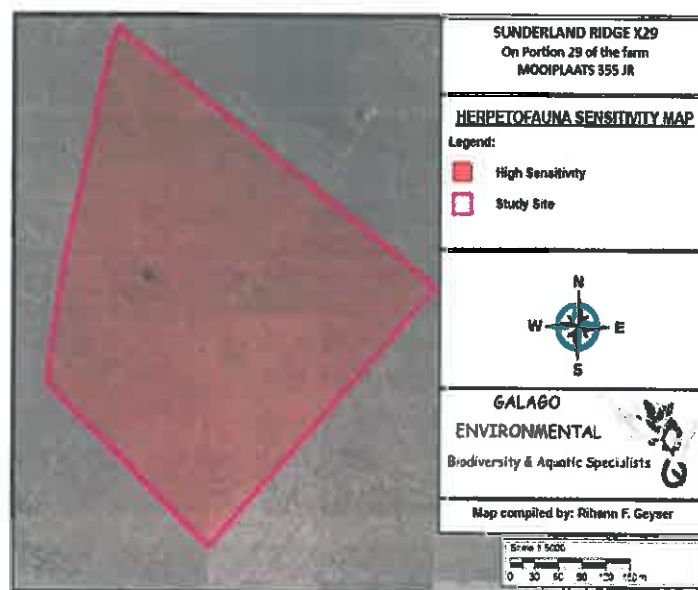


Figure 5: Herpetofauna sensitivity map

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- The Natural Scientific Professions Act (Act 27 of 2003).

Services Report



Appendix G5

CITY OF TSHWANE

**SUNDERLAND RIDGE X29
(A PART OF THE REMAINDER OF
PORTION 29 OF THE FARM
MOOPLAATS 355-JR)**

SERVICES REPORT

PROJECT NO. 1976

MAY 2012

CITY OF TSHWANE

SUNDERLAND RIDGE X29

**(A PART OF THE REMAINDER OF
PORTION 29 OF THE FARM
MOOPLAATS 355-JR)**

SERVICES REPORT

CITY OF TSHWANE : SUNDERLAND RIDGE X29 : SERVICES REPORT

1. CLIENT :

Name of Client	UZIMA Property Investments 1 (Pty) Ltd
Contact Person	Gideon Matthys Els
Address	P O Box 7003 CENTURION 0046
Telephone No. / Cell No.	012-664 6767
Fax No.	012-664 6774
E-mail	emo@velmore.co.za

2. FOR SUBMISSION TO :

Local Authority	City of Tshwane
Contact Person	Jason Ngobeni (City Manager)
Address	P O Box 6336 PRETORIA 0001
Telephone No.	012-358 4901 / 4904
Fax No.	012-358 1112
E-mail	citymanager@tshwane.gov.za

3. COMPILED BY :

Consulting Engineers	CIVILCONSULT
Contact Person	Leon Wentzel
Address	P O Box 12645 HATFIELD 0028
Telephone No. / Cell No.	012-343 6297 / 082 574 3558
Fax No.	086 583 6249 / 012-343 8929
E-mail	mail@civilconsult.co.za

CITY OF TSHWANE : SUNDERLAND RIDGE X29 : SERVICES REPORT

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CITY OF TSHWANE : SUNDERLAND RIDGE X29 : SERVICES REPORT

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ANNEXURE G	:	GEOTECHNICAL REPORT (NOT AVAILABLE)
ANNEXURE H	:	GLS REPORT

CITY OF TSHWANE : SUNDERLAND RIDGE X29 : SERVICES REPORT
1. INTRODUCTION

CIVILCONSULT was appointed by Gideon Matthys Eis of Unzima Property Investments 1 (Pty) Ltd as consulting engineers for the planning, design and construction supervision for the installation of civil engineering services, for the proposed Sunderland Ridge X29 Development.

2. PROFESSIONAL TEAM

The professional team is as follows :

Professional Discipline	Name of Company	Contact Person(s)
Client	Unzima Property Investments 1 (Pty) Ltd	Gideon Matthys Eis
Town Planner	Velocity Town Planning & Project Management CC	Lydia Lewis
Geologist	Holland Muter & Associates CC	Les Holland-Muter
Civil Engineers	CIVILCONSULT	Leon Wentzel / Armand du Toit
Electrical Engineers	ELEKTROPLAN	Stephen Carrack
EIA	Bokamoso Environmental Consultants and Landscape Architects	Lizelle Gregory
Traffic Engineers	Route ² Transport Strategies	Jac Botha

3. LOCATION OF DEVELOPMENT AND FLOOD LINES

The proposed development is located on a Part of the Remainder of Portion 29, of the Farm Mooiplaats 355-JR to the west of Centurion in the Sunderland Ridge Region.

The proposed development is bounded by Sunderland Ridge X18 and Sunderland Ridge X28 to the south east. Sunderland Ridge X24 forms the south western boundary and the proposed PWV9 Road forms the western boundary. Sunderland Ridge X11 forms the north eastern boundary of the proposed development.

The 1:50 and 1:100 year flood lines will to the best of our knowledge not affect the proposed development.

A locality plan is included in Annexure A.

4. LAND USES**Table 4 : Land Uses**

Use Zone / Reservation	Erf No.	Area (ha)	FAR / Coverage	Floor Area (m²)
Industrial 1	1-3	12,1355	0.6 / 60%	72 813
Roads	N/A	1,3980	N/A	8 376
Total	-	13,5315	-	81 189

5. GEOLOGICAL AND GEO-HYDROLOGICAL ASPECTS

A geotechnical report is not available at this stage.

6. TRAFFIC IMPACT STUDY

A traffic impact study is not available at this stage.

7. CIVIL ENGINEERING SERVICES

7.1 Design Standards

The design standards to be followed for the design of the infrastructure will be based on the technical requirements of the Engineering Department of the City of Tshwane for the provision of municipal services.

The design of the water reticulation will be done in accordance with the latest edition of the Design Guidelines for Water Reticulation and Supply issued by the Water and Sanitation Division of the City of Tshwane.

Sewer designs will be done according to the design guidelines for Sewer Mains and Sewer Drainage Systems in the City of Tshwane.

All roads and storm water designs will be done according to the Tshwane Manual for the Design of Streets and Storm Water, issued by the Town Engineer's office of City of Tshwane.

7.2 Design Software

The designs for the civil engineering services will be carried out with TechnoCad design programmes.

7.3 Ownership of Services

The internal services of the proposed Sunderland Ridge X29 Development will be taken over by the City of Tshwane.

8. WATER

8.1 Bulk Services

8.1.1 Long Term Supply

The GLS Master Plan Report for Sunderland Ridge X18 dated February 2012 indicates the proposed development to fall within the new Mooiplaats High Level Reservoir Zone.

The proposed 15M³ Mooiplaats High Level Reservoir will be constructed to the west of the proposed development and will receive water from the H35 Rand Water pipeline currently in the process to be constructed.

A new bulk water supply pipeline will be constructed from this proposed Mooiplaats High Level Reservoir in a southern direction and turning eastwards to supply the eastern regions of the supply zone where the proposed development is located. The following upgrades to accommodate the proposed development will be required :

- Feeder main from the H35 Rand Water pipeline to the proposed Mooiplaats High Level Reservoir
- New 15M³ Mooiplaats High Level Reservoir
- Inlet flow control
- Bulk water supply pipeline (gravity feed) from the proposed Mooiplaats High Level Reservoir up to the proposed Sunderland Ridge X18 Development.

Water connection for the proposed development will be established at the western boundary of Sunderland Ridge X18 north of Baralong Street. From there a 160mm Ø HDPE PE 83 water pipe will be installed to supply water for the proposed Sunderland Ridge X29 Development.

Refer to Annexure H for a copy of the GLS Master Plan Report for Sunderland Ridge X18.

Refer to Annexure C, Drawing No. 1976/200/01/00 for details.

8.1.2 Interim Supply

The GLS Master Plan Report for Sunderland Ridge X18 further indicates that a temporary connection could be made to the proposed development from Rand Water Connection No. 2044 directly north-west of the Raslouw Reservoir.

From the connection point a bulk water supply pipeline will have to be constructed to Sunderland Ridge X18. The pipe sizes will vary from 200mm Ø to 450mm Ø.

The water reticulation of the proposed Sunderland Ridge X29 Development will connect directly to the water reticulation of Sunderland Ridge X28 in Baralong Street.

Once the feeder main from the H35 water pipeline to the proposed Mooiplaats High Level Reservoir has been constructed, the proposed development will be switched over to the Mooiplaats Reservoir zone.

A PRV set at 1490m a.s.l. will also have to be installed.

Refer to Annexure H for a copy of the GLS Master Plan Report for Sunderland Ridge X18.

Refer to Annexure C, Drawing No. 1976/200/01/02 for details.

8.2 Internal Retification

8.2.1 Water Design Criteria

The design criteria to be used and to analyze and design the water network are indicated in Table 8.2.1 below.

Table 8.2.1 : Water Design Criteria

Item No.	Design Element	Criteria
1.	Average Annual Daily Demand (AADD) for residential and recreational sites	Refer to Table 8.2.2 below
2.	Gross Average Annual Daily Demand (GAADD)	Allow 20% losses
3.	Daily Peak Factor (DPF)	1.7
4.	Peak Hourly Factor (PHF)	3.3
5.	Design Peak Flow Rate (DPFR) for industrial flows	GAADD x IPF
6.	Maximum static head	90m
7.	Minimum residual head under conditions of industrial peak flows	35m
8.	Maximum linear flow velocity under conditions of industrial peak flows	1.8m/s
9.	Pipe type	HDPE Pressure Pipes
10.	Minimum pipe class	Class PN 12.5, PE 80
11.	Fire flow at any one hydrant under the condition of industrial peak flows (one hydrant at a time)	25t/s
12.	Minimum residual head (fire plus industrial peak flow)	15m
13.	Maximum linear flow velocity under conditions of fire-fighting	2,2m/s
14.	Boundary roughness (K-Value)	0,1mm
15.	Flow formulae	D'Arcy Weisbach
16.	Minimum pipe diameter	110mm

8.2.2 Estimated Water Demand

The estimated water demand for the proposed development is shown in Table 8.2.2 below.

Table 8.2.2 : Estimated Water Demand

Zoning	Sunderland Ridge X29		
	Floor Area (m ²)	Average Annual Daily Demand (AADD)	Water Demand (kℓ/d)
Industrial 1	72 813	0.4 kℓ/d per 100m ²	291.25
Roads	8 376	N/A	N/A
Total			291.25

10.3 Design Standards

Table 10.3 lists the standards to be used in the design of the storm water drainage system.

Table 10.3 : Storm water Design Standards

Design Element	Specification
a) Minimum pipe size	450mm diameter
b) Pipe Type	Spigot and socket with rubber ring seals Pipe Class : 50D 75D road crossings
c) Minimum pipe gradient	0,67%
d) Storm water details	Minimum time of concentration and run-off co-efficient according to : Tahwane Council requirements and Design Manual

11. ROADS

11.1 Access to the Development

Access to the proposed development will be directly from Sunderland Ridge X18 via Barolong Street.

Refer to Annexure C, Drawing No. 1976/400/01/01 for details.

11.2 Classification of Roads

The classification of the roads is shown in Table 11.2.

Table 11.2 : Classification of Internal Paved Areas

Description	Class No.	Function
Paved Areas	4b	Local Distributor

11.3 Geometric Design Standards

Details of the road class are shown in the Table 11.3.

Table 11.3 : Class 4b – Local Distributor

Design speed	50km/h
Minimum centre line radii	50m
Minimum gradient	0,67%
Favoured maximum gradient	10%
Maximum grade/grade length	12,5% over 70m
Minimum K-value : Crest	6
Sag	6

11.4 Pavement Design

The proposed pavement design will be based on anticipated traffic volumes and ground conditions. The design life of the proposed pavement is 20 years on provision that repairs to the surface will be made where necessary in order to maintain its skid resistance and impermeability during the design life of the road.

The pavement design proposed is shown in Table 11.4.

Table 11.4 : Pavement Design of Road Class 4b

Paving	80mm interlocking paving blocks with 20mm sand bedding
Sub base	150mm sub base stabilized to C4
Upper Selected Layer	150mm thick natural gravel compacted to 95% of modified AASHTO density. Minimum CBR = 25 at 95% of modified AASHTO density – G6 (in-situ or imported)
Lower Selected Layer	150mm thick natural gravel compacted to 95% of modified AASHTO density. Minimum CBR = 15 at 95% of modified AASHTO density – G7 (in-situ or imported)
Road bed	150mm thick layers compacted to 93% of modified AASHTO density. Minimum CBR = 7 at 93% of modified AASHTO density – G9

12. SOLID WASTE DISPOSAL**12.1 Volume of Solid Waste**

The estimated volume of waste to be generated on a weekly basis is shown Table 12.1.

Table 12.1 : Estimated Volume of Solid Waste

Use Zone/ Reservation	Floor Area (m²)	Volume of Solid Waste (m³/Week)
Industrial 1	72 813	182.03
Total		182.03

12.2 The collection of solid waste from Sunderland Ridge X29 will be carried out by the City of Tshwane.

12.3 The solid waste will be transported to the solid waste disposal site of the City of Tshwane.


Refer to Annexure E for a letter in this regard sent to the City of Tshwane on Thursday, 31 May 2012.

13. BULK SERVICES CONTRIBUTIONS

The amount of Bulk Services Contributions for civil services payable to the City of Tshwane will be determined with the compilation of the service agreement.

14. CONCLUSION

We trust that the above report meets your requirements. Please contact us should you require any additional information.



.....
Leon Wentzel
for CIVILCONSULT Consulting Engineers (Pty) Ltd

31/05/2012
.....
Date

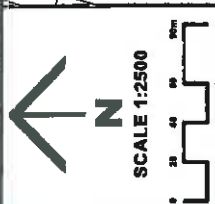
ANNEXURE A
LOCALITY PLAN

ANNEXURE B

**APPROVED TOWNSHIP LAYOUT
PLAN**

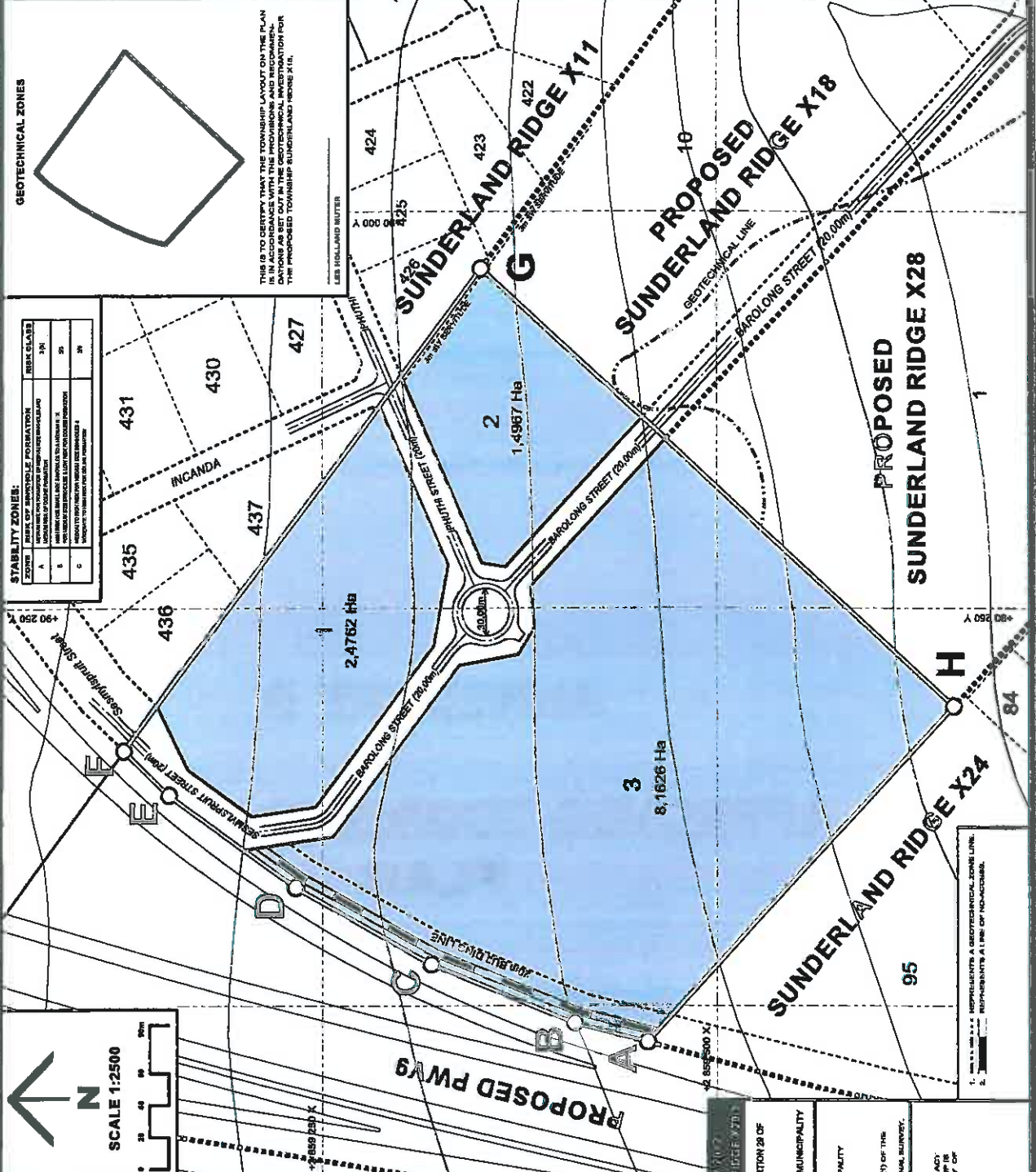
PROPOSED TOWNSHIP: SUNDERLAND RIDGE X29

LOCALITY MAP 1:25,000



STABILITY ZONES:

SCORE	RISK OF SLOTTYPE FORMATION	RISK CLASS
A	NO SIGNIFICANT RISK OF SLOTTYPE FORMATION	1A
B	LOW RISK OF SLOTTYPE FORMATION	1B
C	MEDIUM RISK OF SLOTTYPE FORMATION	2A
D	HIGH RISK OF SLOTTYPE FORMATION	2B



THIS IS TO CERTIFY THAT THE TOWNSHIP LAYOUT ON THE PLAN IS IN ACCORDANCE WITH THE PROVISIONS AND RECOMMENDATIONS OF THE TOWNSHIP ACT AND THE TOWNSHIP ZONING BY-LAW FOR THE PROPOSED TOWNSHIP SUNDERLAND RIDGE X29.

USE ZONE	LOT NUMBERS	TOT. NO. OF LOTS	MIN. LRF USE (%)	AVERAGE	TOTAL AREA (Ha)	%
INDUSTRIAL No. 1	1-3	3	N/A	N/A	12,725	88.8
STREET	N/A	N/A	N/A	N/A	1,290	9.2
TOTAL		3			14,015	100.0

VELOCITY
 100% CLIENT SERVICE
 41 Dundas Avenue
 Markham, Ontario
 L3R 9V7
 Tel: (905) 947-1888
 Fax: (905) 947-1888

LOCALITY: SITUATED ON PART OF THE REMAINDER OF PORTION 29 OF THE FARM INCORPORATED 355-14 REPRESENTED BY THE FIGURE A-B-C-D-E-F-G-H-HA

LOCAL AUTHORITY: CITY OF TORNWANE METROPOLITAN MUNICIPALITY

GENERAL NOTE:
 1. CONTOURS: SUPPLIED BY TORNWANE METROPOLITAN MUNICIPALITY
 2. ALL DIMENSIONS AND AREAS ARE APPROXIMATE FIGURES FROM SURVEY.
 3. THE CONTOURS ARE IN ACCORDANCE WITH REGULATION 18(1) OF THE TOWNSHIP ZONING AND TOWNSHIP ORDINANCE, 1989
 4. ALL DIMENSIONS AND AREAS ARE APPROXIMATE FIGURES FROM SURVEY.
 5. 1:50 AND 1:100 YEARS FLOODS
 IN TERMS OF SECTION 144 OF THE NATIONAL WATER ACT, ACT NO. 28 OF 1988, IT IS HEREBY CERTIFIED THAT THE TOWNSHIP IS NOT SUBJECT TO FLOODS WITH AN EXPECTED FREQUENCY OF 100 YEARS OR 1:100 YEARS.

1. THIS PLAN REPRESENTS A GEOTECHNICAL ZONE LINE.
 2. REPRESENTS A LINE OF NO-CUTS.

ANNEXURE C

ENGINEERING LAYOUT DRAWINGS

ANNEXURE D

TITLE DEED

(SG DIAGRAM NOT AVAILABLE)

ANNEXURE E

RELEVANT CORRESPONDENCE

ANNEXURE F
TRAFFIC IMPACT STUDY
(NOT AVAILABLE)

ANNEXURE G
GEOTECHNICAL REPORT
(NOT AVAILABLE)

ANNEXURE H

GLS REPORT

20 February 2012

General Manager: Water and Sanitation
City of Tshwane Metropolitan Municipality
PO Box 6338
PRETORIA
0001

ATTENTION: Mr. Stephens Notoane

Dear Sir,

**WATER AND SEWER MASTER PLANS: DEVELOPMENT OF PROPOSED TOWNSHIP –
SUNDERLAND RIDGE X18**

The attached request from Civilconsult (Gideon Ras) dated 10 August 2011 with regards to accommodating the proposed development in the Tshwane water and sewer systems refers.

Although the City of Tshwane has water and sewer master plans, you requested this further analysis and report because :

- The development is considered to be a large development (i.e. > than 250 housing units).
- The development has large fire flow requirements (i.e. > 20 l/s which is usually the case for industrial, general business, shopping centres or high-rise flats >= 4 storeys).
- The development falls outside the planning scope / urban edge of the latest master plan (i.e. does not fall in any "future development area") OR has a substantially higher Unit Water Demand than used in the master plan.
- The reservoir which will supply the development in future will be different to the reservoir which currently supplies the development (i.e. a change in reservoir supply zones).
- The reservoir zone in which the development falls is currently experiencing inadequate bulk system capacity.

This report is a technical report stating upgrades required in the distribution networks in the vicinity of the development. The City of Tshwane engineer (yourself) will accept the report or suggest changes and will make a final decision on works to be implemented by the proposed development.

This analysis and report is based on the 2010 water and sewer master plans which are now continuously updated on a three monthly basis. The latest master plans which were used in this analysis were the October 2011 master plans.

All costs shown in this report are estimates only and **INCLUDE** 40% surcharge for P&Gs, fees and contingencies but **EXCLUDE** VAT.

1 WATER DISTRIBUTION NETWORK

1.1 Distribution Zone

The proposed development was taken into consideration in the above mentioned water master plan as part of the MOOIPLAATS/HOEKPLAATS future development area.

The master plan indicated that this development area falls in the future MOOIPLAATS reservoir zone as shown in Figure 1a (Water) attached. However, this analysis and report also considered a temporary connection to the proposed development from Rand Water connection number 2044 (see Figure 1b (Water)).

1.2 Revised Water Demand

The combined AADD for the proposed development as originally calculated and used in the analysis of the water distribution network in the master plan was 454 k/d.

The revised AADD, peak flow and fire flow calculated for the proposed development and used in the re-analysis of the water distribution network was:

Anticipated Landuse	New Dev Area (ha)	FSR	Floor space (ha)	FSR (litres)	UWD Type	LWD (litre UATV)	AADD (litre UAW) (k/d)	PODW F	Water / Sewer Ratio	IPDWF (lit/s)	IPWWE (lit/s)
NEW DEVELOPMENT											
Industrial (dry)	17.1023	0.6	10.2614	1026	floor	0.4 kl/100m ² /d	410	291		5.0	7.1
Private open space	2.5498				area	15 kl/ha/d	38	0		0.0	0.0
Roads	3.0486				none	0 kl/unit/d	0	0		0.0	0.0
	22.7007			1026			449	291	65%	5.0	7.1

- Peak flow using zone peak hour factor of: 3.0^{\ddagger} = 15.6 l/s
- Fire flow for type: Industrial/business (moderate risk) = 50 l/s @ 15 m

[‡] Higher peak flow factors might be applicable for internal networks.

1.3 PERMANENT Accommodation of Proposed Development In the Existing Water Distribution Network

Accommodation of the proposed development, with its revised AADD, requires implementation of the following additions and adjustments to the *existing* water distribution network as indicated in Figure 1a (Water) attached:

1.3.1 Bulk Items

• MP.B1	New Rand Water Connection, 1 597m EGL	R	840 000	*
• MP.B3	1300 mm Ø PRV including pipework	R	3 648 400	*
• MP.B2	456 m x 800 mm Ø main pipe	R	3 709 000	*
• MP.B4	420 m x 800 mm Ø main pipe	R	3 493 000	*
• MP.B10	1040 m x 600 mm Ø main pipe	R	3 794 000	*
• MP.B12a	237 t/s FCV	R	306 600	*
• MP.B11a	15 000 kℓ new Mooiplaats reservoir	R	19 740 000	*

1.3.2 Reticulation Items

Items required to alleviate existing problems in the water distribution network:

- None

Items required to accommodate the proposed development (excluding fire flow requirements):

• MPHL.1	1135 m x 900 mm Ø main pipe	R	10 164 280	*
• MPHL.2	1145 m x 800 mm Ø main pipe	R	9 147 320	*
• MPHL.3	1025 m x 700 mm Ø main pipe	R	6 079 080	*
• MPHL.58	930 m x 400 mm Ø main pipe	R	1 730 960	*
• MPHL.59	350 m x 355 mm Ø main pipe	R	556 000	*
• MPHL.60	585 m x 355 mm Ø main pipe	R	901 000	*
• MPHL.61a	140 m x 315 mm Ø main pipe	R	208 000	*
• MPHL.61b	270 m x 250 mm Ø main pipe	R	258 000	*
• MPHL.79a	60 m x 315 mm Ø main pipe	R	110 000	*
• MPHL.79b	968 m x 250 mm Ø main pipe	R	849 000	*
• Item 4	160 m x 200 mm Ø main pipe	R	131 000	*
• Item 6	170 m x 200 mm Ø main pipe	R	137 000	*
• Item 7	200 m x 160 mm Ø main pipe	R	123 000	*

Items required to accommodate the proposed development (including fire flow requirements):

- As above

Items shown in red text above (Bulk Items MP.B4/B10/B11/B12a/B11a and reticulation Item MPHL.1) can be delayed if Item MP.B2 is linked to Item MPHL.2 and Item B3 (the PRV) is set at 1 490m a.s.l. to mimic the reservoir static E.G.L.

The items in blue text are in effect internal to another development called Sunderland Ridge X22, X23 and X24 or Sunderland Ridge X18 itself.

"External" items (black text) amount to some R16.6m (excluding items that can be delayed and shown in red text).

* Year 2010/11 Rand value, **INCLUDES** 40% surcharge for P&Gs, fees and contingencies but **EXCLUDES** VAT.

1.4 TEMPORARY Accommodation of Proposed Development in the Existing Water Distribution Network

Accommodation of the proposed development, with its revised AADD, requires implementation of the following additions and adjustments to the *existing* water distribution network as indicated in Figure 1b (Water) attached:

1.4.1 Bulk Items

					<u>Equivalent Ø replacement pipe</u>		
<u>Items required to alleviate existing problems in the water distribution network:</u>							
• RLR.B1	20 m x	450 mm Ø	parallel reinforcement pipe (to existing 350 mm Ø)	R	129 000	550 mm Ø	R 638 000 *
• RLR.B2	715 m x	450 mm Ø	main pipe (a portion of)	R	2 455 000		R 2 455 000 *

1.4.2 Reticulation Items

					<u>Equivalent Ø replacement pipe</u>		
<u>Items required to alleviate existing problems in the water distribution network:</u>							
• None							
<u>Items required to accommodate the proposed development (excluding fire flow requirements):</u>							
• Item 10		315 mm Ø	PRV set at 1 490m a.s.l. (i.e. 55m)	R	226 000		R 226 000 *
• Item 11	122	Øs,	315 mm Ø FCV	R	119 000		R 119 000 *
• RLR.3	575 m x	400 mm Ø	main pipe	R	1 107 000		R 1 107 000 *
• RLR.4	25 m x	355 mm Ø	main pipe	R	78 000		R 78 000 *
• RLR.5	270 m x	355 mm Ø	main pipe	R	447 000		R 447 000 *
• RLR.6	325 m x	315 mm Ø	main pipe	R	444 000		R 444 000 *
• RLR.7	690 m x	315 mm Ø	main pipe	R	899 000		R 899 000 *
• Item 12	640 m x	315 mm Ø	main pipe	R	837 000		R 837 000 *
• MPHL.61	620 m x	315 mm Ø	main pipe	R	812 000		R 812 000 *
• Item 13	72	Øs,	10 m pump and 122 Øs at 65m head for fire flow	R	1 359 000		R 1 359 000 *
• MPHL.61a	140 m x	315 mm Ø	main pipe	R	208 000		R 208 000 *
• MPHL.79a	60 m x	315 mm Ø	main pipe	R	110 000		R 110 000 *
• MPHL.79b	968 m x	250 mm Ø	main pipe	R	849 000		R 849 000 *
• Item 4	160 m x	200 mm Ø	main pipe	R	131 000		R 131 000 *
• Item 6	170 m x	200 mm Ø	main pipe	R	137 000		R 137 000 *
• Item 7	200 m x	160 mm Ø	main pipe	R	123 000		R 123 000 *

Items required to accommodate the proposed development (including fire flow requirements):

- As above

"External" bulk and "external" reticulation items (black text) amount to some R9.4m (excluding internal items that are shown in blue text).

The above pipe, pump and FCV sizes were determined taking into account temporary accommodation of Sunderland Ridge X22, X23, X24; Sunderland Ridge X18 and the portion of land north of Sunderland Ridge X18. Demands of Sunderland Ridge X26 were not considered.

Once the Rand Water bulk line to the Mooiplaats reservoir has been constructed, the above three mentioned developments must be switched over to the Mooiplaats reservoir zone. Items RLR.3/4/5/6/7 and Item 12 can then be switched over to form part of the Raslow distribution network. However, all items above should in no way be interconnected onto any Raslow reservoir zone distribution pipes at present. Items 10, 11 and 13 will then become redundant.

* Year 2010/11 Rand value, INCLUDES 40% surcharge for P&Gs, fees and contingencies but EXCLUDES VAT.

1.5 Adjustments to the Master Plan

The revised AADD of the proposed development requires the following additions and adjustments to the *master plan* as indicated in **Figure 1b (Water)** attached.

1.5.1 Bulk Items

- None

1.5.2 Reticulation Items

• RLR.6	325	m x	315	mm Ø main pipe (MP recommended a 250mm Ø pipe)	R	444 000	*
• RLR.7	690	m x	315	mm Ø main pipe (MP recommended a 160mm Ø pipe)	R	899 000	*
• Item 12	640	m x	315	mm Ø main pipe	R	837 000	*
• MPHL.61	620	m x	315	mm Ø main pipe (MP recommended a 160 mm Ø pipe)	R	812 000	*

1.6 Internal Reticulation

The internal network design on the property of the proposed development is beyond the scope of this report. However, the consulting engineer for the development is required to allow for the fire flow demand (as listed in 1.2 above) on the internal networks.

For internal network design purposes the water distribution network provides the following energy gradelines (EGLs) at the proposed connection point (see **Figure 1b (Water)**):

				<u>At Point D: when temporarily connected to the Raslow system</u>			
• Static EGL	=			1 490	m a.s.l.	(65 m)	
• Residual EGL	=			1 467	m a.s.l.	(42 m)	
• Fire Flow EGL	=			1 454	m a.s.l.	(29 m)	
• Ground Level	=			1 425	m a.s.l.		

2 SEWER NETWORK

2.1 Drainage Area

The proposed development was taken into consideration in the above mentioned sewer master plan as part of the MOOIPLAATS/HOEKPLAATS future development area.

The master plan indicated that this development area falls in the RIETSPRUIT drainage area as shown in **Figure 2 (Sewer)** attached.

2.2 Revised Sewer Flow

The combined peak day dry weather flow (PDDWF) for the proposed development area as originally calculated and used in the analysis of the sewer system in the master plan was 312 kl/d.

The revised PDDWF calculated for the proposed development and used in the re-analysis of the sewer system was 291 kl/d with an instantaneous peak dry weather flow (IPDWF) of 5.0 l/s. The design flow, or instantaneous peak wet weather flow (IPWWF) is 7.1 l/s.

2.3 Accommodation of the Proposed Development in the Existing Sewer System

Accommodation of the proposed development, with its revised PDDWF, requires implementation of the following additions and adjustments to the *existing sewer reticulation network* as indicated in **Figure 2 (Sewer)** attached:

Items required to alleviate existing problems in the sewer system:

- None

Items required to accommodate the proposed development in the existing sewer system:

• RS_F67.1	274	m x	160	mm Ø new pipe	Design Flow	=	3	ℓ/s	R	212 000	*
• RS_F68.1	264	m x	160	mm Ø new pipe	Design Flow	=	7	ℓ/s	R	205 300	*
• RS_F68.2	221	m x	160	mm Ø new pipe	Design Flow	=	11	ℓ/s	R	176 100	*
• RS_F68.3	586	m x	250	mm Ø new pipe	Design Flow	=	35	ℓ/s	R	555 300	*

In Figure 2 (Sewer) attached pipes in future development areas are indicated schematically.

The proposed connection points of the internal sewer network to the external Tshwane network are shown in Figure 2 (Sewer).

2.4 Adjustments to the Master Plan

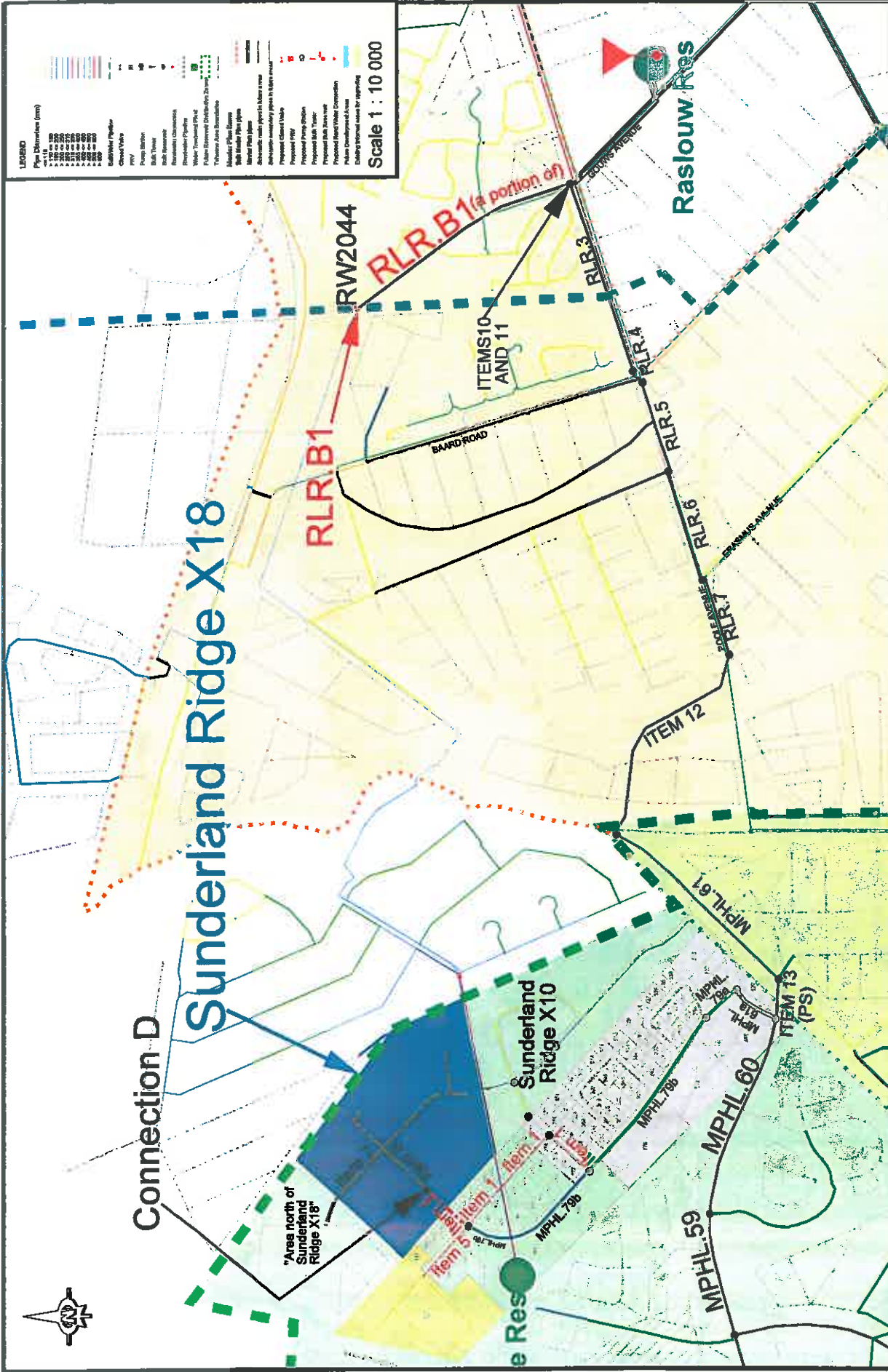
No adjustments to the sewer master plan are required due to the revised PDDWF of the proposed development.

Yours sincerely,



Per: Dr BF Loubser
GLS Consulting

* Year 2010/11 Rand value, **INCLUDES** 40% surcharge for P&Gs, fees and contingencies but **EXCLUDES** VAT.



LEGEND

Pipe Diameter (mm)	Color/Style
150	Blue
200	Green
250	Yellow
300	Orange
350	Red
400	Dark Red
450	Brown
500	Black
600	Dark Blue
750	Light Blue
900	Light Green
1050	Light Yellow
1200	Light Orange
1350	Light Red
1500	Light Brown
1800	Light Grey
2100	Light Purple
2400	Light Blue-Grey
2700	Light Green-Grey
3000	Light Yellow-Grey
3600	Light Orange-Grey
4200	Light Red-Grey
4800	Light Brown-Grey
5400	Light Grey
6000	Light Purple-Grey
6600	Light Blue-Grey
7200	Light Green-Grey
7800	Light Yellow-Grey
8400	Light Orange-Grey
9000	Light Red-Grey
9600	Light Brown-Grey
10200	Light Grey
10800	Light Purple-Grey
11400	Light Blue-Grey
12000	Light Green-Grey
12600	Light Yellow-Grey
13200	Light Orange-Grey
13800	Light Red-Grey
14400	Light Brown-Grey
15000	Light Grey
15600	Light Purple-Grey
16200	Light Blue-Grey
16800	Light Green-Grey
17400	Light Yellow-Grey
18000	Light Orange-Grey
18600	Light Red-Grey
19200	Light Brown-Grey
19800	Light Grey
20400	Light Purple-Grey
21000	Light Blue-Grey
21600	Light Green-Grey
22200	Light Yellow-Grey
22800	Light Orange-Grey
23400	Light Red-Grey
24000	Light Brown-Grey
24600	Light Grey
25200	Light Purple-Grey
25800	Light Blue-Grey
26400	Light Green-Grey
27000	Light Yellow-Grey
27600	Light Orange-Grey
28200	Light Red-Grey
28800	Light Brown-Grey
29400	Light Grey
30000	Light Purple-Grey

Scale 1 : 10 000

FIGURE 1b (Water)
 Master Plan Items, Required Works & Proposed Connection
 Sunderland Ridge X18
 (Temporary Accommodation in Raslaw Zone)



October 2011 Planning Models
 WATER/SEWER MIS
 Tshwane:
 Computer Analysis and
 Master Planning of Water Distribution Network

Proposed Connection

Sunderland Ridge WWTP

Sunderland Ridge X18

Proposed Connection

Legend:

- Pipe diameter (mm)
 - 110mm
 - 150mm
 - 200mm
 - 250mm
 - 375mm
 - > 400mm
- Pumping Main
- Outfall Sewer
- Overhead Structures
- Pump Stations
- Water Care Works
- Drainage Area
- Connections to other systems
- Connection of External Contributions
- External Contributions
- Study Area
- Tshwane Area Boundaries
- Proposed Master Plan
 - Proposed Gravity Main
 - Investigate Gravity Main
 - Future Gravity Main
 - Future Sewerage Pipes
 - Future Rising Main
 - Future Pump Stations
 - Future Water Care Works
 - Future development areas
 - Existing Informal Areas (no sewers)

Scale 1: 7 000

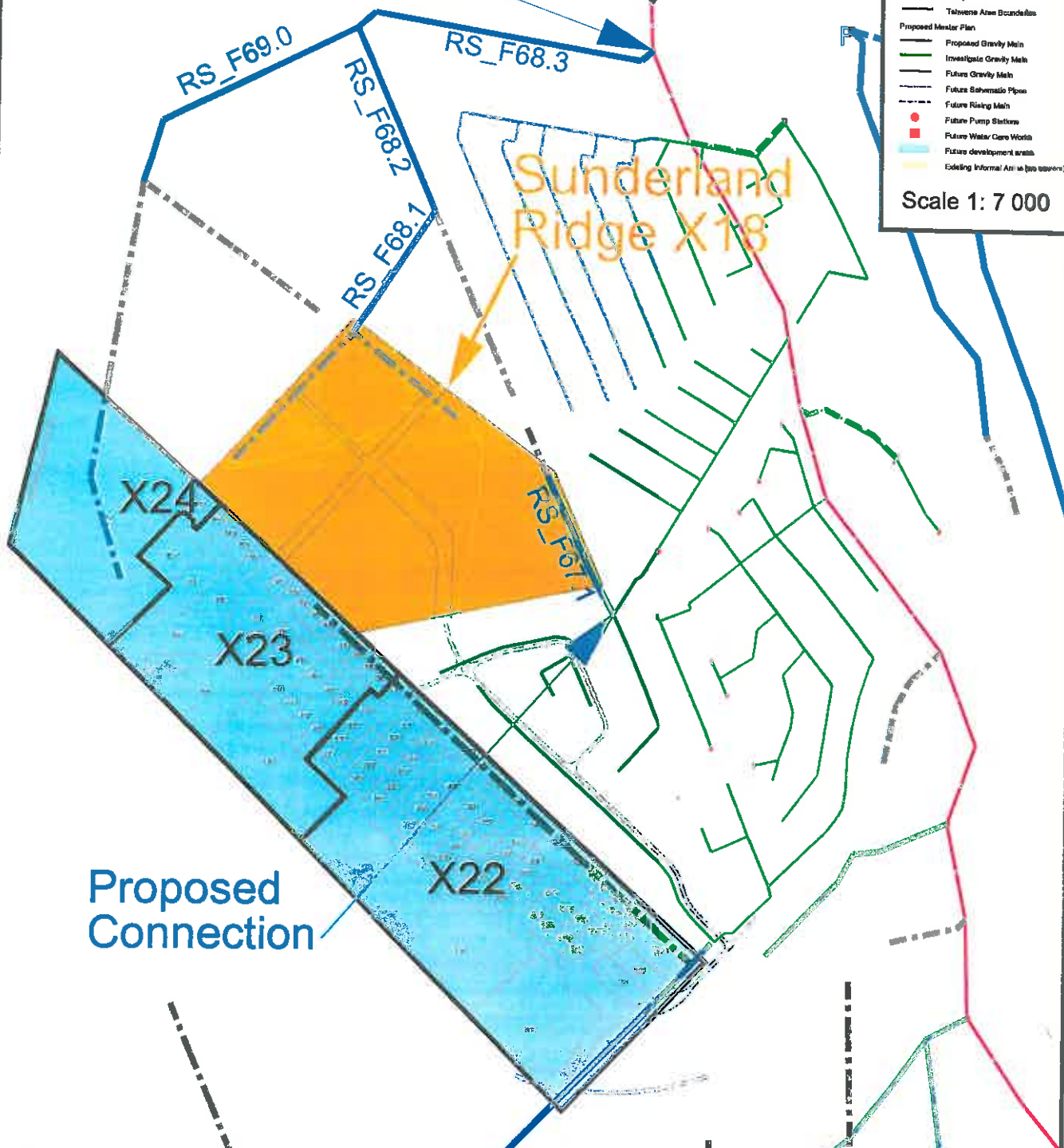


FIGURE 2 (SEWER)
 Master Plan Items / Required Works and Proposed Connections
 Sunderland Ridge X18
 (Rietspruit Drainage Area)

October 2011 Master Plan Models
 WATER/SEWER MIS
 Tshwane:
 Computer Analysis and
 Master Planning of Sewerage System



NOTES

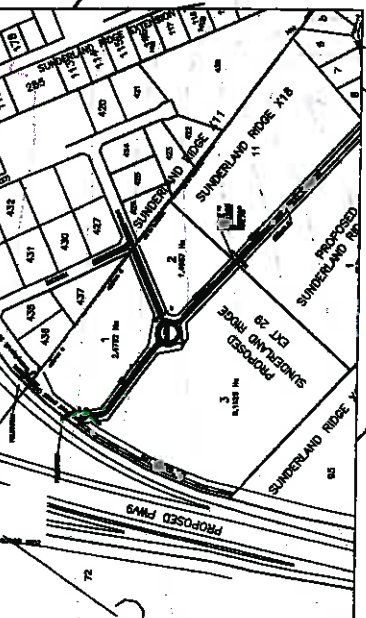
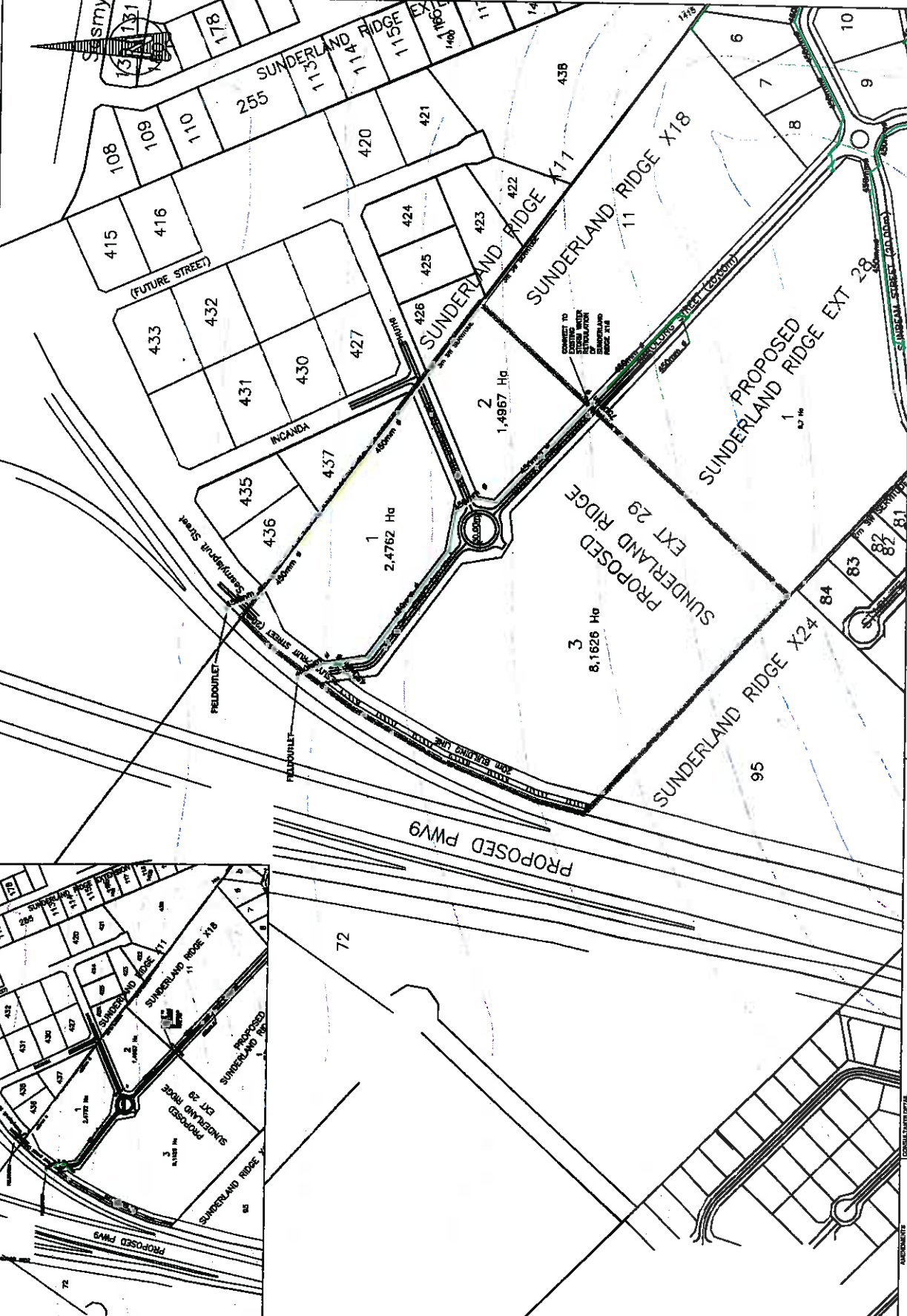
- GENERAL**
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE CITY OF TSHWANE MUNICIPALITY WATER SERVICES BY-LAW.
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- ROADS**
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LEGEND

- 1. INTERCONNECTOR WATER MAIN
- 2. PROPOSED STORM WATER MAIN
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- STORMWATER**
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PROJECT STATUS

DATE	DESCRIPTION
12-05-2012	ISSUED FOR TENDERS
1978	PRELIMINARY DESIGN
1978	FINAL DESIGN
1978	CONSTRUCTION

STORM WATER LAYOUT

DATE	DESCRIPTION
12-05-2012	ISSUED FOR TENDERS
1978	PRELIMINARY DESIGN
1978	FINAL DESIGN
1978	CONSTRUCTION

CITY OF TSHWANE
TRANSPORT AND ROADS DEPARTMENT
ROADS AND STORMWATER DIVISION

MR. L. MOKGONO
 DIVISIONAL MANAGER

MR. E. MASHAYI
 MANAGER

MR. J. MASHAYI
 MANAGER

MR. J. MASHAYI
 MANAGER

MR. J. MASHAYI
 MANAGER

CIVILCONSULT
 CONSULTANTS

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NOTES AND SPECIFICATIONS

GENERAL

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FROM THE LOCAL AUTHORITIES AND THE WATER AND SANITATION DEPARTMENT.
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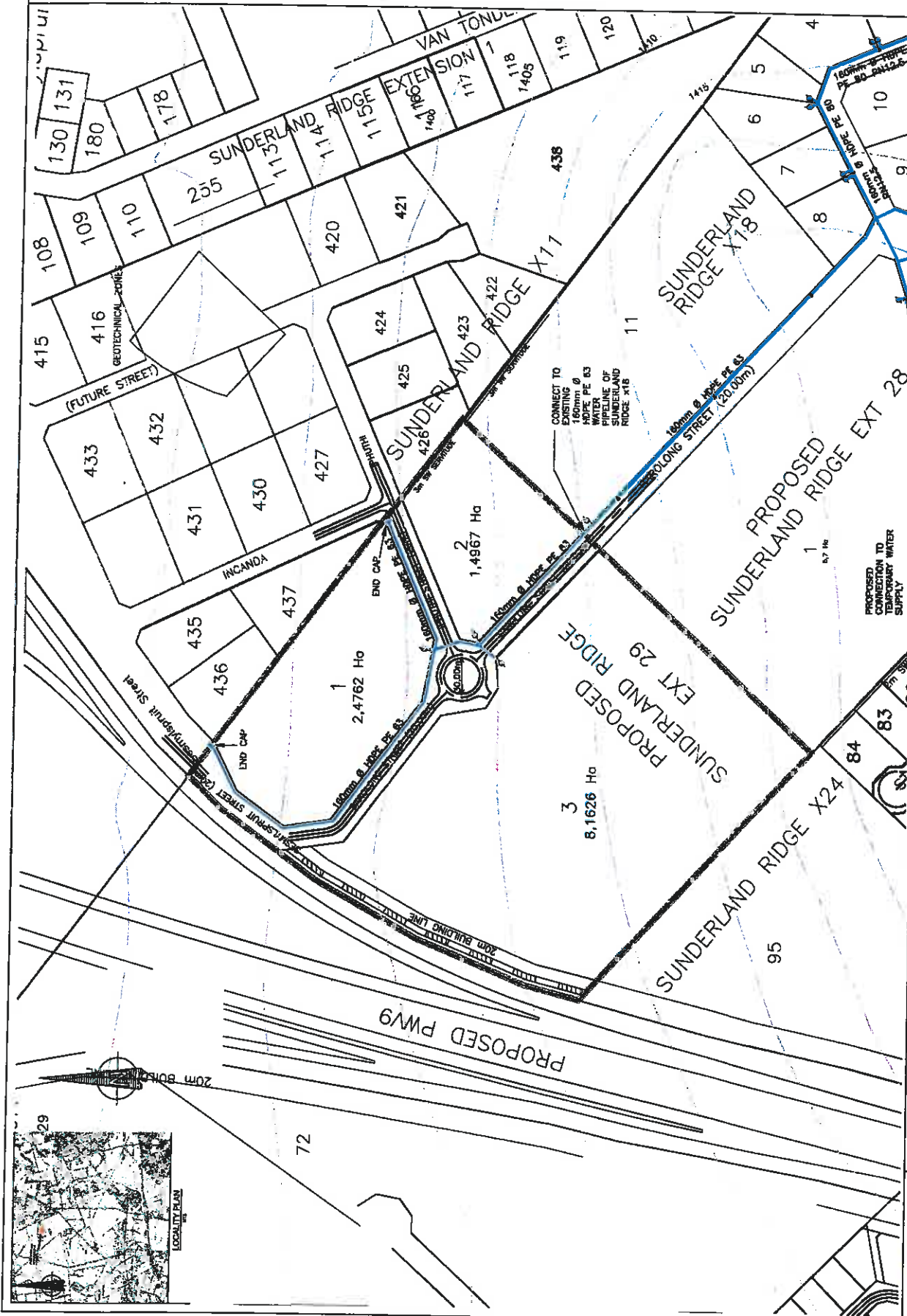
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LEGEND

WATER

- EXISTING WATER
- PROPOSED WATER
- WATER MAIN
- WATER SERVICE LINE
- WATER TAP
- WATER VALVE
- WATER METER
- WATER CONNECTION
- WATER PUMP
- WATER STORAGE TANK
- WATER DISTRIBUTION NETWORK
- WATER TREATMENT PLANT
- WATER RESERVOIR
- WATER CONDUIT
- WATER PIPE
- WATER FITTING
- WATER JOINT
- WATER FLANGE
- WATER GASKET
- WATER O-RING
- WATER WASHER
- WATER NUT
- WATER BOLT
- WATER SCREW
- WATER WRENCH
- WATER Pliers
- WATER CUTTER
- WATER SOLDER
- WATER SOLDERING IRON
- WATER SOLDERING FLUX
- WATER SOLDERING ROD
- WATER SOLDERING TIPS
- WATER SOLDERING MASK
- WATER SOLDERING GLOVES
- WATER SOLDERING SAFETY GOGGLES
- WATER SOLDERING APRON
- WATER SOLDERING MASK
- WATER SOLDERING GLOVES
- WATER SOLDERING SAFETY GOGGLES
- WATER SOLDERING APRON



<p>CITY OF TSHWANE SERVICES DEPARTMENT WATER AND SANITATION 1111 BANGORWAY WIR 19 BATHURST EXECUTIVE DIRECTOR</p>		<p>AMENDMENTS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DATE</th> <th>APPROVED</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		NO.	DATE	APPROVED	DESCRIPTION				
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<p>WATER AND SANITATION</p> <p>CONSULTANT DETAILS</p> <p>CHILCO-SUIT</p> <p>1111 BANGORWAY WIR 19 BATHURST 1978-2004-01-00</p>		<p>DESIGNED</p> <p>DATE: 10/08/2012</p> <p>CHECKED</p> <p>DATE: 10/08/2012</p> <p>APPROVED</p> <p>DATE: 10/08/2012</p>									
<p>PROJECT STATUS</p> <p>PROJECT NO. 1000</p> <p>SHEET NO. 1 OF 1</p> <p>PAPER SIZE A1</p> <p>SCALE 1:1000</p> <p>DATE: 10/08/2012</p>		<p>LOCATION OF PROJECT</p> <p>SUNDERLAND RIDGE X29</p> <p>DESCRIPTION OF PROJECT:</p> <p>WATER LAYOUT PLAN</p>									
<p>PROJECT ENGINEER OF CITY:</p> <p>NAME: _____</p> <p>POST: PROJECT ENGINEER</p>		<p>INSPECTOR OF WORKS OF CITY:</p> <p>NAME: _____</p> <p>POST: INSPECTOR OF WORKS</p>									

Environmental Management Plan (EMP)



Appendix H

November
2013

Final Environmental Management Plan (EMP) for the Proposed Sunderland Ridge X 29

Ref No. GAUT: 002/12-13/E0047

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1 Project Outline

1.1 Background

Bokamoso Environmental Consultants was appointed by **Rugged Property Investments (ONE) Pty Ltd** to compile a basic assessment report for the proposed developments of **Sunderland Ridge Extension 29** as well as its associated activities.

1.2 Project description

The proposed development of **Sunderland Ridge Extension 29** is situated on the Remainder of Portion 70 (A Portion of Portion 29) of the Farm Mooiplaats 355-JR.

The study area is situated south of the proposed PWV9 road and the Proposed Sunderland Ridge x 11 is situated to the north east. The approved Industrial Township known as Sunderland Ridge x 18 and the approved Industrial 1 Township known as Sunderland Ridge x 28 are situated to the south east. The proposed Sunderland Ridge x 24 is situated to the south west of the proposed site.

The Total extent of the proposed application site(s) is approximately **13.5315** hectares and is located in the area of jurisdiction of the **City of Tshwane Metropolitan Municipality** in **Gauteng Province**.

The township layout makes provision for 3 erven, to be zone as "Industrial 1", with erf sizes varying from 1, 4967 to 8, 1626 Ha (the largest of the erven).

(Refer to Figure 1 for the Locality Map and Figure 2 for the Aerial Map)

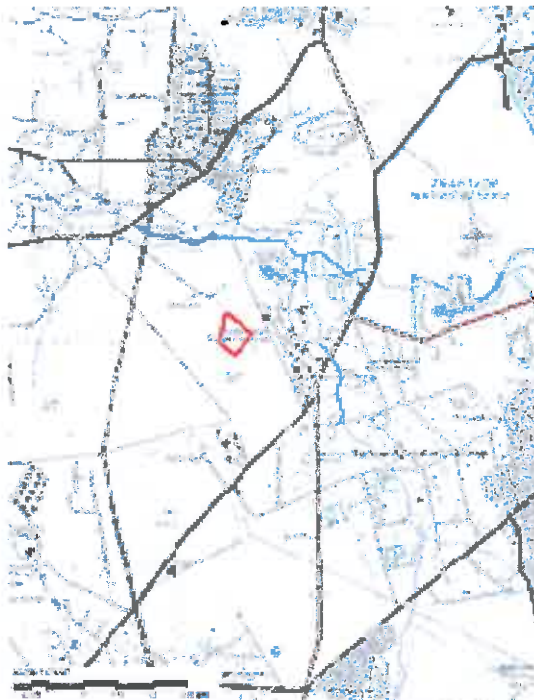


Figure 1: Locality Map



Figure 2: Aerial Map

Timeframe for construction:

Will be provided when or if the application for the proposed development is approved. Therefore the timeframe for construction is unknown.

The developer will be responsible for the onsite activities. The EMP will be a binding document for purposes of compliance.

1.3 Receiving Environment

Hydrology:

No river or wetlands occur within the application site;

Fauna and flora:

No Red Listed plant species were recorded on the proposed development site. The site lies within the 2528CC quarter degree grid cell and the habitat on site was suitable for

three of the seven Orange Listed plant species. Only two of these were recorded on site and they are not assigned a conservation status of rare or endangered. The site is described as Mixed *Eragrostis* Grassland and classified as Carltonville Dolomite Grassland by Mucina and Rutherford (2006). This vulnerable vegetation type is considered a species-rich grassland where a quarter of the vegetation type is transformed by cultivation, urbanization and mining.

The Red Listed, *Drimia sanguinea*, was recorded north of the site. The specialist recommended a 200m buffer area for this species. Two large multi-stemmed *Searsia lancea* specimens were observed during the site visit and should preferably be included in an open space area. It is recommended by the specialist that areas used for development on the site should still promote connectivity between the grasslands on site and neighbouring properties.

An avifaunal study was conducted on the proposed development site. Melodious Lark (*Mirafra cheniana*) is a Red Data avifaunal species for which suitable foraging habitat was confirmed on the study site and within the 500m extended study site. This is however a non-priority Red Data avifaunal species according to GDARD.

It is recommended that these red data listed plant species be relocated and the large trees be part of the landscaping and layout plan. With approval of the Environmental Authorization the status of these recommendations will be known and it will be implemented accordingly.

Cultural /Historical:

No obvious features, sites or artefacts of cultural significance were found on the site;

Visual:

The construction phase will cause a visual impact and must be mitigated accordingly.

Geology:

A detailed Geotechnical investigation is being conducted. It is recommended that the Geotechnical report be made a condition of the ROD.

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The objectives of the study are as follows:

- Determine and/confirm the Dolomite Stability of the study area.
- Determine and confirm areas on the study area which are suitable for Township Establishment;
- Determine areas where excavatability problems are foreseen;
- Present appropriate foundation recommendations and water precautionary measures;
- Present a pro-active maintenance strategy for water bearing services and other infrastructure to reduce the probability of the occurrence of ground movement events.

2 EMP Objectives and context

Objectives

The objectives of this plan are to:

- Identify the possible environmental impacts of the proposed activity;
- Develop measures to minimise, mitigate and manage these impacts;
- Meet the requirements of the Record of Decision of GDARD and requirements of other Authorities; and
- Monitor the project.

EMP context

This EMP fits into the overall planning process of the project by carrying out the conditions of consent set out by the Gauteng Department of Agriculture and Rural Development. In addition, all mitigation measures recommended in the Basic Assessment report are included in the EMP.

This EMP addresses the following three phases of the development:

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- Pre-construction planning phase;
- Construction phase; and
- Operational phase.

3 Monitoring

In order for the EMP to be successfully implemented all the role players involved must have a clear understanding of their roles and responsibilities in the project.

These role players may include the Authorities (A), other Authorities (OA), Developer/proponent (D), Environmental Control Officer (ECO), Project Manager (PM), Contractors (C), Environmental Assessment Practitioner (EAP) and Environmental Site Officer (ESO). Landowners interested and affected parties and the relevant environmental and project specialists' area also important role players.

3.1 Roles and responsibilities

Developer (D)

The developer is ultimately accountable for ensuring compliance with the EMP and conditions contained in the RoD. The developer must appoint an independent Environmental Control Officer (ECO), for the duration of the pre-construction and construction phases, to ensure compliance with the requirements of this EMP. The developer must ensure that the ECO is integrated as part of the project team. The responsibility of compliance will be carried across to the individual property owners as soon as transfer of the erven has taken place. It will be ensured that a copy of this document accompanies the purchase agreements for the erven.

Project Manager (PM)

The project Manager is responsible for the coordination of various activities and ensures compliance with this EMP through delegation of the EMP to the contractors and monitoring of performance as per the Environmental Control Officer's monthly reports.

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Environmental Control Officer (ECO)

An independent Environmental Control Officer (ECO) shall be appointed, for the duration of the pre-construction and construction phase of the services and bulk infrastructure, by the developer to ensure compliance with the requirements of this EMP. Thereafter the individual property owners will be responsible for the further appointment of the ECO.

- The Environmental Control Officer shall ensure that the contractor is aware of all the specifications pertaining to the project;
- Any damage to the environment must be repaired as soon as possible after consultation between the Environmental Control Officer, Consulting Engineer and Contractor;
- The Environmental Control Officer shall ensure that the developer staff and/or contractor are adhering to all stipulations of the EMP;
- The Environmental Control Officer shall be responsible for monitoring the EMP throughout the project by means of site visits and meetings. This should be documented as part of the site meeting minutes;
- The Environmental Control Officer shall be responsible for the environmental training program;
- The Environmental Control Officer shall ensure that all clean up and rehabilitation or any remedial action required, are completed prior to transfer of properties;
- A post construction environmental audit is to be conducted to ensure that all conditions in the EMP have been adhered to.

Contractor (C):

The contractors shall be responsible for ensuring that all activities on site are undertaken in accordance with the environmental provisions detailed in this document and that sub-contractor and labourers are duly informed of their roles and responsibilities in this regard.

The contractor will be required, where specified to provide Method Statements setting out in detail how the management actions contained in the EMP will be implemented.

The contractors will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the environmental regulations.

Environmental Site Officer (ESO):

The ESO is appointed by the developer and then finally the owners of the individual properties as his/her environmental representative to monitor, review and verify compliance with the EMP by the contractor. The ESO is not an independent appointment but must be a member of the contractor's management team. The ESO must ensure that he/she is involved at all phases of the construction (from site clearance to rehabilitation).

Authority (A):

The authorities are the relevant environmental department that has issued the Environmental Authorisation. The authorities are responsible for ensuring that the monitoring of the EMP and other authorization documentation is carried out by means of reviewing audit reports submitted by the ECO and conducting regular site visits.

Other Authorities (OA):

Other authorities are those that may be involved in the approval process of the EMP.

Environmental Assessment Practitioner (EAP):

According to section 1 of NEMA the definition of an environmental assessment practitioner is "the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instruments through regulations".

3.2 Lines of Communication

The Environmental Control Officer in writing should immediately report any breach of the EMP to the Project Manager. The Project Manager should then be responsible for rectifying the problem on-site after discussion with the contractor. Should this require additional cost, then the developer should be notified immediately before any additional steps are taken.

3.3 Reporting Procedures to the Developer

Any pollution incidents must be reported to the Environmental Control Officer immediately (within 12 hours). The Environmental Control Officer shall report to the Developer on a regular basis (site meetings).

3.4 Site Instruction Entries

The site instruction book entries will be used for the recording of general site instructions as they relate to the works on site. There should be issuing of stop work order for the purposes of immediately halting any activities of the contractor that may pose environmental risk.

3.5 ESA/ESO (Environmental Site Officer) Diary Entries

Each of these books must be available in duplicate, with copies for the Engineer and Environmental Site Officer. These books should be available to the authorities for inspection or on request. All spills are to be recorded in the ESA/Environmental Site Officer's diary.

3.6 Methods Statements

Methods statements from the contractor will be required for specific sensitive actions on request of the authorities or ESA/ESO (Environmental Site Officer). All method statements will form part of the EMP documentation and are subject to all terms and conditions

contained within the EMP document. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of ESA/ESO, the format should clearly indicate the following:

- What – a brief description of the work to be undertaken
- How- a detailed description of the process of work, methods and materials
- Where- a description / sketch map of the locality of work; and
- When- the sequencing of actions with due commencement dates and completion date estimate.

The contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ESA/ESO.

3.7 Record Keeping

All records related to the implementation of this management plan (e.g. site instruction book, ESA/ESO dairy, methods statements etc.) must be kept together in an office where it is safe and can be retrieved easily. These records should be kept for two years and at any time be available for scrutiny by any relevant authorities.

3.8 Acts

3.8.1. The National Water Act, 1998 (Act No: 36 of 1998)

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.

Impact on proposed Development:

Significant – The proposed development of Sunderland Ridge Ext 29 will **not** require a water license application in terms of section 21 (c) and (i) of the National Water Act (Act 36 of 1998).

3.8.2. Atmospheric Pollution Prevention Act (Act 45 of 1965)

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 License
- 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.

Impact on proposed Development:

Significant – The Act have relevance to the proposed development during the construction phase. Dust pollution could be a concern primarily during the construction phase of the proposed project. Dust control would be adequately minimised during this phase by way of water spraying and possible dust-nets, when working close to existing residential dwellings. It is not foreseen that the proposed development would contribute significantly to pollution in terms of emissions and noise during its operational phase, as it is a light industrial development, which does not include any noxious industries.

3.8.3 National Environmental Management Act (Act 107 of 1998)

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 principles in essence state that environmental management must place people and their needs at the forefront of its concern and that development must be socially, environmentally and economically sustainable.

Impact on proposed Development:

Significant – Section 28 (1) of NEMA states that every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot

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reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.

The EMP is compiled in terms of Section 28 of NEMA.

3.8.4. The National Environmental Management: Waste Act (Act 59 of 2008)

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:

- The establishment of a national waste management strategy, and national and provincial norms and standards for, amongst others, the classification of waste, waste service delivery, and tariffs for such waste services;
- Addressing reduction, reuse, recycling and recovery of waste;
- The requirement for industry and local government to prepare integrated waste management plans;
- The establishment of control over contaminated land;
- Identifying waste management activities that requires a licence, which currently include facilities for the storage, transfer, recycling, recovery, treatment and disposal of waste on land;
- 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
- The establishment of a national waste information system.

On 3 July 2009 the Minister of Environmental Affairs and Tourism promulgated a list of waste management activities that might have a detrimental effect on the environment. These listed activities provide the activities that require a Waste Management License. Two Categories is specified: Category A and Category B. As part of Category A Waste Management License application a Basic Assessment in terms of Section 24(5) of the National Environmental Management Act (Act 107 of 1998) must be submitted to the relevant Authority. As part of a Category B Waste Management License a Scoping and

EIA process in terms of Section 24(5) of the National Environmental Management Act (Act 107 of 1998) must be followed and submitted to the relevant Authority.

Impact on proposed Development:

Not Significant– No Waste Management License will be required during the construction phase of the proposed development. One should however note that this development will be a full title light Industrial Park individual owners of the industrial properties will be responsible for the designs of their own industrial structures and facilities. Although Light Industrial uses do not provide for noxious industries or activities that require effluent pits and air and water pollution monitoring, the Waste Act could become applicable during the operational phase of some of the individual industrial uses. The developer must warn the potential tenants of this new Act.

3.8.5. The Municipal Systems Act (Act 32 of 2000)

This Act was introduced to provide for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities, and ensure universal access to essential services that are affordable to all.

The proposed development will support the local authority in complying with the principles of the Municipal Systems Act, by assisting in providing the community with essential services, such as water and sewage infrastructure.

Impact on proposed Development:

Significant – The proposed development will promote the Municipal System with in the area of Sunderland Ridge, as the proposed development will upgrade, and improve the essential services such as water and sewage reticulation networks, therefore contributing to the social and Economic upliftment of the involved City of Tshwane Metropolitan Municipality.

3.8.6 National Veld and Forrest Fire Act, 1998 (Act No. 101, 1998)

The purpose of this Act is to prevent and combat veld, forest and mountain fires throughout the Republic. Furthermore the Act provides for a variety of institutions, methods and practices for achieving the prevention of fires.

Impact on proposed Development:

Significant – Fires of construction workers may only be lit in the designated site camp as indicated in assistance with the ECO. It is important that a site development camp be located on a part of the application site that is already disturbed.

3.8.7 National Heritage Resources Act, 1999 (Act No. 25 of 1999)

The National Heritage Resources Act legislates the necessity and heritage impact assessment in areas earmarked for development, which exceed 0.5ha. 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).

Impact on proposed Development:

Not significant- No cultural/historical significant areas were identified within the application site and thus no areas of historical or cultural value will be affected;

3.8.8. Conservation of Agricultural Resources Act (Act No. 43 of 1983)

This Act provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

Impact on proposed Development:

Not Significant – According to the Gauteng Agriculture Potential Atlas (GAPA 3) some areas of the application site is located on high potential Agriculture land. In addition, the study area of Sunderland Ridge Extension 18 is located within the Gauteng Urban Edge, and does not fall within any of the seven Agriculture Hubs identified for the Gauteng Province. Based on the available information, Bokamoso were of the opinion that **No** Agriculture Potential Study was required for the application site. In addition, the site is also very small (approximately 13.5315 ha) and due to the dominance of poor soil, it can be concluded that it would not be economically viable to use the site for the purpose of Agriculture.

3.8.9. National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004)

The purpose of the Biodiversity Act is to provide for the management of South Africa's biodiversity within the Framework of the NEMA and the protection of species and ecosystems that warrant National protection. As part of the implementation strategy, the National Spatial Biodiversity Assessment was developed.

Impact on proposed Development:

Not Significant – No Red Listed plant species were recorded on the proposed development site. The site lies within the 2528CC quarter degree grid cell and the habitat on site was suitable for three of the seven Orange Listed plant species. Only two of these were recorded on site and they are not assigned a conservation status of rare or endangered. The Red Listed, *Drimia sanguinea*, was recorded north of the site. The specialist recommended a 200m buffer area for this species. Two large multi-stemmed *Searsia lancea* specimens were observed during the site visit and should preferably be included in an open space area. It is recommended that these red data listed plant species be relocated and the large trees be part of the landscaping and layout plan. With approval of the Environmental Authorization the status of these recommendations will be known and it will be implemented accordingly.

3.8.11. National Spatial Biodiversity assessment

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.

Impact on proposed Development:

Not Significant – no irreplaceable sites exist on the land development area.

3.8.12 Protected Species – Provincial Ordinances

Provincial ordinances were developed to protect particular plant species within specific provinces. The protection of these species is enforced through permitting requirements associated with provincial lists of protected species. Permits are administered by the Provincial Departments of Environmental Affairs.

Impact on proposed Development:

Not Significant- A red listed plant species, *Drimia sanguinea*, was recorded north of the proposed development site. The northern corner of the study site will encroach the 200m buffer for the red listed plant species.

However, this is not considered feasible as the Future Road PWV9 will in the near future be developed on the north western boundary of the proposed development site. Therefore the 200m buffer will not only encroach the proposed development site but also this buffer will be right next to the future PWV9 road and the species will therefore experience all the impacts associated with road construction and ongoing traffic of humans and vehicles. Consequently it was thought best to relocate the red data plant species out of the proposed development area and future development to a location where the habitat is associated with this species, in order to conserve the species.

3.8.13. National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)

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.

Impact on proposed Development:

Not Significant- The Application site is not located within any conservancy or protected area.

3.8.14 National Road Traffic Act, 1996 (Act No. 93 of 1996)

This Act provides for all road traffic matters which shall apply uniformly throughout the Republic and for matters connected therewith.

Impact on proposed Development:

Not significant – Not Applicable.

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4 Project activities

4.1 Pre-Construction Phase

TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
General	Project contract	To make the EMP enforceable under the general conditions of the contract.	The EMP document must be included as part of the tender documentation	The EMP is included as part of the tender documentation	Developer	-
	Surrounding Residents	Service Interruption.	Contractor should inform all residents, landowners and tenants at least 48hours before the proposed interruption.		Developer Contractor	
Design and planning	Geology- Stability of structures and restriction of land use due to geology	To ensure stability of structures	-Standard Precautionary Measures and founding recommendations should be made by Geotechnical Engineers for the establishment of structures on Dolomite; -The wet services engineer must recommend very strict precautionary measures for the establishment of services on dolomite; - The layout and land must correspond to the stability zonation and development types recommended by the geotechnical engineer; -The Structural/ Geotechnical Engineer should stipulate and list the NHBRC precautionary measures (Buildings and Structures should adhere to the NHBRC Standards and Norms) -More detailed foundation investigations should be done for each of the structures		Geotechnical Engineer, Structural Engineer, Wet Services Engineer	-

Environmental Management Plan (EMP) for the Proposed Sunderland Ridge Extension 29 on the Remainder of Portion 70 (a Portion of Portion 29) of the Farm Mooiplaats 355-JR

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TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
	Erosion and Siltation	To prevent the unnecessary loss of soil through bad management	prior to construction. All surface run-offs should be managed in such a way so as to ensure erosion of soil does not occur. Provisions should be made for the development of a rehabilitation plan, prior to construction, to ensure that all the areas which are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed.	Rehabilitation Plan are developed prior to construction to be implemented during and after construction	Landscape Architect, Environmental Consultants, Flora Specialist	-
	Compaction	To prevent the compaction of valuable soils due to traffic and equipment	Designated routes shall be determined prior to construction for movement of construction vehicles and areas for the storage of equipment. All the areas that are compacted by machinery shall be ripped prior to them being rehabilitated. The site access point should be clearly marked as well as routes designated to be used by construction vehicles and pedestrians.		ECO, Site Supervisor, Contractor	
	Topsoil	To Prevent the loss of valuable topsoil	Designated areas should be identified prior to construction for the stockpile of stripped topsoil. The stockpile areas should be should be designated were the material will not be damaged, removed or compacted. The stockpiled topsoil shall be used for the rehabilitation of the site during and after construction and for landscaping purposes. When the stripping of Topsoil takes place, the grass component shall be included in the stripped topsoil. The soil will contain a natural grass seed mixture that may assist	Designated stockpile areas identified prior to construction for the storage of Top soil	ECO, Site Supervisor, Contractor	
					Contractor	

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TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
	<p>Storm water design-</p> <p>-Environmental Damage due to erosion, water pollution, gully formation and siltation;</p>	<p>To prevent and restrict erosion, siltation and groundwater pollution, through the design of a proper Storm water management system</p>	<p>in the re-growth of grass once the soil is used for backfilling and landscaping.</p> <p>-A proper storm water management plan should be developed, to be implemented during the construction and operational phases of the proposed Light Industrial Development;</p> <p>-Storm water outlets shall be correctly designed to prevent erosion;</p> <p>-Construction guidelines should be provided for the prevention and restriction of erosion and siltation;</p> <p>- It is important to note the trenches for the water pipeline and even those for sewage lines do not need to be wide, which means that the environmental damage caused by the actual digging can be reduced to a minimum. However, while they are open, their presence will mean that herpetofauna of any size may fall into them, from where it will be difficult to escape and death may cause by drowning, excessive exposure to the sun or by being buried alive during the final construction work.</p> <p>- The design of the storm water lines is not known. If cement pipes of large diameter are used and the trenches are filled in again, potential danger is substantially reduced. Open storm water channels are dangerous, as they will continuously</p>	<p>Compilation and approval of storm water management plan</p>	<p>Civil Engineer</p>	

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TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
		To ensure the sustainability of the drainage and the open space systems lower down in the catchment area	<p>contribute to herpetofauna destruction.</p> <p>-The Storm water design for the proposed development must be designed to:</p> <ul style="list-style-type: none"> ➤ Reduce and/ or prevent siltation, erosion and water pollution. Storm water runoff should not be concentrated as far as possible and sheet flow should be implemented; ➤ Run-off from paved surfaces should be slowed down through the strategic placement of berms; ➤ Attenuation ponds and energy dissipaters must be installed on the study area to break the speed of the water and to act as siltation ponds where required. ➤ Sheet runoff from paved surfaces and access roads needs to be curtailed; ➤ Surface storm water generated as a result of the development must not be channelled directly into any natural drainage system or wetland; ➤ The storm water management plan should be designed in a way that aims to ensure that post development runoff does not exceed predevelopment values 		Civil Engineer	

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TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			<p>in:</p> <ul style="list-style-type: none"> -Peak discharge for any given storm; -Total volume of runoff for any given storm; -Frequency of run-off; -Pollutants and debris reaching watercourses; <p>➤ As much of the vegetation should be retained as far as possible and rehabilitated if disturbed by construction activities to ensure that erosion and siltation does not take place;</p> <p>➤ No Trees should be planted with in three meters from water bearing services.</p>			
	Waste storage	To control the temporary storage of waste.	<p>Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks and these points should not be located in sensitive areas/ areas highly visible from the properties of the surrounding land-owners/ tenants in areas where the wind direction will carry bad odours across the properties of adjacent tenants or landowners.</p> <p>Build a bund around waste storage area to avoid occurrence of pollution.</p>		Contractor ESO	-
		Ensure waste storage area does not generate pollution.			Contractor	-

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TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
		To control the temporary storage of waste	No waste materials shall at any stage be disposed of in the open veld of adjacent properties or in sensitive areas. Temporary waste storage points should be determined prior to construction on site. These storage points shall be accessible by waste removal trucks. Such areas should not be located in areas highly visible from the properties of the surrounding land-owners/tenants. -The area designated for the storage of waste on site should be located in non-sensitive areas and areas where it would not be able to contaminate storm water.	Designated areas determined prior to construction for the storage of waste on site.	ECO, Contractor	
		To ensure that the waste storage area does not generate any pollution	-In order to prevent any visual pollution, as well as mitigate anticipated visual impacts, the area designated for the storage of waste should be located in an area that is not highly visible. Coordinate with other trades working on site regarding, site management, timing of works and waste management (recycling and reuse potential)		Site Supervisor	
	Waste Generation, and air, water and noise pollution	Best Practice to minimise environmental impacts and ensure efficient management	Plan the activities on site prior to construction-for access, deliveries, construction areas, washout area, waste stockpiles, and chemical storage.		Project Manager	
		Solid Waste Disposal	Solid waste shall be disposed off in a manner approved by the relevant local authorities, and at a registered land-fill site.		Environmental Site Officer. Occupational Health and Safety officer etc. Contractor	

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TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
	Fauna and Flora and Ecological Health	To give smaller birds, mammals and reptiles a chance to move into other undisturbed areas close to their natural territories	Construction work should be planned beforehand and restricted to one area at a time.		Contractor	
		To ensure that the species introduced to the area, are compatible with the current and future quality of the ecological processes.	<p>-The Landscape development plan for the proposed development shall be submitted to the local authority for approval;</p> <p>-It is important that all the plant positions, quantities and coverage per m² be indicated on a plan;</p> <p>-The proposed planting materials for the areas to be landscaped shall be non-invasive, and preferably indigenous and /or endemic;</p> <p>-Where possible, trees naturally growing on the site should be retained as part of the landscaping.</p> <p>- Staff should be trained not to destroy herpetological specimens unnecessarily. Herpetofauna that are exposed during the construction phase should be removed and translocated.</p> <p>- It is important to note the trenches for the water pipeline and even those for sewage lines do not need to be wide, which means that the environmental damage caused by the actual digging can be</p>	The landscape development plan submitted to the local authority for approval.	Landscape Architect	-

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TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			<p>reduced to a minimum. However, while they are open, their presence will mean that herpetofauna of any size may fall into them, from where it will be difficult to escape and death may cause by drowning, excessive exposure to the sun or by being buried alive during the final construction work.</p> <p>-Environmental damage caused by these trenches may be kept to a minimum by good forward planning and thereby reducing the actual length of time that trenches are left open. Possible damage to herpetofauna is in direct proportion to the time that these trenches are left open and may destroy amphibian and reptilian species.</p> <p>- The design of the storm water lines is not known. If cement pipes of large diameter are used and the trenches are filled in again, potential danger is substantially reduced. Open storm water channels are dangerous, as they will continuously contribute to herpetofauna destruction.</p>			
		To ensure the removal of all the Declared weeds and invaders from the site	All the Declared weeds and invaders should be removed from site prior to construction.		Flora Specialist /Contractor	
Other Design Requirements	Extreme change in micro climate temperatures	To prevent the extreme change in micro climate temperatures	Where open parking bays are involved, one tree for every two parking bays shall be indicated on Landscape Development Plan which shall be approved by the	Landscape Development Plan complies	Landscape Architect	-

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	Light Pollution	To prevent excessive light pollution through ineffective design	Design Review Committee / Local Authority. The generation of light through security lighting and other lighting should be effectively designed to not spill unnecessary outward into the oncoming traffic, or into the yards of the neighbouring properties or open spaces.		Architect, Landscape Architect/ Contractor	
	Visual Impact	To minimize the visual impact of the proposed development.	Architectural guidelines should be compiled for the proposed development and the styles used must promote unity through the use of certain street furniture, planting and paving patterns, colours and textures that do not only blend in tastefully with the character of the area, but are also functional and easy to maintain.		Architect Contractor.	

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4.2 Construction Phase

TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
General	Surrounding Residents	Service Interruption.	Contractor should inform all residents, landowners and tenants at least 48hours before the proposed interruption.		Developer Contractor	
Contractors Camp	Vegetation and topsoil	To minimize damage to and loss of vegetation and retain quality of Topsoil.	<p>-Site to be established under supervision of ECO;</p> <p>- Clearing and relocation of plants to be undertaken in accordance with site specific requirements;</p> <p>-The Clearing of the Site Should take place with in phases to prevent large areas exposed which could be prone to erosion;</p> <p>-The Contractor's Camp should not be established in areas which are deemed to be sensitive. Areas with low Sensitivity such as degraded areas should rather be considered for the establishment of the contractor's Site Camp;</p> <p>-Valuable Topsoil that is cleared should be retained in designated stockpiles and used again during rehabilitation works.</p>	Minimal vegetation removed/damaged during site activities.	Contractor	As and when required
	Surface and ground water pollution	To minimize pollution of surface and groundwater resources.	<p>1) Sufficient and temporary facilities including ablution facilities must be provided for construction workers operating on the site;</p> <p>2) A minimum of one chemical toilet shall be provided per 10 persons. The contractor shall keep the toilets in a clean, neat and</p>	Effluents managed effectively. No pollution of water resources from site.	Contractor ESO	As and when required

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			<p>hygienic condition. Toilets provided by the contractor must be easily accessible and a maximum of 50m from the works area to ensure they are utilized. The contractor (who must use reputable toilet-servicing company) shall be responsible for the cleaning, maintenance and servicing of the toilets. The contractor (using reputable toilet-servicing company) shall ensure that all toilets are cleaned and emptied before the builders' or other public holidays;</p> <p>3) No person is allowed to use any other area than chemical toilets;</p> <p>4) No French drain systems may be installed;</p> <p>5) No chemical or waste water must be allowed to contaminate the run-off on site;</p> <p>6) Avoid the clearing of the site camp (of specific phase) or paved surfaces with soap.</p>	<p>Workforce use toilets provided.</p>		
	<p>To minimize pollution of surface and groundwater resources due to spilling of materials.</p>		<p>1) Drip trays and/ or lined earth bunds must be provided under vehicles and equipment, to contain spills of hazardous materials such as fuel, oil and cement;</p> <p>2) Repair and storage of vehicles only within the demarcated site area;</p> <p>3) Spill kits must be available on site;</p> <p>4) Oils and chemicals must be confined to specific secured areas within the site camp. These areas must be bunded with adequate</p>	<p>No pollution of the environment</p>	<p>Contractor ESO</p>	<p>Daily</p>

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			<p>containment (at least 1.5 times the volume of the fuel) for potential spills or leaks;</p> <p>5) All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site;</p> <p>6) No leaking vehicle shall be allowed on site. The mechanic/ the mechanic of the appointed contractor must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof;</p> <p>7) No bins containing organic solvents such as paints and thinners shall be cleaned on site, unless containers for liquid waste disposal are placed for this purpose on site.</p>			
		To minimize pollution of surface and groundwater resources by cement.	The mixing of concrete shall only be done at specifically selected sites, as close as possible to the entrance, on mortar boards or similar structures to prevent run-off into drainage lines, streams and natural vegetation.	No evidence of contaminated soil on the construction site.	Contractor ESO	Daily
		To minimize pollution of surface and groundwater resources due to effluent.	No effluent (including effluent from any storage areas) may be discharged into any water surface or ground water resource.	No evidence of contaminated water resources.	Contractor ESO	Daily
	Pollution of the environment	To prevent unhygienic usage on the site and pollution of the natural assets.	<p>1) Weather proof waste bins must be provided and emptied regularly;</p> <p>2) The contractor shall provide labourers to clean up the contractor's camp and construction site on a daily basis;</p>	<p>No waste bins overflowing.</p> <p>No litter or building waste lying in or around</p>	Contractor ESO	Daily Weekly

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			<p>3) Temporary waste storage points on the site should be determined. THESE AREAS SHALL BE PREDETERMINED AND LOCATED IN AREAS THAT IS ALREADY DISTURBED. These storage points should be accessible by waste removal trucks and these points should be located in already disturbed areas /areas not highly visible from the properties of the surrounding land-owners/ in areas where the wind direction will not carry bad odours across the properties of adjacent landowners. This site should comply with the following:</p> <ul style="list-style-type: none"> • Skips for the containment and disposal of waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; • Small lightweight waste items should be contained in skips with lids to prevent wind littering; • Bunded areas for containment and holding of dry building waste. <p>4) No solid waste may be disposed of on the site;</p> <p>5) No waste materials shall at any stage be disposed of in the open veld of adjacent properties;</p> <p>6) The storage of solid waste on the site, until such time as it may be disposed of, must be in a manner acceptable to the local authority and DWA;</p> <p>7) Cover any wastes that are likely to wash</p>	<p>the site.</p>		

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		Recycle material where possible and correctly dispose of unusable wastes	<p>away or contaminate storm water.</p> <p>1) Waste shall be separated into recyclable and non-recyclable waste, and shall be separated as follows:</p> <ul style="list-style-type: none"> • General waste: including (but not limited to) construction rubble, • Reusable construction material. <p>2) Recyclable waste shall preferably be deposited in separate bins;</p> <p>3) All solid waste including excess spoil (soil, rock, rubble etc) must be removed to a permitted waste disposal site on a weekly basis;</p> <p>4) No bins containing organic solvents such as paints and thinners shall be cleaned on site, unless containers for liquid waste disposal are placed for this purpose on site;</p> <p>5) Keep records of waste reuse, recycling and disposal for future reference. Provide information to ECO.</p>	<p>Sufficient containers available on site</p> <p>No visible signs of pollution</p>	Contractor ESO	Daily Weekly
	Increased fire risk to site and surrounding areas	To decrease fire risk.	<p>1) Fires shall only be permitted in specifically designated areas and under controlled circumstances'</p> <p>2) Food vendors shall be allowed within specified areas;</p> <p>3) Fire extinguishers to be provided in all vehicles and fire beaters must be available on site;</p>	No open fires on site that have been left unattended	Contractor	Monitor daily

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TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
Construction site	<p>Geology and soils- *Unstable structured due to underlying geotechnical conditions of the site; *Loss of valuable Topsoil</p>	<p>To Ensure the Stability of Structures</p>	<p>4) Emergency numbers/ contact details must be available on site, where applicable. -The Standard Precautionary measures and founding recommendations made during the design and planning phase by the Geotechnical/ Structural Engineers should be implemented during construction; -The Precautionary measures made by the Wet Services Engineer for the establishment of services on dolomite should be implemented during construction;</p>	<p>To ensure that all the precautionary measures has been taken and implemented during construction</p>	<p>Contractor, Consulting Engineers</p>	
		<p>To prevent the damaging of the existing soils and geology.</p>	<p>-The NHRC precautionary measures for the establishment of structures on dolomite should be implemented during construction 1) The top layer of all areas to be excavated for the purposes of construction shall be stripped and stockpiled in areas where this material will not be damaged, removed or compacted; 2) All surfaces that are susceptible to erosion, shall be protected either by cladding with biodegradable material or with the top layer of soil being seeded with grass seed/planted with a suitable groundcover.</p>	<p>Excavated materials correctly stockpiled No signs of erosion</p>	<p>Contractor</p>	<p>Monitor daily</p>
		<p>To prevent the loss of topsoil To prevent siltation & water pollution.</p>	<p>1) Stockpiling will only be done in designated places where it will not interfere with the natural drainage paths of the environment; 2) In order to minimize erosion and siltation and disturbance to existing vegetation, it is recommended that stockpiling be done/</p>	<p>Excavated materials correctly stockpiled No visible signs of erosion and sedimentation</p>	<p>Contractor of the Individual Developer</p>	<p>Monitor daily</p>

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			<p>equipment is stored in already disturbed/exposed areas;</p> <p>3) Cover stockpiles and surround downhill sides with a sediment fence to stop materials washing away;</p> <p>4) Remove vegetation only in areas designated during the planning stage;</p> <p>5) Rehabilitation/ landscaping are to be done immediately after the involved works are completed;</p> <p>6) All compacted areas should be ripped prior to them being rehabilitated/ landscaped by the contractor as appointed by the individual erf owner;</p> <p>7) The top layer of all areas to be excavated must be stripped and stockpiled in areas where this material will not be damaged, removed or compacted. This stockpiled material should be used for the rehabilitation of the site and for landscaping purposes;</p> <p>8) Strip topsoil at start of works and store in stockpiles no more than 1,5 m high in designated materials storage area;</p> <p>9) During the laying of any cables, pipelines or infrastructure (on or adjacent to the site) topsoil shall be kept aside to cover the disturbed areas immediately after such activities are completed.</p>	<p>Minimal invasive weed growth</p> <p>Vegetation only removed in designated areas</p>		

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	Erosion and siltation	To prevent erosion and siltation	<p>1) It is recommended that the construction of the development be done in phases;</p> <p>2) Each phase should be rehabilitated immediately after the construction for that phase has been completed. The rehabilitated areas should be maintained by the appointed rehabilitation contractor until a vegetative coverage of at least 80% has been achieved as appointed by the individual erf owner;</p> <p>3) Mark out the areas to be excavated;</p> <p>4) Large exposed areas during the construction phases should be limited. Where possible areas earmarked for construction during later phases should remain covered with vegetation coverage until the actual construction phase. This will prevent unnecessary erosion and siltation in these areas;</p> <p>5) Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided;</p> <p>6) All embankments must be adequately compacted and planted with grass to stop any excessive soils erosion and scouring of the landscape if required;</p> <p>7) The eradication of alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to</p>	<p>No erosion scars.</p> <p>No loss of topsoil.</p> <p>All damaged areas successfully rehabilitated.</p>	Contractor ESO	Monitor daily

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			<p>ensure quick and sufficient coverage of exposed areas by the individual erf owner;</p> <p>8) Storm water outlets shall be correctly designed to prevent any possible soil erosion;</p> <p>9) All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur;</p> <p>10) Implementation of temporary storm water management measures that will help to reduce the speed of surface water by the individual erf owner / developer;</p> <p>11) All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed by the individual erf owner / developer.</p>			
	Hydrology	<p>To ensure that:</p> <ul style="list-style-type: none"> -Construction works and structures are not flooded during heavy precipitation; -To minimise potential significant environmental damage due to extensive soil erosion, saltation and water pollution 	<p>➤ The storm water management plan which has been developed prior to construction should be implemented on a continuous basis;</p>	<p>-No damage to construction works and structures due to the effective management of floodwater;</p> <p>-No visible signs of Environmental damage in the form of erosion.</p>	Contractor, Civil Engineers	

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		To minimise pollution of soil, surface and groundwater	<p>-Increased run-off during construction must be managed using berms and other suitable structures as required to ensure flow velocities are reduced;</p> <p>-The contractor shall ensure that an excessive quantity of sand, silt and silted water does not enter the storm water system.</p>	<p>water pollution etc.</p> <p>No visible signs of erosion.</p> <p>No visible signs of pollution.</p>	Contractor	Monitor daily
	Fauna and Flora	To protect the existing fauna and flora.	<p>1) All exotic invaders and weeds must be eradicated on a continuous basis;</p> <p>2) Exotic invaders must be included in an alien management program for the site. Eradication must occur every 3 months;</p> <p>3) No plants not indigenous to the area, or exotic plant species, especially lawn grasses and other ground-covering plants, should be introduced in the communal landscaping of the proposed site, as they will drastically interfere with the nature of the area;</p> <p>4) Where possible, trees naturally growing on the site should be retained as part of the landscaping.</p> <p>5) Only indigenous plant species, preferably species that are indigenous to the natural vegetation of the area, should be used for landscaping in communal areas. As far as possible, plants naturally growing on the development site, but would otherwise be</p>	<p>No exotic plants used for landscaping</p>	Contractor ESO / Home Owners Association / Design Review Committee	As and when required Every 6 months

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			<p>destroyed during clearing for development purposes, should be incorporated into landscaped areas. Forage and host plants required by pollinators should be planted in landscaped areas.</p> <p>6) Alien and invasive species must be removed.</p> <p>1) Trees that are intended to be retained shall be clearly marked on site;</p> <p>2) Snaring and hunting of fauna by construction workers on or adjacent to the study area are strictly prohibited and the Council shall prosecute offenders;</p> <p>3) All mitigation measures for impacts on the indigenous flora of the area should be implemented in order to limit habitat loss as far as possible and maintain and improve available habitat, in order to maintain and possibly increase numbers and species of indigenous fauna;</p> <p>4) Wood harvesting of any trees or shrubs on the study area or adjacent areas shall be prohibited;</p> <p>5) Where possible, work should be restricted to one area at a time;</p> <p>6) Noise should be kept to a minimum and the development should be done in phases to allow faunal species to temporarily migrate into the conservation areas in the</p>	No measurable signs of habitat destruction.	Contractor ESO	As and when required

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			vicinity; 7) The integrity of remaining wildlife should be upheld, and no trapping or hunting by construction personnel should be allowed. Caught animals should be relocated to the conservation areas in the vicinity. 8) Where possible, work should be restricted to one area at a time, as this will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories.			
			All Declared weeds and invaders should be removed from the open spaces on an on-going basis.			
		To mitigate the negative impact on the ecological environment due to the installation of services.	Rehabilitate areas which were disturbed by the installation of services immediately after works have been completed.	Disturbed areas successfully rehabilitated.	Site Supervisor, Contractor	
	Social, safety and security	To ensure the safety of the public.	Although regarded as a normal practice, it is important to erect proper signs indicating the operations of heavy machinery in the vicinity of dangerous crossings and access roads or even in the development site if necessary.	Visible signs erected.	Contractor	
			With the exemption of the appointed security personnel, no other workers, friend or relatives will be allowed to sleep on the construction site (weekends included).		Security Personnel, contractor	
			-Heavy construction vehicles should avoid using the local road network during peak			

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			<p>traffic times;</p> <ul style="list-style-type: none"> -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 should be allowed; - Access to the site for construction vehicles should be planned to minimize the impact on the surrounding road network ; -Warning signs should be erected on the roads if needed. 			
			<p>The following actions would assist in the management of safety along the road:</p> <ul style="list-style-type: none"> -Adequate road marking; -Adequate roadside recovery areas; -Allowance for pedestrians and cyclists 		Project Manager, Environmental Site officer, Health and Safety officer	
		To mitigate localized vibration.	<p>Activities that cause localised vibration should be limited to normal working hours only, between 07h00 and 18h00 on weekdays and between 08h00 and 13h00 on Saturdays. No construction activities will be allowed on Sundays, and public holidays.</p> <ul style="list-style-type: none"> - Site workers must comply with the Provincial noise requirements; -Construction will only be permitted during working hours of between 07h00 and 18h00 on weekdays, and between 08h00 and 13h00 on Saturdays. No construction activities will be allowed on Sundays and Public Holidays; -The surrounding residents must be notified of blasting activities in advance. The necessary 	No complaints from surrounding residents and I & AP	Contractor	Monitored daily
		Noise Impact- To maintain noise levels below "disturbing" as defined in the National Noise Regulations.				

Environmental Management Plan (EMP) for the Proposed Sunderland Ridge Extension 29 on the Remainder of Portion 70 (a Portion of Portion 29) of the Farm Mooiplaats 355-JR

November 2013

TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
		Dust Impact- Minimise dust from the site. To ensure the adequate protection of construction workers against dust pollution.	<p>safety measures must also be implemented.</p> <p>-Dust pollution could occur during the construction works, especially during the dry months. 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</p> <p>-Stockpiles of fine material should be wetted and/or covered during windy conditions;</p> <p>-Workers on site should wear dust masks during dry and windy conditions;</p> <p>- During the construction phase, noise must be kept to a minimum to reduce the impact of the development on the fauna residing on the site.</p>	<p>No visible signs of dust pollution</p> <p>No complaints from surrounding residents and I & AP</p>	Contractor	Monitored daily
		Visual Impact- In order to minimise the visual impact.	<p>The disturbed areas shall be rehabilitated immediately after the involved construction works are completed as the construction vehicle and equipment's will be causing visual impact during construction phase.</p> <p>There should be consulted with affected parties to determine the most convenient times for service disruptions. The interested and affected parties should also be notified in advance of dates that services will be disrupted.</p>	Visual impacts minimized	Contractor ESO	Monitor daily
		To mitigate the inconvenience of temporary power failures, disconnection of water and sewage, and telecommunication			Project Manager, Contractor	
		Increased fire risk to site and surrounding	-Fires shall only be permitted in specifically designated areas and under controlled	No open fires on site that have	Contractor	Monitor daily

Environmental Management Plan (EMP) for the Proposed Sunderland Ridge Extension 29 on the Remainder of Portion 70 (a Portion of Portion 29) of the Farm Mooiplaats 355-JR

November 2013

TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
		areas -To decrease fire risk.	circumstances. -Food vendors shall be allowed within specified areas. - Fire extinguishers to be provided in all vehicles and fire beaters must be available on site. -Emergency numbers/contact details must be available on site, where applicable.	been left unattended.		
	Infrastructure and services	Installation of services.	Determine areas where services will be upgraded and relocated well in advance. Discuss possible disruptions with affected parties to determine most convenient times for service disruptions and warn affected parties well in advance of dates that service disruptions will take place.	No complaints from I & AP	Contractor ESO	When required
	Cultural Resources	To ensure the protection of heritage resources if exposed during construction.	If any graves or archaeological sites are exposed during construction work it should immediately be reported to a museum. The report from the archaeologist must be provided to GDARD if any graves are recovered.	No destruction of or damage to graves or known archaeological sites.	Contractor ESO	Monitor daily
	Vegetation	Landscaping.	1) When planting trees, care should be taken to avoid the incorrect positioning of trees and other plants, to prevent the roots of trees planted in close proximity to the line of water-bearing services from causing leaking in, or malfunctioning of the services; 2) The proposed planting materials for the areas to be landscaped should preferably be endemic and indigenous; 3) All new trees and shrubs to be planted on the study area shall be inspected for pests and diseases prior to them being planted;	Landscaping done according to landscape development plan.	Landscaper architect Contractor Individual Developer	When required

Environmental Management Plan (EMP) for the Proposed Sunderland Ridge Extension 29 on the Remainder of Portion 70 (a Portion of Portion 29) of the Farm Mooiplaats 355-JR

November 2013

TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			<p>4) The inspection shall be carried out by the maintenance contractor at the property of the supplier and not on the study area;</p> <p>5) All trees to be planted shall be in 20L containers with a height of approximately 1,8 metres and a main stem diameter of approximately 300 mm.</p>			
		Loss of plants	<p>1) Aerate compacted soil and check and correct pH for soils affected by construction activities;</p> <p>2) Make sure plant material will be matured enough and hardened off ready for planting. Water in plants immediately as planting proceeds;</p> <p>3) Apply mulch to conserve moisture. Plant according to the layout and planting techniques specified by the Landscape Architect in the Landscape Development plans for the site.</p> <p>4) Alien and invasive plants must be removed.</p>	Landscaping done according to landscape development plan	Landscape architect Contractor Individual Developer	When required
		Spread of weeds	<p>Ensure that materials used for mulching and topsoil/ fertilisers are certified weed free. Collect certifications where available. Control weeds growth that appears during construction.</p>	Weed growth controlled	Landscape architect Contractor	When required
		To ensure rehabilitation of the site	<p>1) Compacted soils shall be ripped at least 200mm;</p> <p>2) All clumps and rocks larger than 30mm diameter shall be removed from the soil to</p>	Grass have hardened off	Landscape architect Contractor	Once a day Then every 4 days

Environmental Management Plan (EMP) for the Proposed Sunderland Ridge Extension 29 on the Remainder of Portion 70 (a Portion of Portion 29) of the Farm Mooiplaats 355-JR

November 2013

TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			be rehabilitated; 3) The soil shall be levelled before seeding; 4) Hydroseed the soil with Potch mixture; 5) Watering shall take place at least once per day for the first 14 days until germination of seeds have taken place; 6) Thereafter watering should take place at least for 20 minutes every 4 days until grass have hardened off.			

Environmental Management Plan (EMP) for the Proposed Sunderland Ridge Extension 29 on the Remainder of Portion 70 (a Portion of Portion 29) of the Farm Mooiplaats 355-JR

November 2013

4.3 Operational Phase

TYPE	Environment at risk or issue	Objective or requirement	Mitigation measure	Responsibility	Frequency of Action
SITE CLEAN UP AND PREPARED FOR USE	Storm water pollution	Do not allow any materials to wash into the storm water system.	Remove erosion and sediment controls only if all bare soil is sealed, covered or re-vegetate. Sweep roadways clean and remove all debris from kerb and gutter areas. Do not wash into drains.	Contractor	-
		Minimise waste.	Decontaminate and collect waste in storage area ready for off-site recycling or disposal. Arrange for final collection and removal of excess and waste materials.	Contractor	-
ESTABLISHING PLANTS	Slow or no re-vegetation to stabilise soil; loss or degradation of habitat	To ensure re-vegetation to stabilize soil.	Agreed schedule for regular follow-up watering, weed control, mulch supplements and amenity pruning, if needed. Replace all plant failures within three month period after planting.	Contractor	To be agreed
MATERIALS FAILURE	Structural damage. Loss of site materials.		Inspect all structures monthly to detect any cracking or structural problems. Confirm with designer if there are design problems. Rectify with materials to match, or other agreed solution.	Contractor	-
DRAINAGE FAILURE	The flooding of structures and basements etc., due to drainage failure	To ensure effective storm water management on site during the operational phase.	All site drainage works should be inspected and maintained on a continuous basis	Maintenance contractor	
SITE AUDIT	Eventual project failure	Successful project establishment.	Routinely audit the works and adjust maintenance schedule accordingly.	Contractor	-
GENERAL			Open fires and smoking during maintenance works are strictly prohibited.	Contractor Maintenance Contractor	-

Environmental Management Plan (EMP) for the Proposed Sunderland Ridge Extension 29 on the Remainder of Portion 70 (a Portion of Portion 29) of the Farm Mooiplaats 355-JR

November 2013

TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Responsibility	Frequency of Action
			No waste material shall at any stage be disposed of in the adjacent open spaces.	Contractor, Maintenance Contractor	
			Disturbed areas will be rehabilitated and re-vegetated. All declared weeds and invaders should be removed from the open space areas on an on-going basis	Landscape Contractor	
			The Open Space areas should be effectively managed (Eradication of exotics, removal of water etc.	Facility Manager Maintenance Contractors Landscape Maintenance Contractors	

5 Procedures for environmental incidents

5.1 Leakages & spills

- Identify source of problem.
- Stop goods leaking, if safe to do so.
- Contain spilt material, using spills kit or sand.
- Notify Environmental Control Officer
- Remove spilt material and place in sealed container for disposal (if possible).
- Environmental Control Officer to follow Incident Management Plan.

5.2 Failure of erosion/sediment control devices

- Prevent further escape of sediment.
- Contain escaped material using silt fence, hay bales, pipes, etc.
- Notify ECO.
- Repair or replace failed device as appropriate.
- Dig/scrape up escaped material; take care not to damage vegetation.
- Remove escaped material from site.
- ECO to follow Incident Management plan.
- Monitor for effectiveness until re-establishment.

5.3 Bank/slope failure

- Stabilize toe of slope to prevent sediment escape using aggregate bags, silt fence, logs, hay bales, pipes, etc.
- Notify ECO.
- ECO to follow Incident Management plan.

- Divert water upslope from failed fence.
- Protect area from further collapse as appropriate.
- Restore as advised by ECO.
- Monitor for effectiveness until stabilized.

5.4 Discovery of rare or endangered species

- Stop work.
- Notify ECO.
- If a plant is found, mark location of plants.
- If an animal, mark location where sighted.
- ECO to identify or arrange for identification of species and or the relocation of the species if possible.
- If confirmed significant, ECO to liaise with Endangered Wildlife Trust.
- Recommence work when cleared by ECO.

5.5 Discovery of archaeological or heritage items

- Stop work.
- Do not further disturb the area.
- Notify ECO.
- ECO to arrange appraisal of specimen.
- If confirmed significant, ECO to liaise with National, Cultural and History Museum.
P.O. Box 28088
SUNNYSIDE
0132
Contact Mr. J. van Schalkwyk
or
Mr. Naude
- Recommence work when cleared by ECO.

6 EMP review

1. The Site supervisor is responsible for ensuring the work crew is complying with procedures, and for informing the work crew of any changes. The site supervisor is responsible for ensuring the work crew is aware of changes that may have been implemented by GDARD before starting any works.
2. If the contractor cannot comply with any of the activities as described above, they should inform the ECO with reasons within 7 working days.

Enlarged Figures



**Locality Map
Figure 1**



**Aerial Map
Figure 2**



Appendix 12

Legend

 Study area



Scale 1:13600



**Hydrology Map
Figure 3**



Legend

Ridges

Ridge_v7_1012_ge

Ridge_v7_Trans_1012_ge

Rivers

Perennial

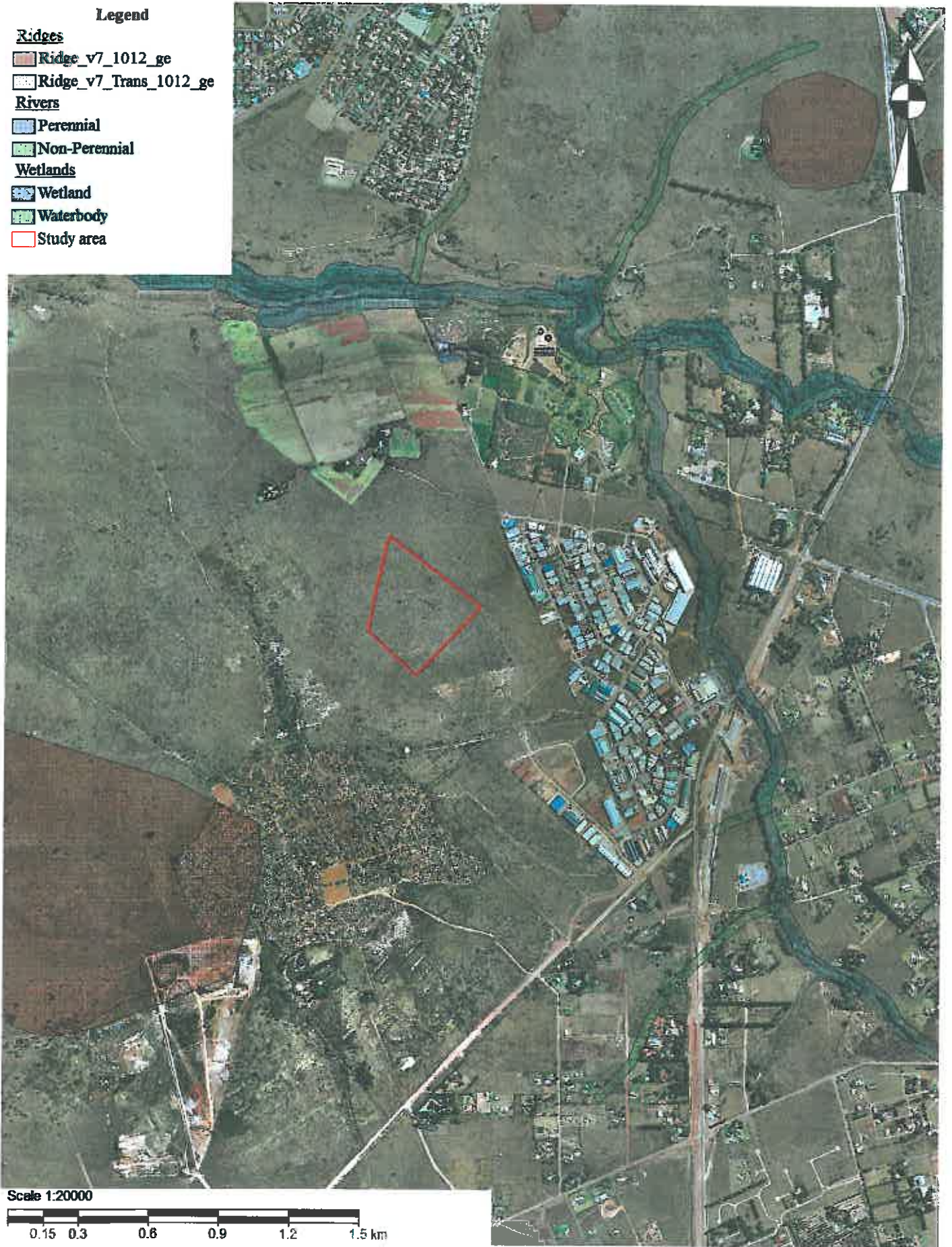
Non-Perennial

Wetlands

Wetland

Waterbody

Study area



**Protected Areas Map
Figure 4**



Appendix 14

Legend

Protected Areas Gauteng

Protected Areas

□ Zwankop

□ Study area



**Ridges Map
Figure 5**



Appendix 15

Legend

Ridges

□ Ridge_v7_1012_ge

□ Ridge_v7_Trans_1012_ge

Rivers

■ Perennial

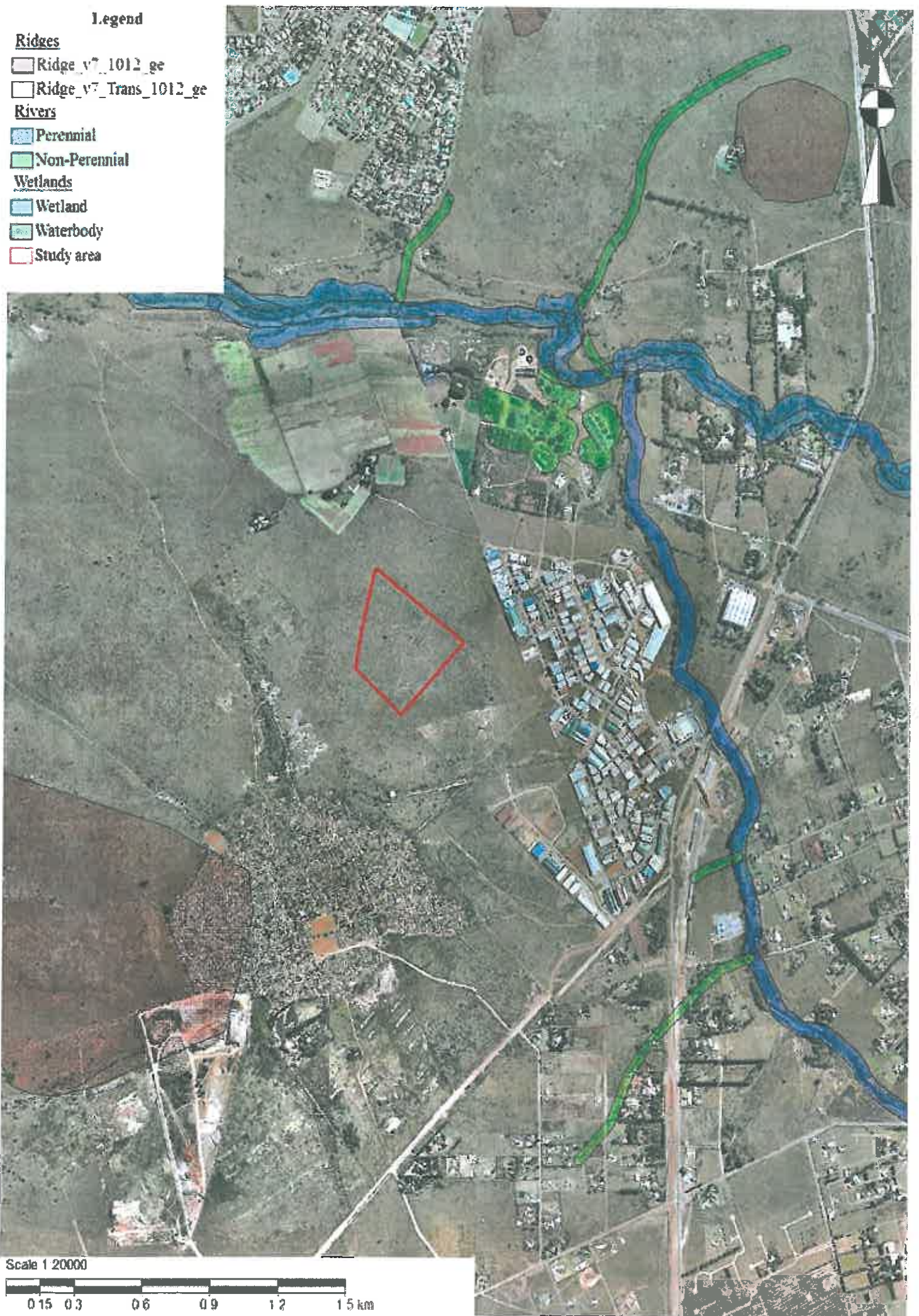
■ Non-Perennial

Wetlands

■ Wetland

■ Waterbody

■ Study area



**Agricultural Potential Map
Figure 6**



Legend

Agricultural Potential

- 1.High
- 3.Moderate
- 4.Low
- 5.Very Low - None
- Study area



Scale 1:30540



Agricultural Hubs Map

Figure 7



Appendix 17

Legend

Agricultural data

Agri Hubs

Ekurhuleni_Kungwini

Nokeng

Study area



Scale 1:253940



**Urban Edge Map
Figure 8**



Legend

Urban Edge

Urban_Edge_2010_ge

Study area



Scale 1:20000

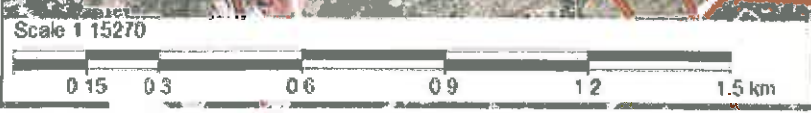


**Roads & Railways Map
Figure 9**



Appendix 19

Legend
Roads and railways
— TPC_Road_network
□ Study area



**Soils Map
Figure 10**



Legend

Soils

- Limiting soil depth
- Limiting soil depth, high clay content
- Limiting soil depth, moderate to strong structure, normal efficiency
- Limiting soil depth, rock outcrops
- Limiting soil depth, rock outcrops, steepness
- Moderate to strong structure, high clay content
- Rainfall efficiency, limiting soil depth, low clay content
- Rock outcrops, limiting soil depth
- Rock outcrops, limiting soil depth, steepness
- Study area

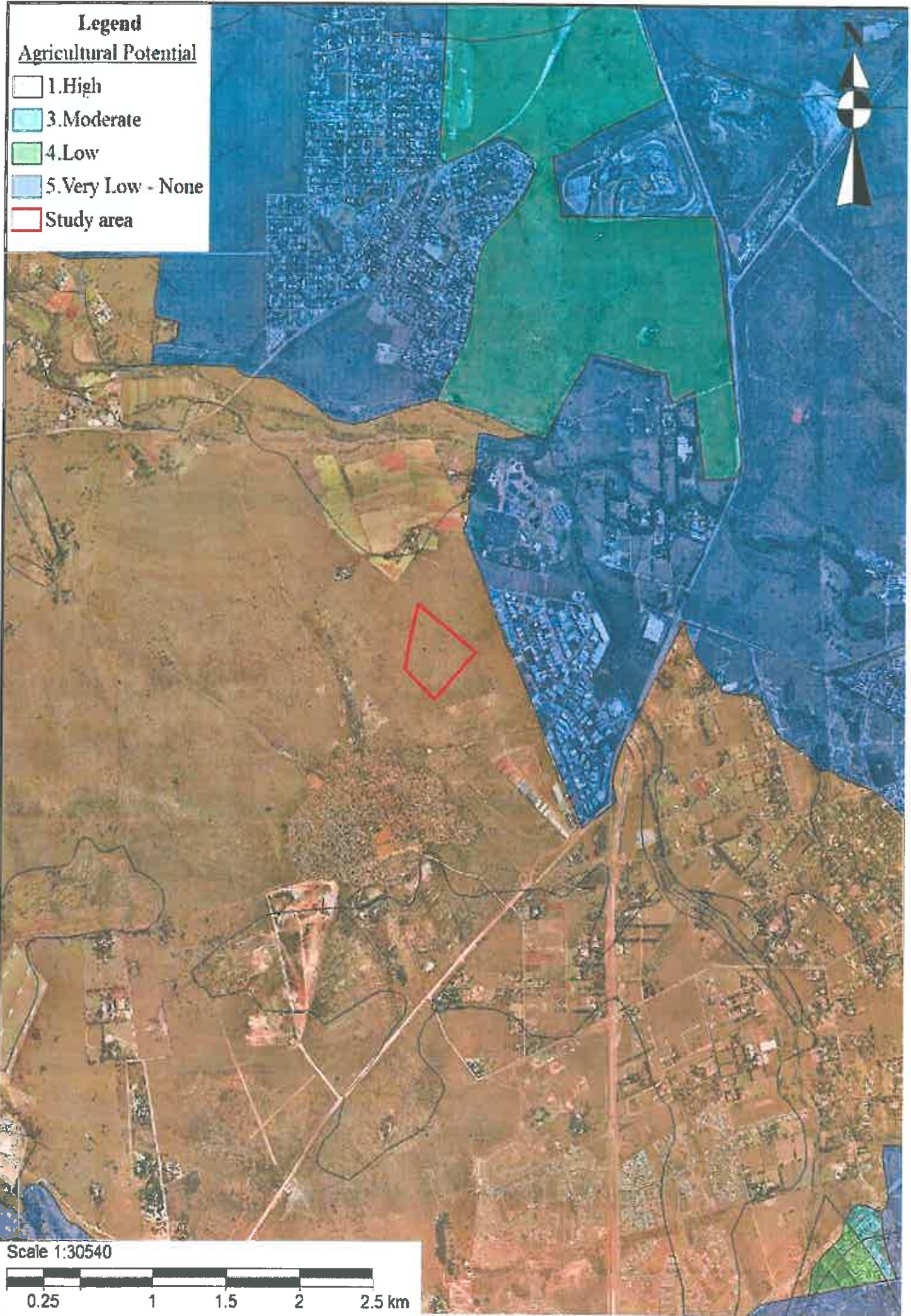


Scale 1:30540



**Agricultural Potential Map
Figure 11**





**Vegetation Groundcover Map
Figure 12**



SUNDERLAND RIDGE X29

On Portion 29 of the farm

MCOIPLAATS 355JR

OVERALL SENSITIVITY MAP

Legend:



Dromia sanguinea Locality



200 m Buffer Zone



High Sensitivity



Study Site



200m Extended Study Area



GALAGO

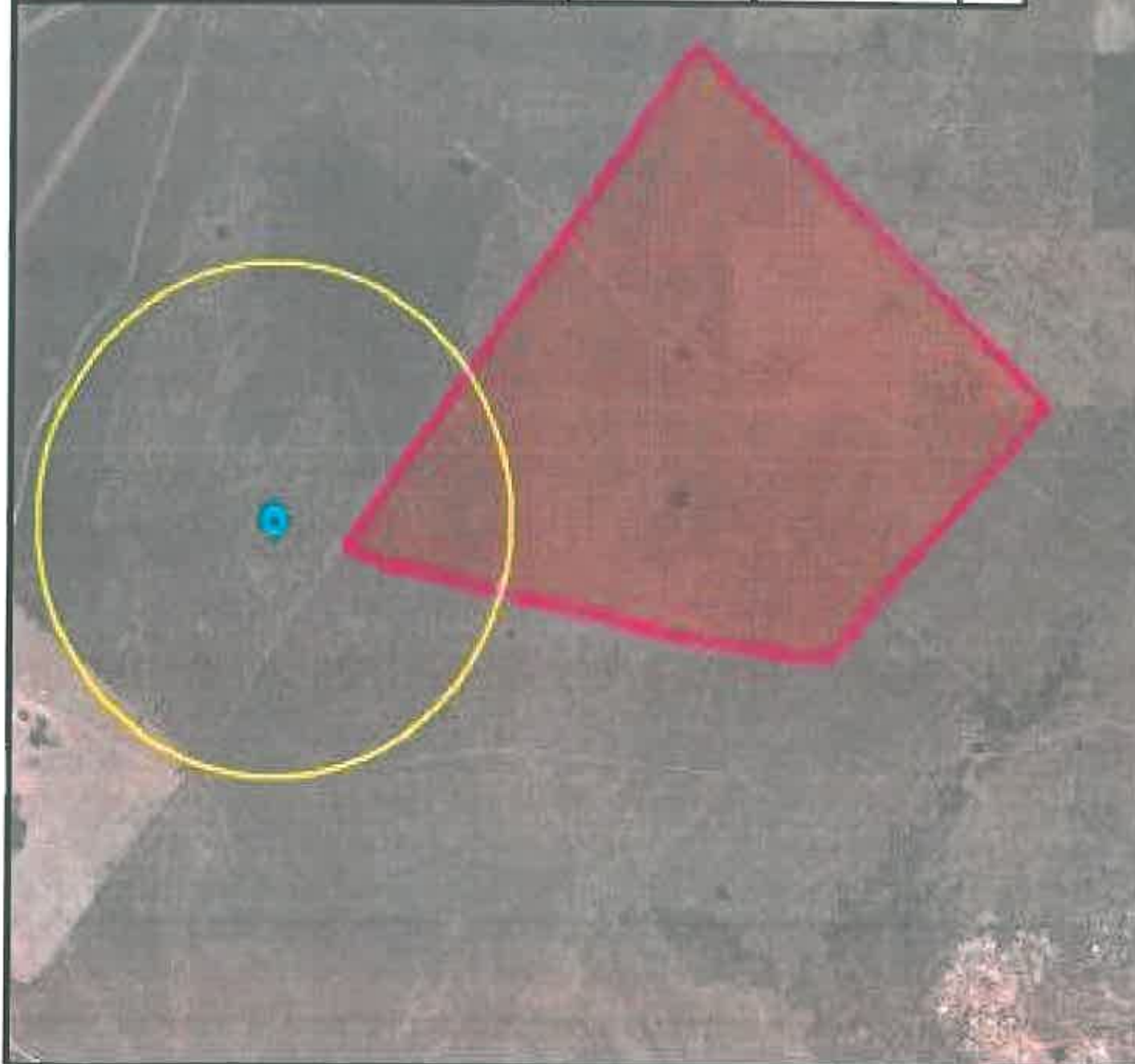


ENVIRONMENTAL

Biodiversity & Aquatic Specialists

Map compiled by: Rihann F. Geysier

Scale 1:7500







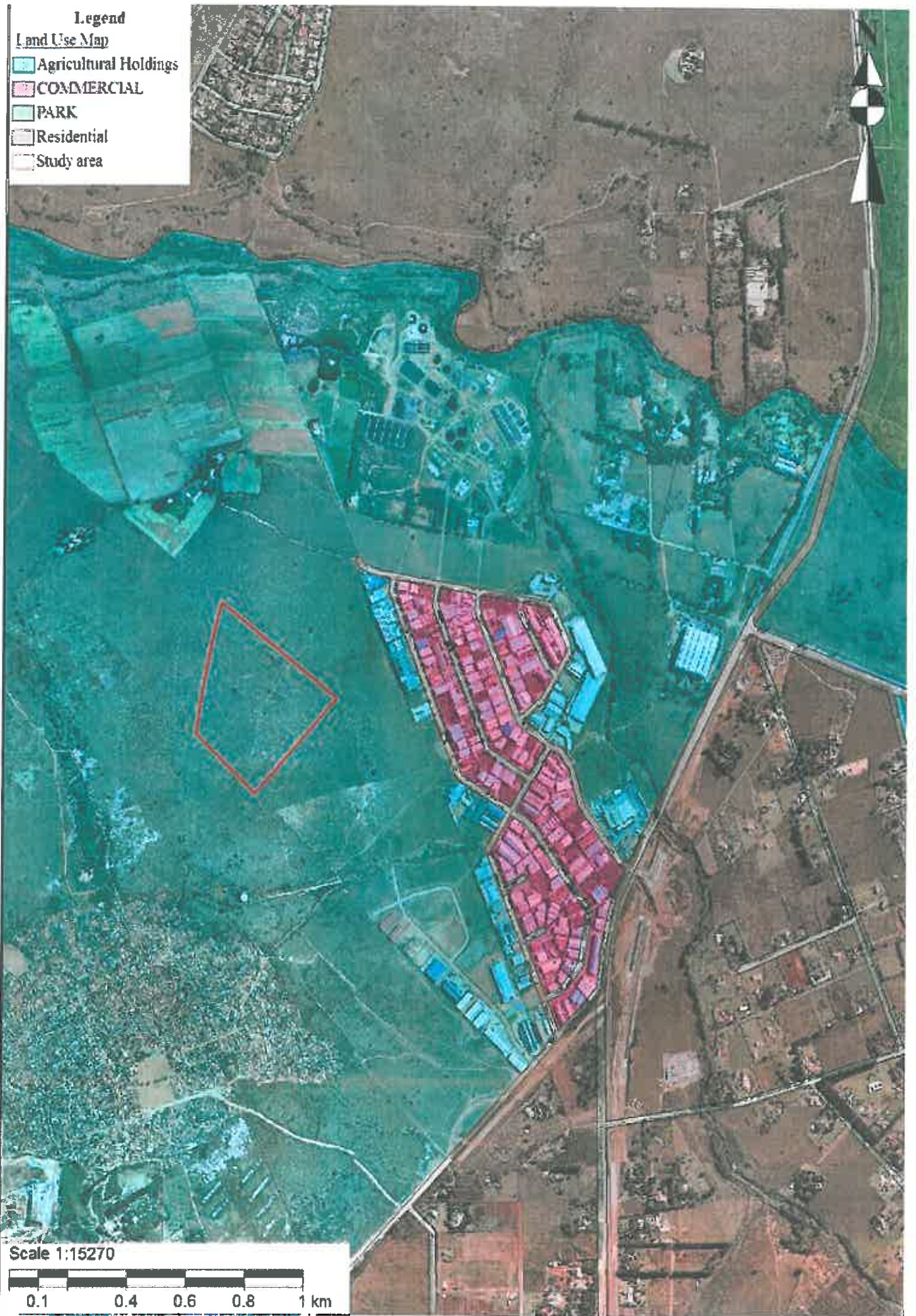
**Land-Uses Map
Figure 13**



Legend

Land Use Map

-  Agricultural Holdings
-  COMMERCIAL
-  PARK
-  Residential
-  Study area



Scale 1:15270

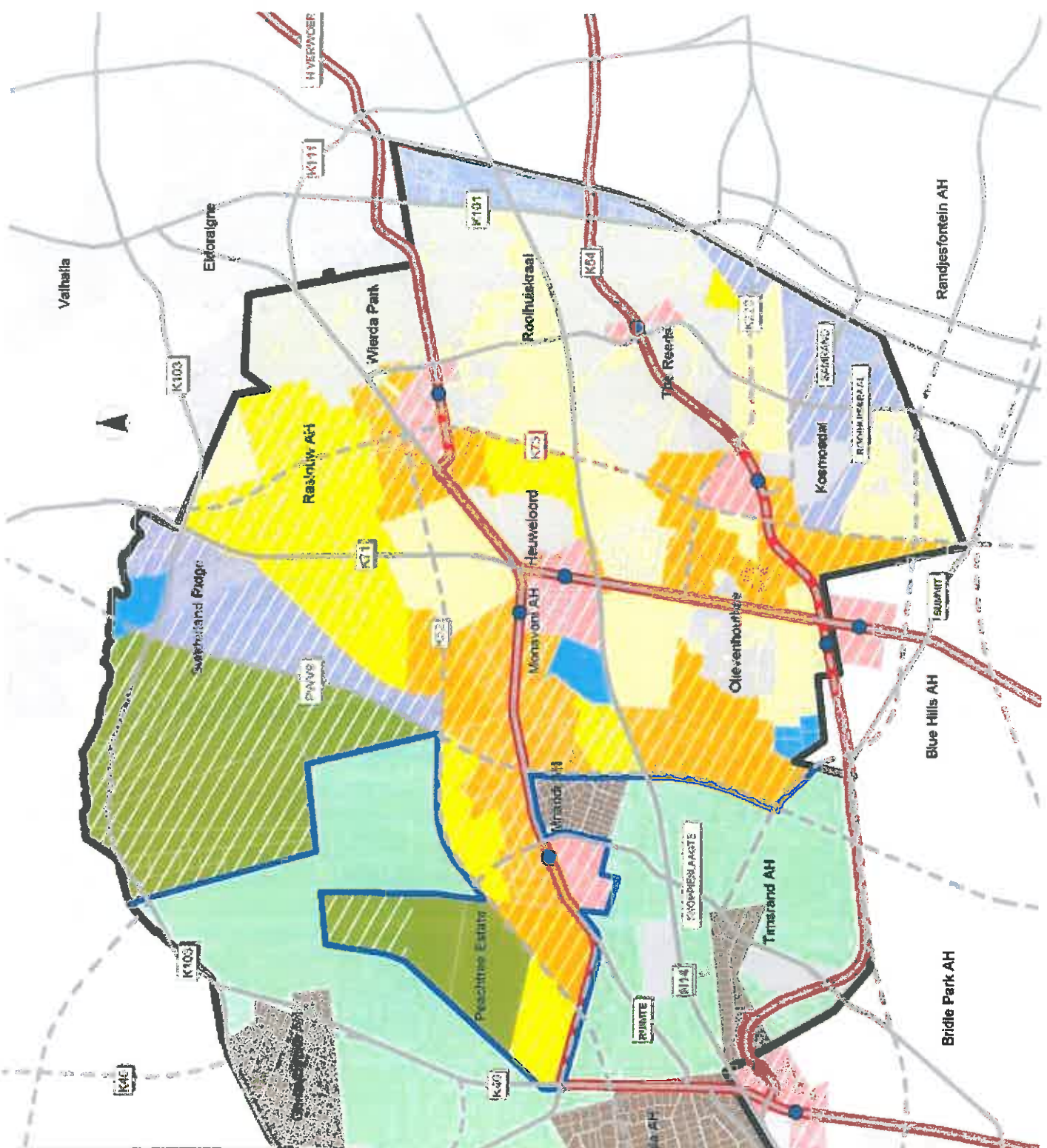


Sunderland Ridge Framework 2020
Figure 14



PROPOSED MAJOR BRT STATION
PROPOSED URBAN EDGE
PROPOSED BRT ROUTE
PUBLIC TRANSPORTATION CORRIDOR
STUDY AREA
AGRICULTURAL HOLDINGS
AGRICULTURE
COMMERCIAL / INDUSTRIAL
MINE / QUARRY
MUNICIPAL
RESIDENTIAL
RESIDENTIAL ESTATE
PROPOSED RESIDENTIAL DENSIFICATION
PROPOSED RESIDENTIAL EXPANSION
PROPOSED COMMERCIAL / INDUSTRIAL
PROPOSED ESTATE DEVELOPMENT
PROPOSED RURAL DENSIFICATION
PROPOSED MIXED USE NODE

1000 0 5000 2000 Meters



**Company Profile & CV of Lizelle Gregory
(Environmental Assessment Practitioner)**



The logo features the word "Bokamoso" in a stylized, rounded font with a white outline and a black shadow. Above the text is a graphic of a tree with intricate, swirling branches, also rendered in white with a black shadow. The background of the entire page is a photograph of a tree with bare branches against a light sky.

Bokamoso

Landscape Architects &
Environmental consultants

P.O. BOX 11975
Maitland
0151

Tel: (012) 245 2810
Fax: (086) 570 5559

E-mail: info@bokamoso.co.za
Website: www.bokamoso.com

01	Executive Summary
02	Vision, Mission & Values
03	Human Resources
04	Services
05	Landscape Projects
06	Corporate Highlights
07	Environmental Projects
08	Indicative Clients
09	Tools



Bokamoso specialises in the fields of Landscape Architecture and all aspects of Environmental Management and Planning. Bokamoso was founded in 1992 and has shown growth by continually meeting the needs of our clients. Our area of expertise stretches throughout the whole of South Africa. Our projects reflect the competence of our well compiled team. The diversity of our members enables us to tend to a variety of needs. Our integrated approach establishes a basis for outstanding quality. We are well known to clients in the private commercial as well as governmental sector.

At Bokamoso we stand on a firm basis of environmental investigation in order to find unique solutions to the requirements of our clients and add value to their operations.



Bokamoso
Pty Ltd

01 Executive Summary

011 Company Overview

Vision:

At Bokamoso we strive to find the best planning solutions by taking into account the functions of a healthy ecosystem. Man and nature should be in balance with each other.

Mission:

We design according to our ethical responsibility, take responsibility for successful completion of projects and constitute a landscape that contributes to a sustainable environment. We add value to the operations of our clients and build long term relationships that are mutually beneficial.

Values:

Integrity
Respect



Bokamoso stands on the basis of fairness. This includes respect within our multicultural team and equal opportunities in terms of gender, nationality and race.

We have a wide variety of projects to tend to, from complicated reports to landscape installation. This wide range of projects enables us to combine a variety of professionals and skilled employees in our team.

Bokamoso further aids in the development of proficiency within the working environment. Each project, whether in need of skilled or unskilled tasks has its own variety of facets to bring to the table.

We are currently in the process of receiving our BEE scorecard. We support transformation in all areas of our company dynamics.



Bokamoso
Pty Ltd

03 Human Resources

031 Employment Equity

Lizelle Gregory (100% interest)

Lizelle Gregory obtained a degree in Landscape Architecture from the University of Pretoria in 1992 and passed her board exam in 1995. Her professional practice number is PrArch 97078.

Ms. Gregory has been a member of both the Institute for Landscape Architecture in South Africa (ILASA) and South African Council for the Landscape Architecture Profession (SACLAP), since 1995.

Although the existing Environmental Legislation doesn't yet stipulate the academic requirements of an Environmental Assessment Practitioner (EAP), it is recommended that the Environmental Consultant be registered at the International Association of Impact Assessments (IAIA). Ms. Gregory has been registered as a member of IAIA in 2007.

Ms. Gregory attended and passed an International Environmental Auditing course in 2008. She is a registered member of the International Environmental Management and Assessment Council (IEMA).

She has lectured at the Tshwane University of Technology (TUT) and the University of Pretoria (UP). The lecturing included fields of Landscape Architecture and Environmental Management.

Ms. Gregory has more than 18 years experience in the compilation of Environmental Evaluation Reports.

Environmental Management Plans (EMP).

Strategic Environmental Assessments.

All stages of Environmental input.

EIA under ECA and the new and amended NEMA regulations and various other Environmental reports and documents.

Ms. Gregory has compiled and submitted more than 500 Impact Assessments within the last 5-6 years. Furthermore, Ms. L. Gregory is also familiar with all the GDARD/Provincial Environmental policies and guidelines. She assisted and supplied GAUTENG former PWV Consortium with Environmental input and reports, regarding road network plans, road determinations, preliminary and detailed designs for the past 12 years.



Bokamoso

Resources
032 Members

Consulting

Mientjie Coetzee

MSc Medical Sciences (US)

BSc (Hons) Medical Sciences (US)

More than 8 years experience in the compilation of various environmental reports

Ane Agenbacht

Introduction to Sustainable Environmental Management—An overview of Principles, Tools, & Issues (Potch 2006)

Leadership Training School (Lewende Woord 2010)

BA Environmental Management (UNISA 2011)

PGCE Education (Unisa 2013)

Project Manager

More than 10 years experience in the compilation of various environmental reports

Olqa Nkangana

BA Environmental Management (UNISA)

Specialises in compiling various environmental reports

Nicolene Lotter

BSc (Hons) Environmental Science (NWU)

BSc Tourism (NWU)

1 year 4 months experience in the field of Environmental Sciences

Specialises in Water Use License Applications

Ben Bhukwana

BSc Landscape Architecture (UP)

More than 4 years experience in the field of Landscape Architecture

Specialises in Landscape Design, ECO & Environmentalist in Training

Mari Burger

B-Tech Nature Conservation (TUT)

N. Dip. Nature Conservation (TUT)

EMI Training (GDARD/University of Pretoria)

5 years Biodiversity Enforcement & Awareness Training experience

Specialises in Water Use Licences



03 Human Re-

033 Personnel

Anton Nel

B-Tech Landscape Technology (TUT)
N Dip Landscape Technology (TUT)
1 year experience in ECO
Specialises in Basic Assessment Reports

Juanita de Beer

Event Management and Marketing (Damelin)
Specializes in Public relations and public participation processes

Mary-Lee Potgieter

Msc Plant Science (UP)
BSc (Hons) Plant Science (UP)
BSc Ecology (UP)
1 year 5 months working experience in the Environmental field
Specializes in ECO works, Basic Assessments, EIA's, and Flora Reports

Alfred Thomas

GM Foundation & Internet Marketing (IT Academy)
12 years experience in GIS and IT in general
GIS Operator and Multimedia Specialist

Maretha Roux

Effective People Management (UCT)
18 years management experience
Specializes in AutoCAD, Visio, Accounting, and Administration
Compiling of various Environmental Reports/
Assisting Project Management
Photographer

Bokamoso

03 Human Resources

034 Personnel

Elsa Viviers

Interior Decorating (Centurion College)
(Accounting/ Receptionist) and Secretary to Lizelle Gregory

Loura du Toit

N. Dip. Professional Teacher (Heidelberg Teachers Training College)
Librarian and PA to Project Manager

Merriam Mogalaki

Administration Assistant with in-house training in bookkeeping

Landscape Contracting

Elias Maloka

Site manager overseeing landscape installations,
Irrigation design and implementation,
Landscape maintenance
18 years experience in landscape contracting works.

The contracting section comprises of six permanently employed black male workers. In many cases the team consists of up to 12 workers, depending on the quantity of work.



Bokamoso PT

03 Human Resources

035 Personnel

01 Environmental Management Services

- Basic Assessment Reports
- EIA & Scoping Reports
- Environmental Management Plans
- Environmental Scans
- Strategic Environmental Assessments
- EMP for Mines
- Environmental Input and Evaluation of Spatial Development Frameworks
- State of Environmental Reports
- Compilation of Environmental Legislation and Policy Documents
- Environmental Auditing and Monitoring
- Environmental Control Officer (ECO)
- Visual Impact assessments
- Specialist Assistance with Environmental Legislation Issues and Appeals
- Development Process Management
- Water Use License applications to DWA
- Waste License Application

Bokamoso
Pty Ltd

04 Services

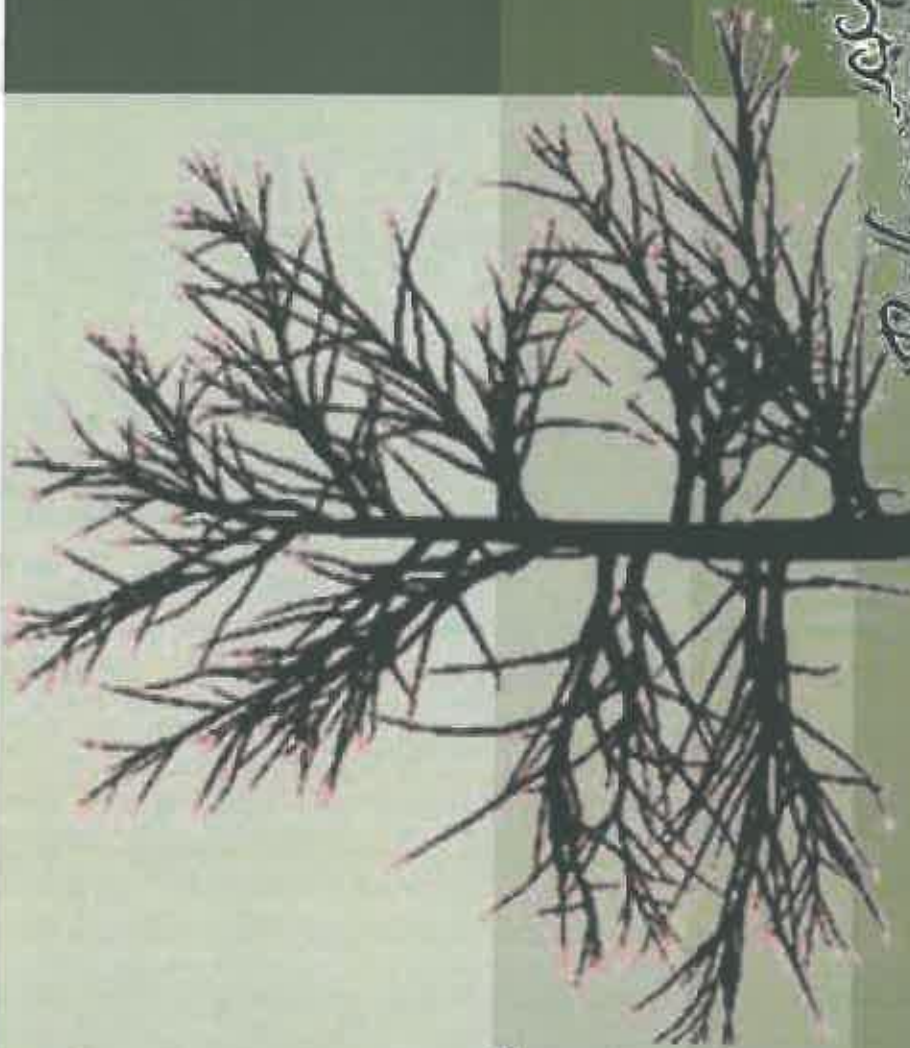
041 Consulting Services

02 Landscape Architecture

- Master Planning
- Sketch Plans
- Planting Plans
- Working Drawings
- Furniture Design
- Detail Design
- Landscape Development Frameworks
- Landscape Development Plans (LDP)
- Contract and Tender Documentation
- Landscape Rehabilitation Works

03 Landscape Contracting

- Implementation of Plans for
- Office Parks
 - Commercial/ Retail / Recreational Development
 - Residential Complexes
 - Private Residential/Guidelets
 - Implementation of irrigation systems



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04 Services

04.2 Contracting Services

01 Valpre Bottling Plant, Heidelberg



project
shelter site plan

05 Landscape Projects- Current
051 Commercial

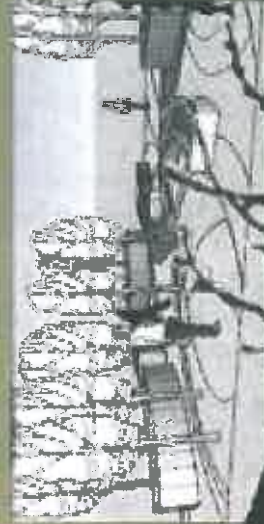


01 Valpre Bottling Plant, Heidelberg



06 Landscape Projects- Current
051 Commercial

01 Valpre Bottling Plant, Heidelberg

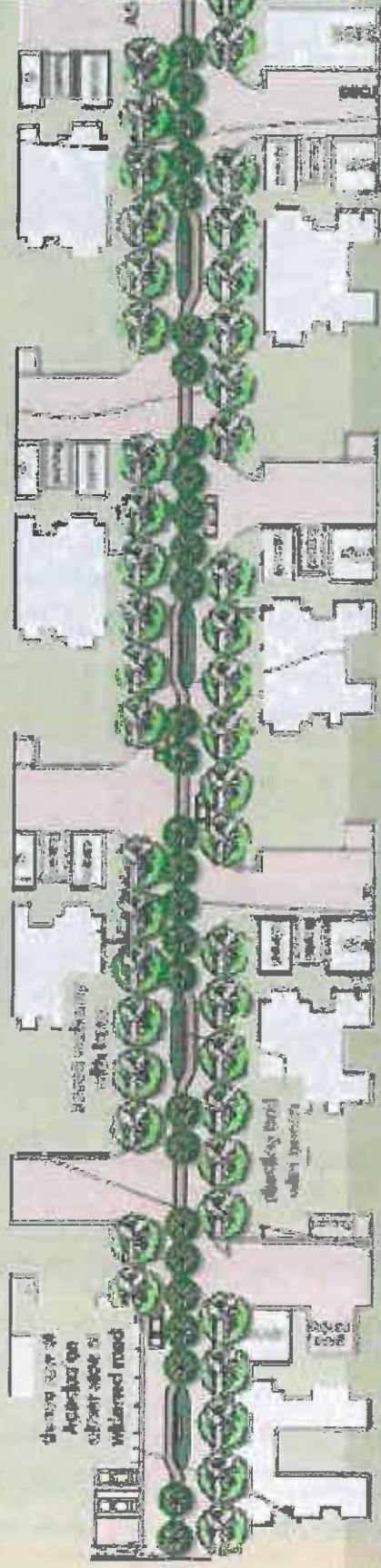


View from the north

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05 Landscape Projects - Current
05 Commercial

02 Melodie Waters, Hartebeespoortdam



Streetscape

Indigenous Planting



Landscape Projects – Current
Commercial/Recreational

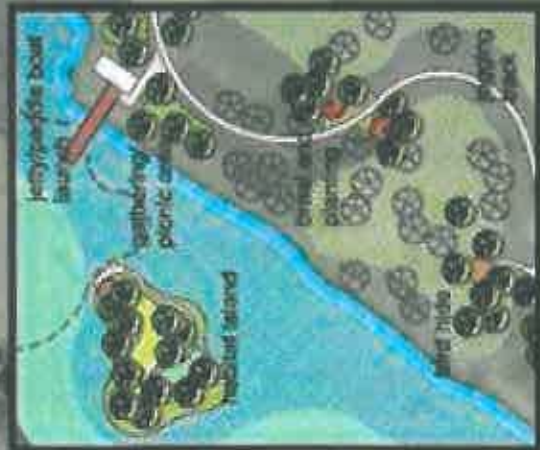


02 Melodie waters, Hartebeestpoortdam

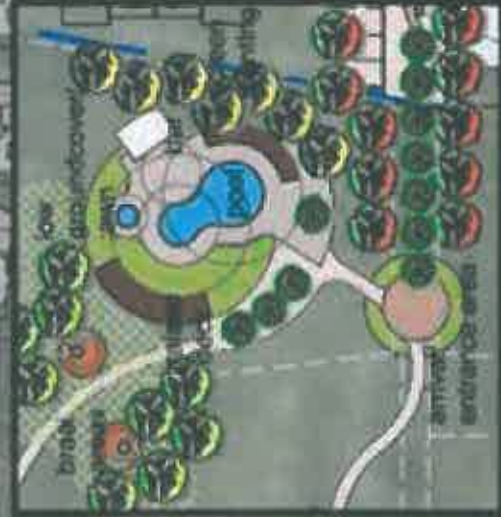


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05 Landscape Projects - Current
053 Commercial/Recreational



Rehabilitation



Area Layout

03 Grain Building, Pretoria



05 Landscape Projects - Completed

013 Offices

04 Ismail Dawson offices, Pretoria



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06 Landscape Projects – Conceptual
053 Offices

05 Celtic Manor, Pretoria



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06 Landscape Projects - Completed

054 Complex Development

Beaufort West, Namaqualand, Namaqualand, Namaqualand

05 The Wilds, Pretoria



Bokamoso II

05 Landscape Projects - Completed

054 Complex Development

07 The Wilds, Pretoria



05 Landscape Projects – Completed

055 Residential

08 The Wilds, Pretoria



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Landscape Projects – Completed
055 Residential

09 The Wilds, Pretoria \-



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05 Landscape Projects - Completed

055 Residential

010 The Wilds, Pretoria



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05 Landmark Properties - Completed

055 Residential

011 Governor of Reserve Bank's Residence, Pretoria



Plant Palette

Option 1 Option 2



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05 Landscape Projects – Conceptual
055 Residential

012 House Ismail, Pretoria



Front Garden



Back Garden

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05 Landscape Projects - Conceptual

055 Residential



013 Forest Garden, Pretoria

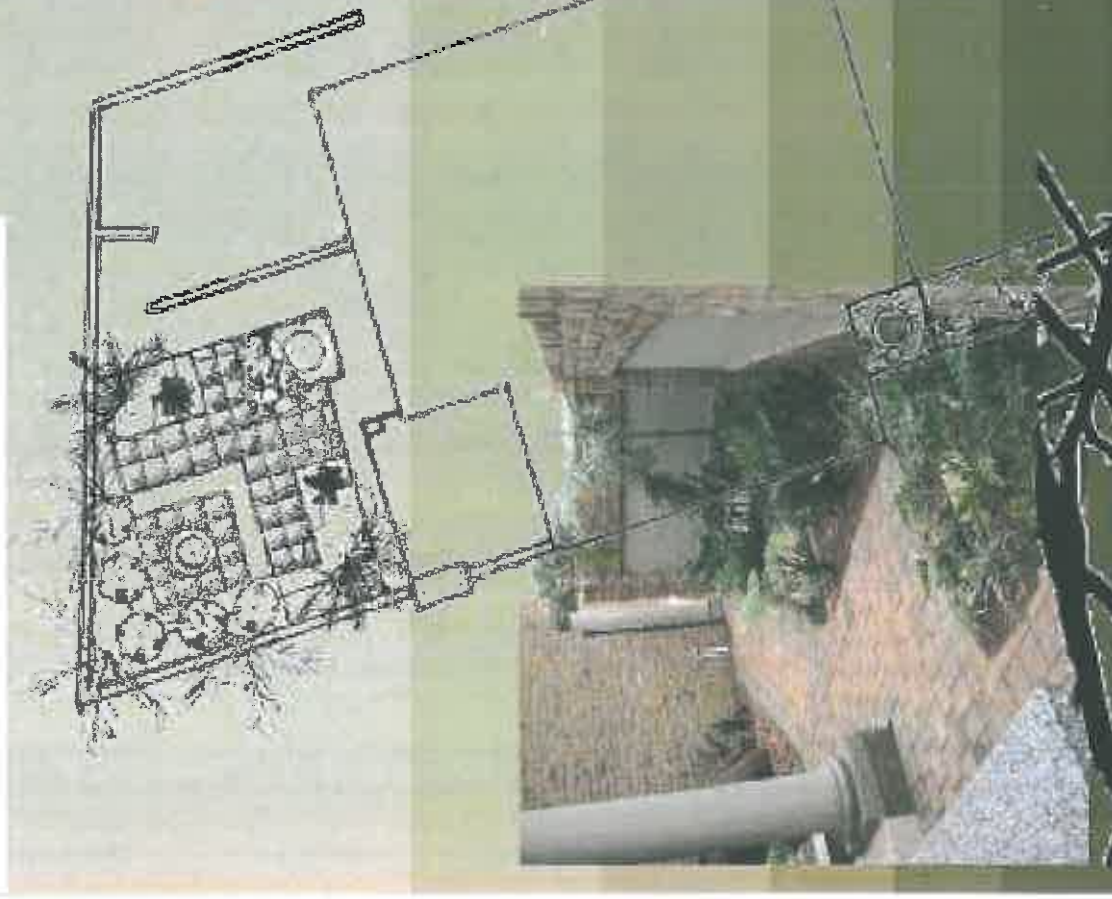


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Landscape Architecture



Landscape Projects – Completed
013 Residential

016 Forest Garden, Pretoria



Bokamoso

05 Landscape Projects - Completed
055 Residential

01 Safari Garden Expo

Received a Silver Certificate at the Safari Garden Expo, 2010



Bokamoso

06 Corporate Highlights

061 Awards

02 UNISA Sunnyside Campus, Pretoria
Best Commercial Paving Plan in Gauteng, 1997



06 Corporate Highlights

07 Awards



The adjacent list host the status of our current projects. Only a selected amount of projects are displayed.



Project Name	Status	Project
Environmental Impact Assessment(EIA) and Scoping Report		
Junction 21	ROD	EIA
5 O'clock site access	In Progress	EIA
Bokamoso X 1	In Progress	Scoping & EIA
Doomvallei Phase 6 & 7	In Progress	EIA
Erongo interchange	In Progress	Scoping & EIA
Erasmia X15	In Progress	EIA
Franschooibos	In Progress	EIA
K113	Amendment of ROD	EIA
K220 East	ROD	EIA
K220 West	ROD	EIA
K54 ROD conditions	In Progress	EIA
Knoppeelaagte 9/Peachtree	ROD	EIA
Knoppeelaagte portion 20 & 21	ROD	EIA
Lilieslei/Nooitgedacht	In Progress	EIA
Mooiplaas 70 (Sutherland)	In Progress	EIA
Nieuwpoort 1 - 12/Valley View	In Progress	EIA
Peachtree X5	In Progress	EIA
Snydfontein 60	In Progress	EIA
Thebe Molweners	In Progress	Scoping & EIA
Vakdwaals	In Progress	EIA
Waterfall Valley	In Progress	EIA
Environmental Opinion		
Bocombol 68 (Roox)	In Progress	Opinion
Mengochi X 53	In Progress	BA & Opinion
Mooibool (USM)	In Progress	Opinion
Norwood Mill/Bokamoso	In Progress	Opinion
Plymington X 0	In Progress	Opinion
SAI Liphema	In Progress	Opinion
USM Beaufort/Walrus/Beaufort	In Progress	Opinion

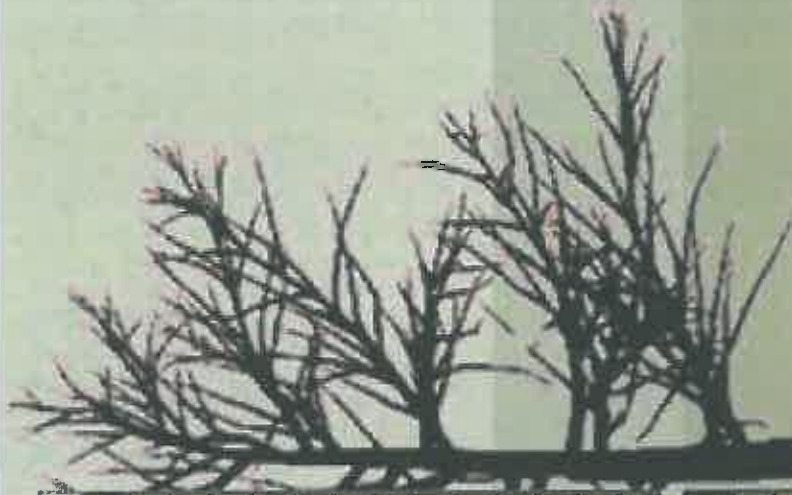
Current Environmental Projects
07 EIA, Scoping & Opinion

Project Name	Status	Project
Basic Assessment(BA)		
Amelin X.138	In Progress	BA
Clubview X 29	ROD	EA
Darrenwood Dam	In Progress	EA
Durley Holding 90 & 91	In Progress	EA
Elam	In Progress	EA
Fochville X 3	In Progress	BA
Harleboeshoek 251	In Progress	BA
Klerksdorp (Makosana Mall)	In Progress	BA
Monawoni External Services	ROD	BA
Monawoni X 45	Amendment of ROD	BA
Montana X 146	In Progress	BA
Rooihuiskraal X29	In Progress	BA
Thornrose Mall	In Progress	BA

Environmental control officer (ECO)		
Grace Point Church	In Progress	ECO
R. 81	In Progress	ECO
Hignwert X 61	In Progress	ECO
Mall of the North	In Progress	ECO
Ollewenhoutbosch Road	In Progress	ECO
Orchards 39	In Progress	ECO
Pierre van Rynsveld Reservoir	In Progress	ECO
Project Shelter	In Progress	ECO

S24 G		
Wonderboom	In Progress	S24 G
Mogwasi Guesthouses	Completed	S24 G

07 Current Environmental Projects
072 BA, ECO & S24 G



Project Name	Status	Project
Objection		
Colesberg WWTW	In Progress	Objection
Mogel Steelmill	Completed	Objection
Charlilly Waters	Completed	Objection
Development facilitation Act-Input (DFA)		
Burgersfort	In Progress	DFA & BA
Dooenpoort Filling Station	In Progress	DFA & EIA & Scoping
Eastwood Junction	In Progress	DFA
Ingersd Road (Erf 78, 81 - 83)	In Progress	DFA
Rooi-Seriekat	In Progress	DFA & EIA & Scoping
Thaba Meeße 1	In Progress	DFA & EIA & Scoping

Water Use License Act (WULA)		
Britstown Bulk Water Supply	In Progress	WULA
Celery Road / Green Channel	In Progress	WULA
Clerville X 45	In Progress	WULA
Dindingwa-Lodge	In Progress	WULA
Dooenpoort Filling Station	In Progress	WULA+DFA+EIA+SC
Eco Park Dam	In Progress	WULA
Gooble Drift Patch	In Progress	WULA
Jozza Shopping Centre	In Progress	WULA+BA
K&O	Completed	WULA
Mabato Roads	In Progress	WULA
Kwacele Sewage Works	In Progress	WULA
Manover External Services	In Progress	WULA+BA
Nyathi Eco Esters	In Progress	WULA
Pharis Grants X 3	In Progress	WULA
Wassards Water Heating Plant	Completed	WULA



Project Name Status Project

Environmental Management Plan(EMP)		
Heidelberg X12	ROD	EMP
Monavoni Shopping Centre	Completed	EMP
Forest Hill Development	Completed	EMP
Welleweden Farm 105KQ	Completed	EMP+EIA
Rastouw Holding 93	Completed	EMP+BA
Durley Development	Completed	EMP+BA
Rooiuiskraal North X 28	Completed	EMP

Rehabilitation Plan

Nonwood Mall/Sandevrult	In Progress	Rehabilitation
Project Shelter Heidelberg	In Progress	Rehabilitation
Sagewood Alteration Pond	ROD	Rehabilitation
Wellmore Hotel	Completed	Rehabilitation
Grace Point Church	Completed	Rehabilitation
Mmamelet Pipeline	Completed	Rehabilitation

Visual Impact Assessment

Swazkop Industrial Development	Completed	Assessment +DFA
Erasmia	Completed	Assessment

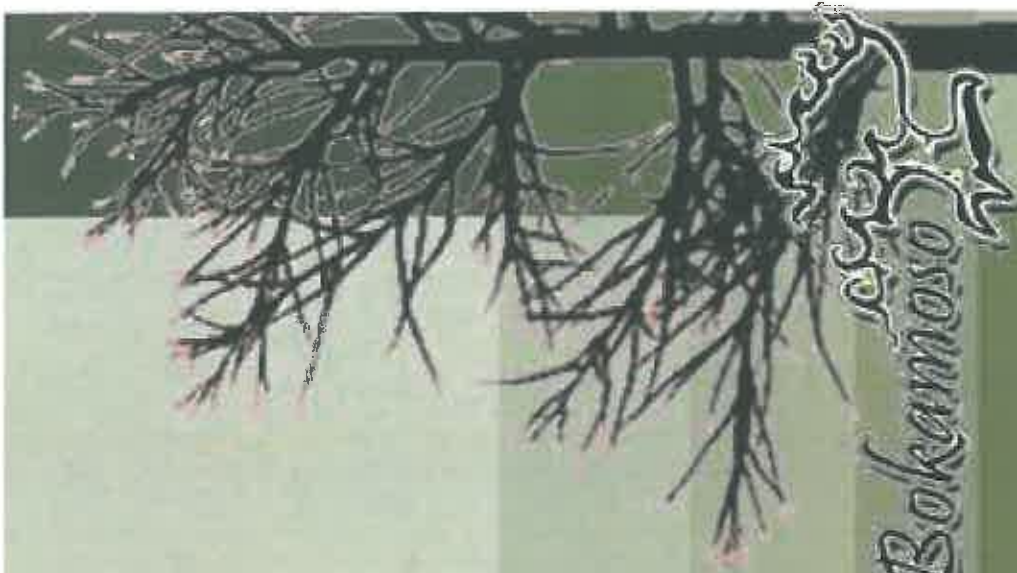
Signage Application


Menlyn Advertising	Completed	Signage
Tithe Villa Mall	Completed	Signage+EMP+BA

07 Current Environmental Projects

07a EMP, Rehabilitation , Waste Management & Signage Application

Bokamoso



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- Adobe Illustrator CS3
 - Adobe Photoshop CS3
 - Adobe InDesign CS3
 - AutoCAD
 - Google SketchUP
 - GIS
 - Microsoft Office Word
 - Microsoft Office Excel
 - Microsoft Office Publisher
 - Microsoft Office Power Point

Bokamoso

- Billion Property Group
- Cavaleros Developments
- Centro Developers
- Chamberlains
- Chieftain
- Century Property Group
- Coca Cola
- Elmado Property Development
- Flanagan & Gerard
- Gautrans
- Hartland Property Group
- Moolman Group
- MTN
- M&T Development
- Old Mutual
- Property Investment Company
- Petroland Developments
- RSD Construction
- SAND
- Stephan Parsons
- Twin City Developments
- Urban Construction
- USIN



LANDSCAPE ARCHITECT

Landscape architect: Lizelle Gregory
Qualifications: Degree in Landscape Architecture (BL)
Professional Registration: PrLArch: 97078
Membership: IAIA, IEMA, SACLAP, ILASA

Selected Projects:

UNISA Sunnyside Campus, Pretoria. Master planning, sketch plans, working drawings, street furniture design, water features, planting and irrigation. Recipient of the 1997 Corobrick Award for Excellence for The Best Commercial Paving Design in Gauteng.

Kimberley Market Square. Master planning, sketch plans, planting plans, irrigation plans.

Monument Park Shopping Centre, Pretoria. Master planning, sketch plans, planting plans and other working drawings.

The Voortrekker Monument upgrading works. Investigations and preliminary proposals for elevator in monument, designing of route for disabled people and the compilation of development proposals for the rest of the Monument site.

Gautrain Station, Pretoria. Landscape and town planning inputs.

Development Framework and Environmental Management Framework and Plan for Randburg. NMLC, Upgrading proposals for Sabie – Proposals on how to make Sabie more Tourism friendly project.

Environmental Impact Assessments for various roads, service stations and other developments such as The Klip & Kruisfontein CBD. It also included Urban Design Inputs and Design Proposals and Guidelines for the Open Spaces of Klip & Kruisfontein. Implementation and monitoring principles, strategies and guidelines were also addressed as part of the study.

Greater Pretoria Metropolitan Open Space Study / ERP for the Greater Pretoria Metropolitan Council. Phase 1 of this study is now completed. The open spaces of the inner City is included as part of the ERP.

Compilation of an Environmental legislation document. This document lists and interprets all the existing and new National and International Environmental legislation and policies and it describes all the responsibilities of the local authorities regarding the Environmental Legislation. Scoping reports, EIA's and Scans for roads K 105, PWV 5, PWV 20, PWV 6, K 109, Oliivenhoutbosch Road, K 111, PWV 9, K 147, PWV 18, PWV 17 and many more Gautrans and now NW Province Roads as well as borrowed pit license applications to DME and DWAF sections 21 applications.

Ms. L. Gregory obtained a degree in Landscape Architecture from the University of Pretoria in 1992. She passed the Board examination, which can only take place 2 years of working experience at a qualified Landscape Architectural firm, in 1995 and was then issued with a professional practice number.

Since 1992, Ms. L Gregory has been a professional member of the Institute of Landscape Architecture South Africa (ILASA) and the South African Council for Landscape Architecture (SACLAP). She is also a registered member of the International Environmental Management and Assessment Council (IEMA).

Although the existing Environmental legislation does not yet stipulate the academic requirements of an Environmental Assessment Practitioner (AEP), it is recommended that the Environmental Consultant be registered at International Association of Impact Assessments (IAIA). Ms. L. Gregory has been registered as a member of IAIA since 2007.

In addition to the above, Ms. L. Gregory also attended and passed an International Environmental Auditing course in 2008.

Ms. Gregory has more than 18 years of experience in Landscape Architecture and the compilation of Environmental Evaluations prior to the latest Environmental Regulations, Environmental Management Plans (EMP), Strategic Environmental Assessments, all stages of Environmental input of all sizes, Road planning, EIA under ECA and the New Regulations and various other Environmental reports and documents.

In terms of Landscape Architecture and design she has been involved in a variety of projects on the following levels:

- Master Planning
- Sketch plans
- Working Drawings
- Detail Design
- Furniture Design
- Irrigation plans and installations
- Landscape Development Frameworks
- Landscape Development Plans (LDP)
- Producing of contract documentation to direct the installation of the proposed works.

Recent projects include a number of residential garden installations at The Wilds Residential Estate and the design and installation of the landscape for the Grain Building (which houses the South African Grain Laboratory) in Pretoria. She has also developed Landscape Development Frameworks for Monavoni X 3, 4 And 6, Celtic Manor Estate, Rietvlei Ridge and Orchards X 39 and 40. She provided Master Planning and Town Planning Guidelines for the Omithuya City Development in South-West Africa, Sonangol Residential Estate in Angola, as well as Landscaping Guidelines for The Island Marina Development at the Hartebeespoort Dam, amongst others.

Ms. L. Gregory has compiled and submitted more than 600 Impact Assessments within the last 10 – 11 years. Furthermore, she is also familiar with all the GDARD/Provincial Environmental policies and guidelines and assisted and supplied GAUTRANS/former PWV Consortium with Environmental input and reports regarding road network plans, road determinations, preliminary designs and detailed designs for the past 12 years.

She has lectured at both the Tshwane University of Technology (TUT) and the University of Pretoria. The lecturing included fields of landscape Architecture and Environmental Management.